ELSEVIER
www.elsevier.com/locate/worlddev

World Development Vol. xx, pp. xxx–xxx, 2017

http://dx.doi.org/10.1016/j.worlddev.2016.12.015

What Drives China's New Agricultural Subsidies?

RIGOBERTO A. LOPEZ [a], XI HE [a] and ELEONORA DE FALCIS [b,*]
[a] *University of Connecticut, USA*
[b] *Università Cattolica del Sacro Cuore, Piacenza, Italy*

Summary. — China's agricultural policy has undergone a fundamental transformation in the four decades since the introduction of market reforms in 1978 and now involves a wide array of policy instruments that range from output and input subsidies to public infrastructure expenditures. This article analyzes the political-economic determinants of China's agricultural subsidy changes using producer subsidy equivalents (PSEs) drawn from annual data from 1984 to 2015 on 16 agricultural commodity sectors that include multiple policy instruments. Empirical results indicate that national factors, such as high rates of economic growth and a lower share of agriculture in the economy, have been the primary drivers of increases in PSEs, and that larger, more geographically concentrated agricultural sectors are more likely to be subsidized at a higher PSE rate. Finally, China's joining the World Trade Organization in December 2001 led to significant increases in PSEs that were not already explained by internal national or commodity-specific factors. In essence, China's agricultural subsidy programs and levels increasingly resemble those of developed countries, primarily as a result of economic transformation and the ability to structure agricultural policies within the WTO rules. Moreover, this article predicts that agricultural subsidies will trend slightly upward in the next decade and that the strongest opportunities to export to China will be in animal products or grains that are utilized for feed or processed foods, where the levels of subsidies are predicted to increase but remain lower than for traditional food crops.

Key words — China, political economy, agricultural policy, WTO, agricultural subsidies

1. INTRODUCTION

As the world's largest producer, consumer, and importer of agricultural products, the domestic agricultural policies of the People's Republic of China have a significant effect on world markets. In the last four decades, China has undergone a radical change of agricultural policy. Starting from policies typical of developing countries that tended to suppress farm prices, China has shifted to support key agricultural prices, more in line with developed countries, [1] as well as to increase agricultural input subsidies. Following Zheng, Lambert, Wang, and Wang (2013), agricultural policy in China has evolved over three periods, each one characterized by the need to address distinct development objectives.

After its establishment in 1949, the new Chinese regime adopted a Soviet-style development strategy oriented toward industry. Agricultural production was organized into cooperatives and people's communes, a form of supra-cooperative (Lin, 1990; Party History Research Center of the CPC Central Committee of China, 2011), with the government generally procuring commodities at below-market prices via state monopsonies to subsidize urban consumption and industrial development (Carter *et al.*, 2002). Low food prices benefited urban consumers but depressed farmers' incomes. Therefore, after 1978, when industrial development was triggered, widespread concerns about the decline of agricultural production and productivity over time made policymakers start to redefine their strategies (Zheng *et al.*, 2013).

By the early 1980s, the majority of farms had been decollectivized and the majority of state enterprises were allowed to retain profits. With the success of decollectivization in rural areas, the Chinese Communist Party attempted to restart their urban programs, and the peasants ceased to be an important political force in China (Xu, 2013). Between 1989 and the early 1990s, there was a period of relative political instability in urban areas in China, including the Tiananmen Square incident on June 4, 1989, and the government paid particular attention to urban rather than rural constituencies. By 1994, the government resumed its policy of maintaining and stabilizing producer prices through procurement and trade policy for important commodities, such as wheat, soybeans, and corn, at prices substantially above international levels (Fang, Tuan, & Zhong, 2002). Price intervention used to be an important tool of agricultural protection, although its magnitude fluctuated significantly as further efforts were made to balance producers' and consumers' interests in order to mitigate impacts of volatile international prices on domestic markets (OECD, 2013).

In December 2001, China joined the World Trade Organization (WTO). Although China was already starting to support its agricultural sector, the extent of support was minimal and below the OECD average (OECD/FAO, 2013). In 2006, China made an historical change in its macroeconomic policy, abolishing agricultural taxes and introducing direct income subsidies, a minimum price policy via a non-recourse loan program, [2] and a comprehensive program to subsidize agricultural inputs. Finally, in 2008, the central government introduced agricultural machinery subsidies. In compliance with WTO rules, China applies tariff-rate quotas to wheat, rice, corn, sugar, wool, cotton, and some fertilizers to limit quantities over a quota rate. China also maintains a variety of non-tariff barriers that include import licenses, state trading, and food safety measures (WTO, 2012). However, the recent decline in international agricultural commodity prices has increased the need to increase government intervention.

* The research reported in this article was funded by the Zwick Center for Food and Resource Policy and the USDA National Institute of Food and Agriculture, Hatch Multistate project S1062, project accession number 1010008. The authors are grateful to participants in the 2015 Northeastern Agricultural and Resource Economics Association meetings for useful comments that improved the manuscript. All remaining errors, if any, are the responsibility of the authors. Final revision accepted: December 18, 2016.

Please cite this article in press as: Lopez, R. A. *et al.* What Drives China's New Agricultural Subsidies?, *World Development* (2017), http://dx.doi.org/10.1016/j.worlddev.2016.12.015

Given the dramatic changes in China's agricultural policy in the post-reform period, understanding the drivers of these changes is important in order to anticipate potential impacts on world development. The literature is rich in papers that investigate the determinants of agricultural protection in numerous country (e.g., Gawande & Hoekman, 2006; Klomp & de Haan, 2013), and several studies look at the impacts of the new agricultural policies in China (e.g., Wang & Shen, 2014; Yu & Jensen, 2010). Our work contributes to this strand of the literature, providing the first long-term quantitative analysis of the drivers of agricultural policy changes in China. The analysis makes use of a political-economic model to explain the levels of agricultural producer subsidies, with particular attention to emerging agricultural policy changes.

The remainder of the paper is organized as follows. In the next section, we provide some basic background on agricultural production, consumption, and imports in China, along with a summary of agricultural policy regimes. In the third section, we present a political economic model of agricultural and input subsidies to guide the empirical specification. In the fourth section, we use 1984–2015 annual data on producer subsidy equivalents (PSEs) for 16 commodities to examine the drivers of changes in PSEs in this period. The fifth section presents empirical results for PSE determinants as well as agricultural PSE projections from 2016 to 2025. The last section provides the key insights and conclusions of the article. In essence, China's agricultural policies now resemble those of developed countries due to economic transformation and the ability to restructure and reinforce agricultural policies within the WTO rules. In addition, support to farmers is projected to increase and remain higher for crops than for animal products, where the export opportunities for other countries look the most promising.

2. TRENDS IN PRODUCTION, CONSUMPTION, AND SUBSIDIES

(a) *Trends in production, consumption, and imports*

Although China remains a developing country, and its per capita income is still a fraction of those in advanced countries (World Bank, 2015), its continued high rate of economic growth has ensured a transition from a "low-income" developing country to a "middle-income" one. A number of recent studies highlight the rise of income as the major driving force leading to an increase in food consumption, particularly of meat products (Fuller, Hayes, & Smith, 2000; Huang, Rozelle, & Rosegrant, 1998; Ma, Rae, Huang, & Rozelle, 2004; Zhou & Tian, 2003; Zhou, Tian, Wang, Liu, & Cao, 2012).

To further examine the trends in food production and consumption in the last decades, we examine the top four agricultural commodities in terms of the farm value of sales in China during 1990–2010. This group of key commodities includes four animal products (pork, poultry, beef, and milk products) and four crops (rice, wheat, corn, and soybeans). As expected, per capita consumption increased during 1990–2010 for all the commodities in question, except rice, which experienced a modest decline in the diet of the average Chinese consumer.

For crops, as shown in Figure 2, it is interesting to note that while corn and soybeans experienced a significant increase in per capita consumption (nearly 50% and 500%, respectively, in the period in question), per capita consumption of rice and wheat declined modestly. However, as most of the corn crop is devoted to feed, the increase in corn consumption reflects both direct consumption and derived demand through livestock feed purposes. Moreover, approximately 75% of soybeans in 2010 were purchased for further processing by the agro-food complex (FAO, 2015), also reflecting direct

Table 1. *Summary statistics of sample and related data*

	Period 1: 1984–89 Mean	Period 2: 1990–94 Mean	Period 3: 1995–2001 Mean	Period 4: 2002–15 Mean
National-level variables				
Real GDP Per Capita (RMB)	1,089.67	2,678.59	6,859.29	27,309.46
Agriculture Share of GDP	0.27	0.22	0.17	0.11
Urbanization rate	0.25	0.28	0.33	0.48
Transfers from consumers (Billion RMB)	−38.81	12.76	−12.28	541.37
Budget transfers (Billion RMB)	11.13	12.76	40.99	103.25
Commodity-specific variables				
PSE	−2,188.51	−12,806.62	−401.09	22,351.37
Percent PSE	−13.58	−21.61	5.98	12.29
GEO × production value	2.30	4.44	8.00	18.11
Self-sufficiency	2.27	1.41	0.94	0.92
Production level (thousand tons)	28.23	31.11	33.64	42.19
Production value (billion RMB)	25.74	49.35	88.40	201.52
Consumption level (Thousand tons)	28.35	30.85	35.04	44.52
Consumption value (Billion RMB)	20.47	48.78	91.84	218.64
Demand elasticity w.r.t output price	−0.95	−0.93	−0.31	−0.36
Supply elasticity w.r.t output price	0.10	0.11	0.08	0.11
Supply elasticity w.r.t input price	−0.36	−0.38	−0.87	−0.64
Number of observations	72	66	105	195

Note: 1978 is the baseline year when real GDP per capita in China was 381 RMB. Note that the mean values for each period are the simple averages across commodities and years, not the weighted averages.

Please cite this article in press as: Lopez, R. A. *et al.* What Drives China's New Agricultural Subsidies?, *World Development* (2017), http://dx.doi.org/10.1016/j.worlddev.2016.12.015