

From Self-Sufficiency to Self-Supporting: China's Food Security under Overseas Farmland Investment and International Norms*

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Current studies on China's food security are largely based on the perspective of grain self-sufficiency, and discuss whether China can feed itself at the national level through its grain production. As a result, the Chinese grain self-sufficiency policy of maintaining a self-sufficiency rate of above 95% tends to be regarded as a benchmark for evaluating China's food security status. However, recent studies and documents indicate that China is having difficulty adhering to its grain self-sufficiency policy and, therefore, is looking for overseas agricultural resources to support its increasing demand for grain. Today, China has become a major player in investing in farmland in foreign countries for grain production. During 2007-2013, at least 5.3 million hectares of overseas farmland, equal to 5% of its domestic sown land for grain crops in 2011, were secured and operated by Chinese firms. Accordingly, China's grain demand will be largely supported by Chinese-owned farmlands both locally and overseas, resulting in a new scenario for China's grain policy, that of being self-supporting.

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This practice of importing more grain from Chinese-owned farmlands abroad will eventually affect China's long-standing norm of seeking to maintain a 95% grain self-sufficiency rate. Thus, important questions have been raised: How does China acquire farmlands overseas? To what extent does the shifting Chinese grain policy challenge international norms? In response to this developing and ongoing story of China's policy shift from self-sufficiency to being self-supporting, this paper argues that China's adjustment in terms of its food security policy not only further secures its grain supply, but also influences international norms. An important finding of this paper is China's reliance on government-supported companies and bilateral agreements, not only to safeguard production stemming from investments, but also to influence the regional food security status.

KEYWORDS: food security; farmland investment; grain self-sufficiency; China.

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A long-standing research topic of particular interest among academics has focused on whether China can feed itself. Since the mid-1990s, many scholars have been warning the world that a rising China would disturb global food markets (Brown & Kane, 1994). Their analyses have revealed China's insecure food market caused by its rapid urbanization (J. Chen, 2007; Rozelle, Veeck, & Huang, 1997), population growth (Brown, 1995; Brown & Kane, 1994), climate change (Holst, Yu, & Grun, 2013), pollution (Y. Li et al., 2013), scarcity of water (Xiong et al., 2010; You, Spoor, Ulimwengu, & Zhang, 2011), lack of reliable irrigation systems (Zhao, Luo, Deng, & Yan, 2008) and insufficient incentive policies to encourage grain production (Y. Huang, 2004). Nevertheless, many other scholars have pointed out that China is still able to feed itself (J. Huang, Rozelle, & Rosegrant, 1999; Ross-Larsen, 1997). This strand of the literature attributes China's capable food supply largely to its currently sufficient land and water resources (Heilig, Fischer, & van Harrij, 2000; H. Yang & Li, 2000), stable political system, consistent food security policies ("The 9 Billion-People Question," 2011), public expenditure on agricultural research and development (Heilig, 1999; J. Huang & Rozelle, 2009; J. Huang & Wang, 2002), and the intensive use of fertilizers and pesticides (J. Huang & Rozelle, 1995). In other words, increases in

physical inputs, technical improvements, and institutional support are considered to be the three main factors supporting China's grain self-sufficiency policy.

Fortunately, thus far China has successfully fed the largest population in the world. According to the Chinese government, while the arable acreage only grew from almost 130 million hectares in 1991 to 135 million hectares in 2012, the production of grains (rice, wheat, and maize, not including soybean) increased from 300 million tons in 1978 to 540 million tons in 2013, increasing by 80%. During the same period, China's population increased from 963 million to 1.36 billion, or by 41%.¹ The growth rate of grain production was therefore greater than the population growth rate. Thus, the Chinese grain self-sufficiency rate (excluding soybean) was above 98% in 2013. However, recent studies show that these three factors are currently being challenged as grain output with respect to physical inputs has gradually been falling (Z. Chen, Huffman, & Rozelle, 2009), the marginal return on agricultural research and development has started to decline (Fan, Zhang, & Zhang, 2004), and the contributions of the current institutional reforms to the growth of agricultural production have become insignificant (Ito & Ni, 2013). As a result, the three major factors influencing China's ability to feed itself appear to be weakening.

How can China continue its tradition of feeding itself? What are the lessons and experiences from the implementation of China's grain self-sufficiency policy? What will be the resulting effects on China's food security status if it shifts from a domestically grown grain self-sufficiency policy to a globally grown grain strategy? To what extent does the shifting Chinese grain policy challenge international norms? By reviewing the events of the past three decades in China, this paper attempts to provide some answers to these questions. I argue that, given China's increasing challenges to continue to feed itself, as well as its historical grain self-sufficiency background, its going-out strategy points to the implementation of an overseas farmland investment policy through its government-

¹Source from *China Statistical Yearbook* (various editions).

supported companies and bilateral agreements that will both change the Chinese food security status and challenge international norms. This changing policy can be regarded as a shift from grain self-sufficiency, based on domestic production, to being grain self-supporting, facilitated by the Chinese-owned global agricultural resources which will have some effects on international norms in relation to global food security. The main goal of this paper is not to accurately compute China's grain self-sufficiency rate, but to focus on China's agricultural going-out strategy in different areas. Overseas farmland investments are the primary focus of the going-out strategy, both safeguarding the Chinese grain supply and potentially changing the regional food security status, especially in South-east Asia, Eastern Europe, and South America.

The remainder of this paper is organized as follows. In the second section, relevant background information on China's grain self-sufficiency policy and farmland investment status are discussed. The third section addresses land investment data sources used to predict China's grain supply with respect to the amount of land it is acquiring for production. Based on the predictions, the fourth section includes a discussion of China's reasons for and approaches to acquiring farmlands abroad. Subsequently, the effect of the Chinese farmland investment movement on international norms will be analyzed in the fifth section, before a summary of the findings is presented in the final section.

Policy Background: From Grain Self-Sufficiency to Grain Self-Supporting

Grain Self-Sufficiency Policy and Food Security

Since 2002, when China presented its national report at the 16th National Congress of the Chinese Communist Party (CCP), protecting and raising the comprehensive grain production capacity has been a nationwide project. Chinese leaders have continued to focus on China's food production with a national document: "The Comprehensive Plan for

National Land Use” released in 2006. To protect China’s food supply, the Comprehensive Plan imposed an order indicating that arable acreage in China should not be less than 1.818 billion Mu (127.26 million hectares) in 2010 and 1.805 billion Mu (126.35 million hectares) in 2020.²

Later, at the 17th National Congress of 2007, the Chinese government further indicated that enhancement of food security was one of its major national goals, and specified several missions to serve this goal including protecting arable land, strengthening the rural infrastructure, preventing plant diseases, and narrowing gaps in urban-rural development. In response to these national projects, the State Council of China published an important document in 2008: “The Medium- and Long-Term Framework Plan for National Food Security (2008-2020).”³ The Framework Plan demanded that China adhere to a grain self-sufficiency rate at a level of 95%, which required securing over 1.8 billion Mu (126 million hectares) of farmland. In 2009, another document—“The Plan for Increasing National Grain Production Capacity by 50 Billion Kilograms (2009-2020)” —further emphasized that, along with the previously secured 1.8 billion Mu of cultivated farmland, China needed to retain no less than 1.58 billion Mu (110.6 million hectares) of basic farmland for grain production. Thus, maintaining grain self-sufficiency at a level of no less than 95%, with a “red line” of cultivated farmland being no less than 1.8 billion Mu and farmland dedicated to grain production being no less than 1.58 billion Mu, is considered to be a key indicator for measuring China’s food security status.

By including data from the Food and Agriculture Organization Statistical Database (FAOSTAT) and the China Rural Statistical Yearbook (CRSY), Figure 1 details the grain self-sufficiency rate in China. Because *grain* is a term applied to varying products, two different computational formulations are shown, including one regarding soybean as

²1 Mu = 0.07 hectares.

³For the Framework Plan (in Chinese), please see <http://www.gov.cn/jrzq/2008-11/13/content_1148414.htm>.

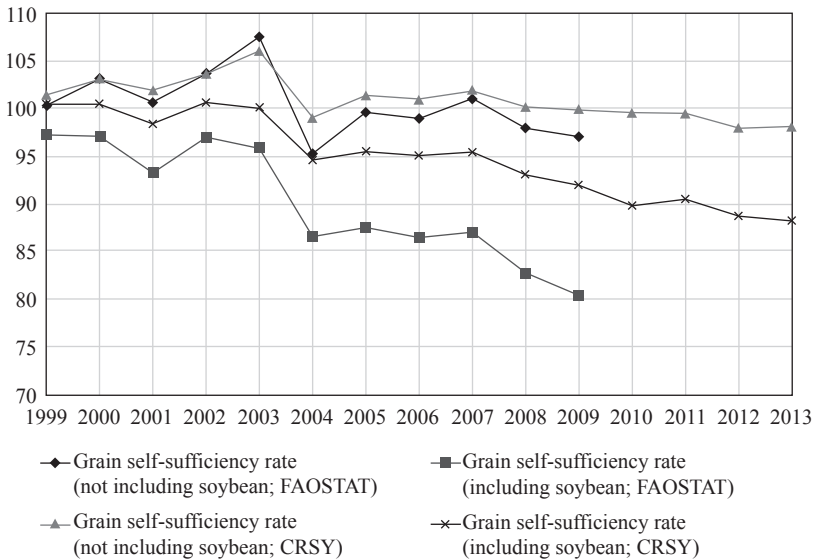


Figure 1. Grain sufficiency rates of China (weight). Sources from Food and Agriculture Organization Statistical Database (FAOSTATA), and China Rural Statistical Yearbook (CRSY).

grain and one not. The grain self-sufficiency rate is computed by dividing China's domestic grain supply quantity (rice, wheat, maize, tubers, and/or soybeans) by the total grain demand. In Figure 1, data from FAOSTAT and CRSY indicate that China consistently meets its 95% target if soybean is not included. However, if soybean is included, the CRSY data indicate that China's grain self-sufficiency rate has not met its target of 95% since 2008 and is continuing to fall. Recently, in 2013, China met only 88.25% of its demand with respect to its domestic grain supply. Unfortunately, data from FAOSTAT indicate an even worse dynamic in which China has not reached a 95% grain self-sufficiency rate since 2004. The latest data show that China's self-sufficiency rate in 2009 was barely above 80%.

The other indicator, the amount of domestic farmland, suggests a dynamic in that the Chinese government has difficulty maintaining its goal

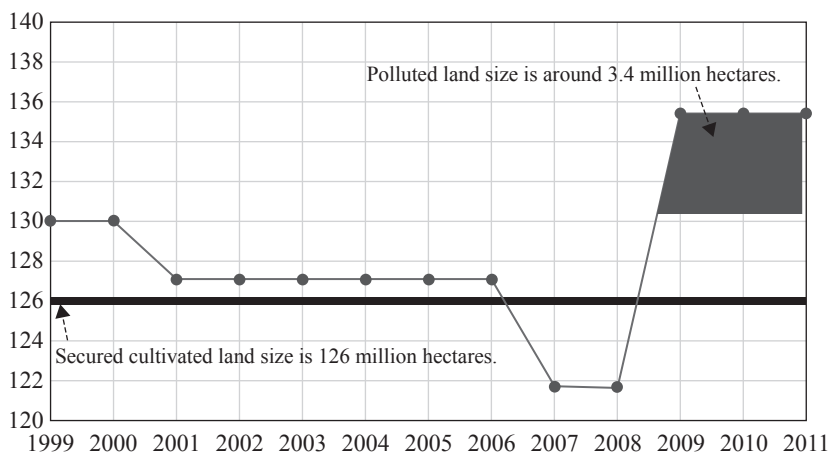


Figure 2. Cultivated land size in China (million hectares). Sources: data between 1999-2008 from *China Statistical Yearbook*; data between 2009-2011 from the Second National Land Survey of China.

of the farmland red line. Figure 2 indicates that the amount of cultivated farmland in China was secured at the level of no less than 126 million hectares only until 2006. Then in 2007 and 2008 the amount of cultivated farmland dropped to 121.74 million hectares, falling short of the goal. Afterwards, data released from the Second National Land Survey of China indicated that cultivated farmland had returned to 135.39 million hectares and met the required level again after 2009. However, the Survey further indicated that at least 2.5%—or 3.4 million hectares—of China's cultivated farmland had been polluted, so that it had become difficult to cultivate. Thus, the available cultivated farmland fell back to the amount at the end of the 20th century, although the red line was successfully maintained. Figure 3 shows a similar trend in which China's sown land for grain production has not remained at its goal of 110.6 million hectares since 2000. Although the amount of farmland for grain production rebounded sharply after 2004 and reached its highest level of 110.57 million hectares more recently in 2011 (still slightly below the goal), it decreased significantly between 1999 and 2003, when the amount leveled off at 99.41 million

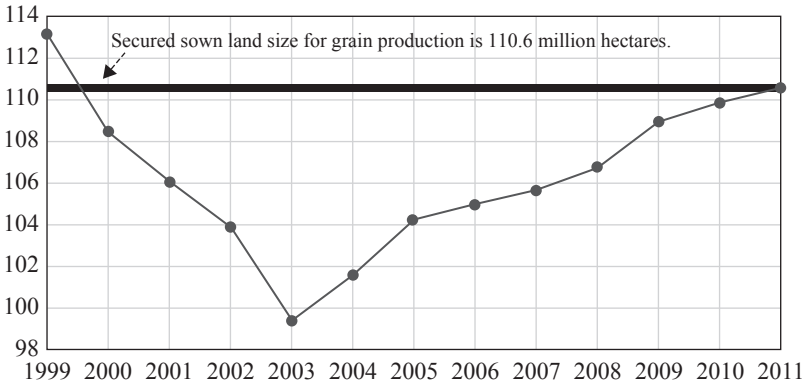


Figure 3. Sown land size for grain crops in China (million hectares). Sources from *China Statistical Yearbook*.

hectares. As a result, a recent study emphasizes that the loss of cultivated farmland and of grain production farmland during the first decade of the 21st century has weakened China's grain production security status (J. Chen, 2007).

In response to these poor grain security dynamics, some scholars have advocated reconsidering whether adhering to the goals of the grain self-sufficiency strategy and the farmland use policy is worth the effort (Ito & Ni, 2013). Rather than randomly relying on global food markets, which have been unstable since 2007 due to the effects of the uncertain dollar value on the food markets and futures, other scholars even suggest that China should take advantage of offshore farmlands and international trade to enhance its grain supply security (Hoering & Sausmikat, 2011). The Chinese government has been aware of the insecurity in the structure of its grain supply; therefore, the going-out strategy, proposed in 1999 as part of China's pursuit of natural resources, has been adopted in Chinese agricultural production since 2006 (Friedberg, 2006). This movement has particularly focused on grain (especially oil-bearing crops) and other agricultural resources, such as natural rubber, cotton, vegetables, and timber (Freeman, 2008, p. 5). Thus, overseas arable farmland investment has been encouraged and supported. Recently, by learning from the Japanese

experience since the 1970s,⁴ some influential scholars (Cheng & Zhang, 2014) have even advocated that China should develop new food security strategies with a more global perspective. The overseas farmland investments should take into account the Chinese companies in the business of food processing, seeds, chemicals, logistics, and transportation, as well as China's import controls in relation to customs, taxes, and inspection. Therefore, not only would the Chinese-favored/-needed food be sure to be grown and transported back from its offshore farmlands, but also the food prices and quality could be equal to its domestic ones. The new food security strategies would provide a comprehensive framework and would ultimately aim to safeguard China's food security.

Grain Self-Supporting Strategy and Farmland-Acquisition Status

As previously mentioned, "The Medium- and Long-Term Framework Plan for National Food Security (2008-2020)" is currently a primary food security document that is not only guiding the domestic development of China's grain production and farmland use, but is also providing policy support to strengthen global cooperation between the Chinese grain companies and foreign companies. Chapter 4 of the Framework Plan states:

[China needs to] enhance intergovernmental cooperation through building a long-term and stable collaborative relationship with other major grain producing countries. In order to develop and secure this stable and reliable grain-imported system, an agricultural "going-out" strategy must be implemented while Chinese companies are encouraged to "go out." This is also the way to both protect and increase the Chinese capacity for its domestic grain security.

Furthermore, Chapter 52 of China's 12th Five-Year Plan (2011-2015), endorsed in March 2011, articulates that Chinese companies, and state-owned enterprises (SOEs) in particular, shall adopt the going-out strategy and cooperate with other grain-producing countries to capture overseas agricultural resources. This is the first time that the Chinese go-

⁴Since the 1970s, Japan has invested in offshore farmlands in South America to secure its food supply, especially by cultivating soybeans for tofu.

ing-out strategy has been officially addressed in China's five-year plans. The following documents, especially Chapters 4 and 6 of the National Modern Agriculture Development Plan in 2011-2015 (January 2012); Chapter 7 of the Communiqué of the Third Plenum of the 18th Central Committee of the Communist Party of China (CPC; November 2013); Point 4 of the 2014 No. 1 Central Document (January 2014); and Point 7 of the 2015 No. 1 Central Document (January 2015), have repeated this agricultural going-out strategy, further encouraging the Chinese to acquire overseas agricultural resources via international cooperation and investment. Therefore, Chinese companies have been driven to invest in global agricultural resources and markets, especially in the countries in the southern hemisphere. According to a report published by GRAIN (2012), an international non-profit organization working for global food security, seven Chinese companies have already expanded their grain production bases overseas: Chongqing Grain Group, Beidahuang, ZTE Corp., Tianjin State Farms Agribusiness Group Company, Shaanxi State Farm, Pengxin Group, and Sanhe Hopeful. Among these, the first five are SOEs and the last two are privately-owned national champion firms, showing that the Chinese government is strongly involved. The long-standing inward-looking food security approach—the grain self-sufficiency policy—has been gradually adjusted to an outward-looking food security approach. This shift can be characterized as a grain self-supporting strategy that identifies Chinese grain support as coming not only from its domestic farmlands but also from Chinese-owned overseas agricultural bases.

Moreover, empirical data support this interpretation. Evidence from the Land Matrix,⁵ a global and independent land-monitoring initiative, shows that, from 2000 to June 2013, China (including Hong Kong) was engaged in 120 overseas farmland deals. Twenty-one of the 120 deals

⁵Sources concerning global land acquisition are increasing and vary from scientific databases to NGO reports and newspaper articles. Because the Land Matrix consistently follows the global land deals with rich and systematic data sources, recent academic studies have relied on its data for analysis more than those of other databases. See Anseeuw, Lay, Messerli, Giger, and Taylor (2013).

were focused on grain farmlands, whereas other deals were largely for economic crops. More specifically, at least sixteen deals secured 2.3 million hectares of farmland for grain production; the other five deals could not be confirmed. In addition, the Chinese government agreed to a deal with the Ukrainian government in fall 2013 to lease 3 million hectares of farmland, and since this was the largest ever land deal, it must be considered in China's overseas agricultural resources. Table 1 shows the details.

Thus, through overseas farmland investment, China was able to expand its cultivated land for grain production to as much as 5.3 million hectares, equal to 5% of its domestic land for grain crops, in 2011. Most land deals also privilege China in that the output of grain crops raised on these overseas farmlands is contracted for Chinese firms. Consequently, the 95% grain self-sufficiency policy might be adjusted if all overseas output is considered. Accordingly, China's grain demand would be supported by the Chinese-owned farmlands both locally and overseas, resulting in the being self-supporting in grain scenario. While China is moving a step forward to secure its grain supply through overseas land investment and its grain self-supporting strategy, an adjustment in the Chinese domestic grain market can be expected. The following sections address the possible scenarios.

Scenarios of Grain Production on Chinese Overseas Farmlands

Analysis

After the above data were merged, all seventeen deals were integrated with the media reports and government documents to determine proposed land use and crop types. The results indicate that the proposed crop types reflect a map in which Southeast Asia was designated for growing rice, Central Asia and Eastern Europe for wheat and maize, South America for soybean and maize, and Africa for China's agricultural research and

Table 1
China's Global Farmland Investments for Grain Production

Target countries	Farmland sizes for crops (in ha.)			
Cambodia	Rice 40600	Wheat	Maize	Soybean
	Source: http://www2.gtz.de/wbf/4tDx9kw63gma/gtz2010-0061en-foreign-direct-investment-cambodia.pdf , pp. 24-25			
Laos	Rice 5000	Wheat	Maize	Soybean
	Source: http://big5.xinhuanet.com/gate/big5/news.xinhuanet.com/fortune/2005-01/21/content_2489513.htm			
Myanmar	Rice 30000	Wheat	Maize	Soybean
	Source: http://www.cafiu.org.cn/english/NewsInfo.asp?NewsId=1577			
Argentina	Rice	Wheat	Maize 320000	Soybean
	Source: http://www.grain.org/article/entries/4139-new-agricultural-agreement-in-argentina-a-land-grabber-s-instruction-manual			
Brazil	Rice	Wheat	Maize	Soybean 200000
	Source: http://cqrpaper.cqnews.net/cqrb/html/2012-09/21/content_1574304.htm			
Bolivia	Rice	Wheat	Maize	Soybean 12488
	Source: http://www.peng-xin.com.cn/nongye/chanye101102102.shtml			
Cameroon	Rice 10000	Wheat	Maize	Soybean
	Source: http://www.globallandproject.org/arquivos/GLP_report_01.pdf , p. 31.			
Nigeria	Rice 300	Wheat	Maize	Soybean
	Source: http://www.grain.org/system/old/front_files/landgrab-2008-en-annex.pdf , p. 3.			
Tanzania	Rice 300	Wheat	Maize	Soybean
	Source: http://www.grain.org/system/old/front_files/landgrab-2008-en-annex.pdf , p. 3.			
Mozambique	Rice 18000	Wheat	Maize	Soybean
	Source: http://hi.people.com.cn/n/2014/0121/c231218-20445050.html			
Uganda	Rice 4046	Wheat	Maize	Soybean
	Source: http://www.grain.org/system/old/front_files/landgrab-2008-en-annex.pdf , p. 3.			

Table 1 (Continued)

Target countries	Farmland sizes for crops (in ha.)			
Zimbabwe ^a	Rice	Wheat	Maize 101171	Soybean
	Source: http://www.grain.org/system/old/front_files/landgrab-2008-en-annex.pdf , p. 3.			
Madagascar	Rice 10000	Wheat	Maize	Soybean
	Source: http://www.theguardian.com/environment/2009/jul/03/africa-land-grab			
Philippines	Rice 1040000	Wheat	Maize	Soybean
	Source: http://www.gmanetwork.com/news/story/64800/news/specialreports/newsbreak-gov-t-leases-1-10th-of-rp-agricultural-lands-to-china-firm			
Sudan	Rice	Wheat	Maize 400000	Soybean
	Source: http://qz.com/127258/why-china-just-bought-one-twentieth-of-ukraine/			
Tajikistan	Rice 110000	Wheat	Maize	Soybean
	Source: http://qz.com/127258/why-china-just-bought-one-twentieth-of-ukraine/			
Ukraine	Rice	Wheat	Maize 3000000	Soybean
	Source: http://www.reuters.com/article/2013/09/22/china-ukraine-idUSL3N0HI04620130922			
Totals	Rice	Wheat	Maize	Soybean
5301903	1268246	0	3821171	212488

Note. ^aResearch results from Bräutigam and Zhang (2013, pp. 1689-1690) found China's investment in Zimbabwe to still be small, but the Zimbabwean government continued to show a strong interest in welcoming China's investment.

extension stations (multipurpose land use in Africa). This plan corresponds to an interpretation from an associate research fellow at the Chinese Academy of Social Sciences who explained that China's going-out strategy for grain supply should take advantage of regional agricultural developments while considering China's geographic politics, food security, and grand strategy.⁶ For example, in China's deal for cropland acquisition in Bolivia, crops on the existing farmland used to be soybean,

⁶The interview was conducted on November 7, 2013 in Beijing.

maize, and sorghum. However, because soybean was greatly needed in the Chinese market and the soybean industry was recently booming and replacing other crops in San Pedro, one place affected by the Chinese land deal, the land was gradually converted to soybean production.

In addition, the data also indicated that China's farmland investment deals largely involved marginal croplands where less commercial crops were planted before the land was acquired, so the deals would have little effect on the global grain markets because very few existing croplands in the global grain markets were included. The World Bank (WB) indicated that such deals in relation to marginal farmland acquisition would benefit both the host and investor countries (Deininger & Byerlee, 2011). Because these overseas farmland acquisitions were regarded as an investment by the WB, both the host countries' agricultural development and the investor countries' food supplies could be improved. In other words, because agricultural skills and funding could be introduced from agriculturally developed countries to developing countries through transnational farmland investments, the WB suggested that these marginal farmland investments should be encouraged. However, the WB also warned that some risks associated with the deals should also be carefully considered, especially the limited recognition of local rights and highly centralized approval processes. If the risks could be taken into account especially in the local context, these farmland deals would therefore contribute to increasing common interests between the host and investor countries.

In total, with the farmland acquisition deals shown in Table 1, China has captured 5.3 million hectares of farmland overseas for grain production, including 1.27 million hectares for rice, 3.82 million hectares for maize, and 212 thousand hectares for soybeans. Further effects on the Chinese grain markets will be analyzed and predicted in the following sections.

Predictions

Following the Medium- and Long-Term Framework Plan for National Food Security (2008-2020), the Chinese government's mission is

to safeguard its food security at least until 2020. Thus, the year 2020 will become a benchmark year for measuring the Chinese food security status. Because most recent calculation methods⁷ used to predict China's food supply and demand have been brought together in Lv's research in 2013 (Lv, 2013), predictions can be made for Chinese grain self-sufficiency rates in 2020. In addition, two other predictions concerning grain production supplied from China's offshore farms are included. The first one will calculate China's grain self-supporting rates in 2020 by considering all grain production from its overseas farmland under local agricultural conditions. Because output from the Chinese overseas farmland deals has been dedicated to the Chinese firms for the next 20-50 years (depending on the specific contract), China can expand its grain supply through production on its overseas farmlands.⁸ The national crop yield levels of the host countries in 2012 were retrieved from FAOSTAT to perform the estimation. The other prediction model calculates the same rates under local agricultural conditions, plus Chinese agricultural support and assistance. All Chinese farmland agreements have guaranteed that they will help develop the local agricultural infrastructure and the seed industries of the host countries. Thus, the host countries may reach the investor country's (China's) crop yield levels while China, in turn, benefits from local knowledge and productivity. Output from the Chinese overseas farmland may consequently increase dramatically in the forthcoming years. Finally, the Chinese crop yield levels for 2012 from FAOSTAT have been applied to estimate China's maximum grain supply from the overseas farmland deals.

To sum up, as shown in Table 2, three prediction scenarios present China's three different food security statuses in 2020, including its grain self-sufficiency rates without the production of overseas farmlands, its

⁷All prediction methods have considered China's changing diet, especially the increasing need for animal feed grains.

⁸Many commentators have asserted that the Chinese cooperative investment agreements may ultimately serve to feed the Chinese rather than the host countries. See Marks (2008), Rubinstein (2009); see also Horta (2008).

grain self-supporting rates with the production of overseas farmlands under local agricultural conditions, and the same grain self-supporting rates with overseas farmland receiving Chinese agricultural support.

Scenario I in Table 2 indicates that most economic predictors, except those of Bao-min Sun (2012) and Yan-lin Zhang (2010), project that China will be unable to meet its national goal of a 95% grain self-sufficiency rate in 2020. However, because grain production from China's overseas farmland can raise 3.3-4.2% of the Chinese grain self-supporting rates, only four models in Scenario II present rates below 95%. Furthermore, if the prediction models include the land-deal host countries receiving sufficient financial and technical support from China, which is a strong possibility, most prediction models in Scenario III, with the exception of the United States Department of Agriculture (2011), Jikun Huang, Jun Yang, and Huan-qing Chou (2012), and Yu-hui Huang (2010), indicate that China will meet the 95% grain self-supporting rate in 2020. Moreover, because both Scenarios II and III use the national crop yield level of 2012 and do not consider any annual growth to the crop yield, the grain self-supporting rates are relatively conservative predictions. In other words, China's grain self-supporting scenarios in 2020 might be better than the projection here. To sum up, China would have difficulty maintaining the 95% grain self-sufficiency rate if it were to rely only on Chinese domestic production. However, with a grain supply from its overseas farmland acquisitions, China is very likely to reach its 95% grain self-supporting rate. The following section further discusses how China secures these offshore assets.

Approaches to the Chinese Overseas Farmland Investments

China's agricultural going-out movement has been driven by the recent food security statements noted previously. More recently, as soon as the new Chinese leader Xi Jinping took office in March 2013, government discussion of food security was upgraded and considered part of China's

Table 2
Scenarios of China's Food Security in 2020

Predictors	Scenario I ^a	Scenario II ^b	Scenario III ^c	PS
	Grain self-sufficiency rates (without production from overseas farmland)	Grain self-supporting rates (with production from overseas farmland under local conditions)	Grain self-supporting rates (with production from overseas farmland under local conditions and China's support)	
USDA (2011) ^d	85.35	89.58	91.27	
J. Huang et al. (2012) ^d	86.73	90.21	91.60	
Y.-h. Huang (2010) ^d	87.00	90.45	91.82	
Xiao and Wang (2007) ^d	89.95	93.70	95.19	
Lv and Hu (2012) ^e	92.93	96.18	97.51	
Y.-m. Zhang et al. (2012) ^e	93.00	96.85	98.42	High demand
	94.95	98.88	100.48	Mid demand
	97.15	101.17	102.81	Low demand
Sun (2012) ^e	96.29	100.27	101.90	
Y.-l. Zhang (2010) ^e	99.51	103.20	104.71	

Notes. ^aThe data are retrieved and modified from Lv (2013, p. 572). ^bScenario II includes China's domestic grain production from Scenario I and other potential production from its overseas farmlands in the national crop yield level of 2012. The national crop yield data are retrieved from FAOSTAT. ^cScenario III includes China's domestic grain production from Scenario I and other potential production from its overseas farmland in the national crop yield level of 2012 and with China's financial and technical support. ^dThe predictions include soybean. ^eThe predictions do not include soybean.

national security, which required further security of its overseas food supply (Lee & Lin, 2015). Thus, the new leadership believes that the agricultural going-out strategy must be further expanded and linked with its offshore grain supply bases. So far, identified investment farmlands have been found in countries in Southeast Asia, Africa, Central Asia, Eastern Europe, and South America, as well as in Russia. According to

Hofman and Ho's findings in 2013, China's foreign farm investments are "situated in countries on good terms with China, which are rich in resources and human capital, while being politically stable" (Hofman & Ho, 2012, p. 9). As the countries are mostly located around China, a new international development strategy "One Belt and One Road" has been proposed by Xi Jinping in November 2014 for deeper cooperation between China and its neighboring countries. Both the Chinese SOEs and privately-owned national champion firms have been identified as actors guiding Chinese overseas farmland investment.⁹ At the same time, the Chinese South-South Cooperation (SSC) and bilateral agreements have played an important role in safeguarding the agricultural production of the investments.

State-Owned Enterprises (SOEs)

The modern food security concept includes such diverse components as production, transportation, processing, storage, price setting, distribution, delivery, and sale of food products. Hence, the Chinese government is no longer content with simply adopting market mechanisms for maintaining food security. Instead, it treats grain not only as a consumer product but also as an industrial raw material, financial instrument, and strategic material. China, therefore, wants to establish a more China-favored global grain market to safeguard its grain supply overseas. SOEs help accomplish this goal more efficiently, particularly through government franchises and financial support guided by the agricultural going-out strategy. Given that the provincial SOEs possess expert know-how in agricultural techniques, their going-out strategy tends to result in their investing in farmlands and thus transferring these professional techniques overseas to the invested farms. However, as the national SOEs are able to secure greater funding from the central government, investing in foreign

⁹However, in the construction sector, some scholars found that the Chinese SOEs were guided by corporate commercial interests, instead of the national interest, in implementing the going-out strategy; see Liou (2014).

agribusiness becomes their first priority instead.

Several examples reveal China's provincial SOEs' actions in terms of foreign farmland investment. In 2010, the Chongqing Grain Group (CGG), a provincial SOE based in Chongqing, announced its plan to invest US\$375 million to launch a processing, storage, and port investment project in Brazil. The project included 200,000 hectares of soybean production and a warehouse with a capacity of 1.5 million tons of cooking oil. The National Development and Reform Commission (NDRC) approved the investment project in August 2010, with financial support from the China Development Bank and other help from a group of its SOE subsidiary partners. Chinese state-owned media in November 2011 indicated that the SOE investment would make controlling the soybean production and shipment back to China easier (Chang, 2011). Through the project, CGG was expected to grow 10 million tons of soybeans that could produce 1.5 million tons of cooking oil per year.

In another example, in September 2013 the Xinjiang Production and Construction Corp. (XPCC) signed a US\$3 billion agricultural project with KSG Agro, the Ukraine's leading agricultural company. This project was China's biggest overseas agricultural investment and provided 3 million hectares—an area almost the size of Belgium—of high quality farmland for growing corn for China. Under this 50-year contract, China could secure production from the Ukrainian farmland for Chinese consumers, whereas the Ukraine received a transfer of irrigation technology from the XPCC. With the XPCC as a typical Xinjiang provincial SOE, still a quasi-military organization, and the Export-Import Bank of China as the major financial supporter, this state-led land investment offered a number of advantages for the Chinese grain supply. Furthermore, other provincial SOEs—such as Beidahuang, the Tianjin State Farms Agribusiness Group Company, Shaanxi State Farm, and the Yunnan State Farms Group—also have overseas farmland investments in projects for grain produced in South America, Russia, and Southeast Asia.

On the other hand, China has begun to invest in leading foreign agribusinesses (usually registered in developed countries) so as to offset the criticism of being a neo-colonialist power resulting from the land-based

investments.¹⁰ Because China acts as only one of the shareholders, such agribusiness investments cannot control food production as efficiently as the overseas farmland investments. However, the market information, grain storage, and logistic networks can be shared through the agribusiness investments. The Chinese national SOEs, directly supported by resources from the central government, are responsible for the overseas agribusiness investments. Examples can be seen in recent overseas investments made by the China National Cereals, Oils and Foodstuffs Corporation (COFCO) and China Investment Corporation (CIC).

In July 2011, after its acquisition of Tully Sugar Limited, an Australia-based company, COFCO announced that it would continue its overseas agribusiness acquisitions to help expand supplies of agricultural commodities, especially soybeans and wheat, because of growing food demand resulting from rising domestic incomes in China (“Cofco Seeks Acquisition,” 2011). More recently, in March 2014, COFCO acquired 51% of Nidera, a Dutch-based major international agribusiness and trading company, and 51% of Noble Agri, a Singapore-listed market-leading agribusiness, in April 2014. Both Nidera and Noble Agri can admit China to their agricultural farm, storage, and logistic networks, especially in Argentina, Brazil, Uruguay, Paraguay, and other South American countries. In fact, in September 2009, prior to the COFCO-Noble deal, CIC, China’s sovereign wealth fund responsible for managing a US\$500 billion fund, had invested US\$850 million to buy a 15% stake in Noble Group. This investment not only helped COFCO become familiar with the merging investment later in 2014, but also reflected the CIC’s interest in teaming up with SOEs to invest jointly in global agribusiness. A report from the *South China Morning Post* in April 2014 indicated that CIC, which used to favor blue-chip stocks, fixed-income assets, and infrastructure business in the West, had become more interested in investing in global agriculture-related businesses (G. Chen & Yu, 2014). As President Xi

¹⁰Such Chinese neo-colonialism charges can especially be found in Bräutigam and Tang (2009); Yan and Sautman (2010).

Jinping's 2014 visits to Europe, Africa, and South America were always in line with CIC exports, the report indicated that the visits would help CIC speed up its efforts to invest in farms and agribusinesses worldwide in the near future.

Privately-Owned National Champion Firms

In addition to SOEs, some large private Chinese companies have also moved toward acquiring more Chinese-owned farmland overseas. Despite being private entities, these firms rely heavily on governmental patronage, such as credit, contracts, and subsidies. Because the Chinese government regards these privately-owned firms as another means of competing with other foreign rivals, they can access resources from the government that help them act as national champion firms in the local Chinese markets. Then, these government-favored national champions absorb more resources and experience from the local markets, therefore reinforcing the firms' strength as pillars of China's agribusiness investment in the global markets.

The Pengxin Group is Shanghai's biggest agribusiness investment company. In 2005, Pengxin purchased farmland in Santa Cruz, Bolivia, amounting to as much as 12,488 hectares, for a soybean production zone. Because the investment evaluation and financial loan for the farmland were to a large extent provided by the China Development Bank (a Chinese SOE bank), this government-favored national champion appears to have been helping the Chinese government feed China. Recently, Pengxin expanded its agribusiness investments by acquiring foreign dairy farmlands in South Africa (November 2013) and New Zealand (May 2014) to further fill China's kitchen cupboard. Meanwhile, since 2011, Sanhe Hopeful, a privately-owned national grain and oil champion firm based in Hebei Province, has worked closely with the provincial government to invest in farmlands in Brazil and Argentina. These deals have even included building a railroad to move soybeans out of the farmlands in order to facilitate shipping them to feed the Chinese. Other privately-owned national champion firms include the Tianjin Julong Group (palm

oil investment in Indonesia), Zhejiang Kasen Group (soybean investment in Brazil), Qingdao Ruichang Cotton Industrial Company (cotton oil investment in Africa), and the Sichuan New Hope Group (animal feed production investment in Southeast Asia).

South-South Cooperation (SSC)

China believes, because of its “historical experience with colonialism and imperialism, and as a developing country, its main international identity and responsibility lies with the developing world” (Shambaugh, 2013, p. 38). This recognition drives China to identify itself as a developing country from the global south; and as a result, the SSC programs, advocated by the United Nations (UN), are promoted by China to enable it to reach other southern countries’ farmlands and agribusinesses. Furthermore, given its strong support for no-strings-attached aid programs and debt relief, China’s unconditional aid and investments among the SSC programs are perceived as supporting the southern regimes to better their positions with no requirement to change their political systems (Aldem, 2005, 2007; Strauss, 2009). Considering the recent food crises in particular, the southern regimes today strongly welcome Chinese agricultural assistance and knowledge (“Chinese Firm Given Land Deal,” 2010; Yap, 2011). The establishment of agricultural training centers in several African countries is a primary example.

Sponsored by the China-Africa Development Fund, financed by the China Development Bank and the Export-Import Bank of China as a result of the 2006 Forum for China-Africa Cooperation, the SSC has set up fifteen Chinese agricultural training centers, with another seven being planned. More than one thousand Chinese agronomists have been teamed up with these centers to help educate local farmers in Africa. For example, in 2007, the Agricultural Cultivation Enterprise Management Bureau of Hubei Province cooperated with the Chinese Academy of Agricultural Sciences to establish a training center in Mozambique. This SSC program initially had 300 hectares of local farmland to train local farmers to develop a high-yielding rice variety that could withstand harsh weather,

especially droughts and flooding (GRAIN, 2008). Then, in 2011, a Hubei provincial SOE, Hubei Province Lianfeng Overseas Agricultural Company, took over the center. Since then, the farm base has been expanded to 18,000 hectares. In Senegal, Buckley even found some individual Chinese expats dispatched to the training center for a period of two years, and later prolonging their stay independent of governmental support (Buckley, 2011). Because of their previous language training and local experience at the training center, their agricultural skills were highly welcomed and even enabled them to become owners of a former Chinese research farm. However, some skeptics have questioned whether these Chinese SSC overseas farmland investments were guided by the Chinese central government to guarantee China's food security (Marks, 2008). In their view, the current and early days of China's foreign aid and investments in the global south were believed, ultimately, to serve to supply the Chinese food market rather than to support local development in Africa. Accordingly, China has been reproached as a neo-colonial power by the global community.

Bilateral Agreements

In response to the rising concerns about neo-colonialism, a Chinese officer from the UN Development Programme (UNDP) in charge of China's SSC programs told me that bilateral agreements between China and the host countries have been applied to ease concerns of the international community.¹¹ Because the bilateral agreements were recognized in the World Trade Organization (WTO) and UN Conference on Trade and Development (UNCTAD) mechanisms, this approach could justify and protect China's overseas farmland investments. Both free trade agreements (FTAs) and currency swap agreements (CSAs) are included among Chinese practices.

First, concerning FTAs, as of August 2014, China had signed and negotiated FTAs with fourteen countries or regions, among which were

¹¹ The interview was conducted on June 27, 2014, in Beijing.

the Association of Southeast Asian Nations (ASEAN), New Zealand, and Australia, all strongly associated with agricultural goods. Signed in November 2002 and fully operative since 2010, the China-ASEAN FTA has boosted the bilateral trade more than seven times from 2003 (\$59.6 billion) to 2013 (\$443.6 billion). The Chinese investment in ASEAN also jumped from \$120 million in 2003 to \$5.74 billion in 2013, particularly for farm and maritime products. In addition, China's FTA with New Zealand was entered into on October 1, 2008. Through this FTA, bilateral trade has expanded about five times, from \$2 billion in 2009 to \$10 billion in 2013, especially in the agricultural industries, such as dairy, wood, and meat. Meanwhile, concluded in 2014, China's FTA with Australia will boost the amount of bilateral trade, particularly in food (Crook, 2011). In fact, one of China's political and strategic reasons for expanding its FTA network is to establish and safeguard a long-term and reliable supply of overseas resources (J. Yang, 2009, p. 224). Therefore, trade, finance, and other means have been adopted by Chinese officials, and strongly encouraged by Chinese agricultural experts and entrepreneurs, to support overseas land investments, as well as to manage risks involved in the investments (P. Li, 2008).

The China-ASEAN FTA is a good example of a natural symmetry between the Chinese government and agribusiness people and experts to develop offshore supply sites. In 2007, encouraged by the China-ASEAN FTA arrangement, thirty-one separate agreements were signed between China and the Philippines. These agreements covered Chinese investments in the Philippines' fishing and agricultural research, in particular for genetically modified grain (corn, rice, and sorghum) projects. Several Chinese institutes, such as the China Development Bank, the Jilin provincial government, and the Jilin Fuhua Agricultural Science and Technology Development Company (Fuhua), were involved. The investment agreement was initially designed to cover about one million hectares of farmland, approximately 10% of the Philippines' arable land, although it has been postponed (while still under review) because of concerns of larger land concession (GRAIN, 2008). Meanwhile, Chinese agribusiness investment in New Zealand was also promoted by that FTA relation-

ship. A few Chinese SOEs and state-supported national champions in the dairy industry, such as the Shanghai Bright Dairy & Food Company, Inner Mongolia Yili Industrial Group Company, Guangdong Yashili Group Company, and Shanghai Pengxin Group Company, rapidly acquired local farmlands and established infant formula plants in New Zealand. One recent development involves discussion on relaxing New Zealand's Overseas Investment Act 2005—which requires a screening mechanism for foreign investments with assets worth NZ\$100 million (USD\$82.76 million) or more or involving sensitive land—to help increase and protect Chinese investments in New Zealand (Lewis, 2014). However, in the China-Australia FTA negotiation process, the Australian Government has decided to continue to screen any farmland investment by Chinese SOEs due to the controversy over farmland investments.¹²

Second, as to the practice of the CSAs, since the G-20 summit in November 2008 China has signed twenty-three bilateral CSAs with foreign central banks, totaling RMB 2.5 trillion (USD\$405 billion). Through the CSA arrangement, China and the other countries or areas can bypass the US dollar as a medium of exchange for their bilateral trade. Along the CSA lines, at least twelve agreements involve the locations of China's overseas farmland investments (for grain, vegetables, fruit, and other cash crops), including Malaysia, Indonesia, Thailand, Ukraine, Mongolia, Pakistan, Kazakhstan, Uzbekistan, Brazil, Argentina, Australia, and New Zealand. These CSA lines, according to a Center for Strategic and International Studies (CSIS) report, can not only internationalize the Chinese currency but, more importantly, “help to secure China's future supplies of much-needed natural resources” (Murphy & Yuan, 2009, pp. 11-12), in particular agricultural products.

In fact, up to August 2014, Beijing had accumulated foreign exchange reserves of around USD\$4 trillion and wanted to avoid any precipitous fall in the value of the dollar. Moreover, because the dollar is the

¹²Nearly all Chinese investment proposals require Foreign Investment Review Board approval in Australia, whereas a threshold of A\$1.08 billion (US\$ 794 million) applies to investment from the US and New Zealand. See Laurenceson (2014).

world's dominant currency in the global agricultural commodities futures markets and trade processes, the current uncertain dollar value since the 2007-2008 global financial crisis has increased volatility in China's already-turbulent food markets. In the near future, China will continue expanding its trade to import more agricultural goods, along with increasing its overseas farmland investments. These foreign goods will become daily necessities in China and will require a reliable currency exchange rate for a stable food market in China. Therefore, the CSA lines were viewed as an alternative approach to reducing the effects of the uncertain dollar value on the food commodity markets and futures. An interview with an influential agricultural expert from the Chinese Academy of Social Sciences, who asked for anonymity, confirmed that the CSAs could play a crucial role in further securing the supply and prices of products from Chinese overseas farmlands to the Chinese domestic market.¹³ A strong example is Chinese President Xi Jinping's two-day visit to Argentina in July 2014 to renew the 2009 China-Argentina CSA (of about USD\$11 billion), which was listed as being of the highest priority to safeguard the health of the bilateral agricultural trade (Parks, 2014). Since the early 2000s, China has received two thirds of Argentina's top export, soybeans, largely used for livestock feed in China, where meat consumption rose along with personal incomes. In 2011, Heilongjiang Beidahuang, a Chinese provincial SOE, even spent \$1.5 billion to lease and develop farms on 320,000 hectares in Argentina's Rio Negro Province. However, since 2013, both the devaluation of the Argentine peso and a lack of US dollars have driven local farmers to refuse to export grain. A report from Xinhua, nevertheless, indicated that, through the implementation of the CSA, not only was the devaluation of the Argentine peso less of a threat to the China-Argentina bilateral agricultural trade, but local farmers were also encouraged to sell their grain stocks to China, contributing to a drop in grain prices (Xinhua News Agency, 2014). The same CSA mechanisms to safeguard the food production line of overseas Chinese-owned farms are

¹³The interview was conducted on June 24, 2014, in Beijing.

being established in other countries, especially Brazil, Ukraine, Mongolia, Kazakhstan, and Uzbekistan.

Effects on International Norms

The current farmland investment movement has, not surprisingly, attracted substantial media interest. Not only China, but also other countries, such as South Korea, India, Malaysia, and the Gulf states, have been involved in the global farms race. The primary targets of such land acquisition are countries in Africa, Pakistan, Kazakhstan, Cambodia, Argentina, Brazil, and the Ukraine, among others. This situation has aroused international concern in general, especially at the G8 Agriculture Ministers' Meeting in April 2009, the G20 Seoul Summit in November 2010, the WB meeting to discuss responsible large-scale land acquisitions in April 2011, the G20 Agriculture Ministers' Meeting in June 2011, the G8 Summit for the New Alliance for Food Security and Nutrition in May 2012, and the FAO's Committee on World Food Security meetings for the Principles for Responsible Agricultural Investments (PRAI) between October 2012 and August 2014. A recent development is that the PRAI have been approved on October 15, 2014, pushed by the WB, FAO, UNCTAD, the International Fund for Agricultural Development, and G8.

Although broad support for the aims of the PRAI has been received from influential international organizations, agreement on how to implement the PRAI remains disputed across various countries. The US and Japan were in favor of endorsing a rigorously enforceable legal instrument to embody the PRAI, whereas other countries, such as China, South Africa and Egypt, expressed little political support for them (Via Campesina, GRAIN, and Others, 2011). Concerns from the latter countries were focused on the possibility of hindering certain foreign agricultural investment forms, including land acquisitions and other joint ventures, which are needed by developing countries. China, therefore, has hesitated to propose related national regulations corresponding to the PRAI. Thus, the PRAI might be considered only as a set of guidelines that could be

referred to when conducting overseas farmland acquisitions. In this way, the PRAI look more like a voluntary code designed to help promote more responsible investment behavior (Hallam, 2013, p. 56). In the following section, the PRAI are used to measure China's behavior in its land investment in different areas.

Africa

Chinese overseas farmland investments in Africa in the 21st century have been catalyzed by the established infrastructural development supported by China's SSC programs. These SSC programs have successfully contributed to a partnership between infrastructure development and investment.¹⁴ More than twenty China-supported agricultural research and training centers established in Africa, followed by a series of Chinese farmland investments, are evidence of the development. Throughout the whole process, Chinese financial institutions have been prime financiers for both the SSC programs and farmland investments.

Although the collected data indicate that China, thus far, has invested in more than 543 thousand hectares of farmland in Africa for grain production, information from FAOSTAT for 2000-2011 indicates that the grain exports of the host countries for the investments have shown little growth. However, the grain production of the host countries in the same period has generally shown a significant increase, especially in rice introduced by the Chinese research and training centers. As for the SSC program in Mozambique, Rubinstein even found that Chinese agronomists in the training center educated local farmers and conducted research on the adaptability of Chinese hybrid rice to the African climate (Rubinstein, 2009). Thus, the whole program contributed to improvement of local food security, social sustainability, and environmental sustainability. In fact, Rubinstein was not alone in this discovery; other scholars, Bräutigam

¹⁴Adem (2009, p. 339) described the development as the "formula of resources for infrastructure."

in particular, also found Chinese interest in acquiring farmland in Africa was to develop its hybrid rice and to be the Monsanto of rice in Africa, rather than secure Africa for its own food supply (Bräutigam, 2009). China's land investments in Africa were, therefore, believed to improve grain self-sufficiency and social sustainability in Africa, thereby reducing African countries' dependence on global grain markets and, in turn, contributing to easing China's own situation (Buckley, 2013; X. Li et al., 2012). Therefore, the Chinese overseas farmland investments in Africa currently fulfill the PRAI, and any criticism of China's foreign investments in Africa is undeserved. However, its investments in other areas present a different story.

Asia, Eastern Europe, and South America

A marked difference between China's overseas farmland investments in Africa and other areas is the broad establishment of the SSC's research and training centers largely in Africa. This establishment, associated with high economic costs and the political risk of shipping grains from Africa back to China, has frequently prevented Beijing from importing grains from Africa.¹⁵ However, in other areas, such as Southeast Asia, Central Asia, Eastern Europe, and South America, the collected data indicate that China's overseas farmland investments surged to about 4.8 million hectares in the post-2007 financial crisis period. Information from the China Customs Statistics Information Service Center further shows that the value of imported grain in 2013 from the above areas increased by 187 times over that in 2006, as opposed to an increase of 16 times more from North America. These significant increases, both in land acquisition by the Chinese and grain imports to China, have also disturbed the local societies in those areas.

As noted above, in the Philippines in 2007, China signed an agree-

¹⁵However, it is still naive to believe that China will not ultimately take advantage of the African grain resources because its increasing investment in Africa has the potential to significantly change grain production on the continent.

ment to lease about one million hectares of land for grain production for 25 years, with the option to renew for another 25 years. In spite of the current suspension of the agreement, largely because of political issues in the Philippines, its review is still in process. An active Asian civil society organization, Focus on the Global South, believes that the government's strong push for more Chinese foreign investments in the Philippines can be taken as a strong signal favoring China's farmland investment and re-activation of the agreement. The organization has further voiced its criticism of the above China-Philippine land deal based on the PRAI because the basic human rights related to food security and food sovereignty are violated under the agreement (Purugganan, 2011).

The Philippines case reveals that national farmland resources are vital for national food security and social sustainability. Thus, most countries do not freely allow foreigners to own farmland. Even if such ownership were allowed, land size limitations and land lease periods would be imposed on foreign investors. For example, in Cambodia, national law limits any foreign land investment to a maximum of 10,000 hectares. Chinese firms, however, acquire land under different names, ultimately enabling them to acquire larger amounts of the Cambodian land in total (Rutherford, Lazarus, & Kelley, 2008). In the Ukraine, the land code prohibits foreigners from acquiring agricultural lands. However, given a strong need for Chinese investment and loans to address the country's economic situation, the Ukrainian government, in September 2013, allowed China's XPCC to lease three million hectares for farming. To avoid the prohibition of acquiring agricultural land, the XPCC's strategy was to target Ukrainian nonagricultural land, which can be leased to foreigners for up to 50 years. Through this bilateral agreement, China secured its offshore food supply, and Ukraine received Chinese agricultural technology, seeds, fertilizer, and development funds, resulting in a so-called "win-win" scenario.¹⁶ The same strategy of adjusting the nu-

¹⁶Some international media doubt this "win-win" scenario. See Radyuhin (2013); Stone (2013).

ances of the land-deal size, period, and purpose in exchange for Chinese technology, facilities, experience, and infrastructure development funds have been frequently used in South America and Central Asia. Based on these agricultural going-out experiences, the Chinese government (P. Li, 2008) and SOEs (Chinese Association for International Understanding, 2013) have concluded that a bilateral agreement between China and the host country, supported by local laws and regulations, is vital to these land deals. Such deals can enable China to defend itself against the charge of neo-colonialism labeled by the global community.

However, several civil society groups do not agree with this Chinese investment as a way to development. Findings from GRAIN (2008) have been frequently adopted by scholars who then advocate that the bilateral national agreements are not enough for global farmland investment governance (Luzi & Zolin, 2014). Because 12.5% of the world's population was still undernourished from 2010 to 2012, an international action to establish a global legal instrument to embody the PRAI is an alternative and needed approach to promoting more responsible land investment behavior and regulating bilateral overseas land investment contracts (Hallam, 2011), including those by the Chinese.

Developed Countries

Even though it is not related to grain production (and hence excluded from Table 1), China's recent shift toward farmland investment in developed countries has caught the media's and scholars' attention (Hofman & Ho, 2012; White, 2013). Two reasons have driven this current movement. On the one hand, recent Chinese food safety scandals, especially the 2008 Sanlu milk contamination crisis, have had significant effects on the Chinese dairy industry. Many leading Chinese dairy companies have been driven to invest in local farms and milk powder plants in New Zealand and Australia, which have better food safety regulations. On the other hand, the redirection of Chinese investments toward more mature and less risky economies can help Beijing avoid a rising popular protest from the Southern countries' civil societies against a perceived neo-colonialist

China attempting to exploit developing countries. New Zealand (dairy farms), Australia (dairy farms), France (vineyards), Switzerland (dairy and cattle farms), Canada (cattle farms), and the US (cattle farms) have all come to China's attention.

Regarding the PRAI measurement, because these industrialized countries highly value agriculture, any land deals are not only cautiously regulated by local laws but must withstand a strict national screening mechanism, such as foreign investment review boards, to investigate foreign investments involving national security and social sustainability. These two processes can ensure that the PRAI are adopted and measured in the investment portfolios. Based on the experiences of the China-New Zealand FTA and China-Australia FTA talks, a recent development is China's attempt to take advantage of the FTA mechanism to relax Chinese land investment restrictions and limitations in the screening mechanism. Worries about the two countries' willingness, through the FTAs, to be more open to investment from the giant Chinese SOEs have arisen within the local communities (Grigg, 2014). The consequence remains to be seen.

Conclusion

China has food security policies indicating that it should have a 95% grain self-sufficiency rate. However, according to data retrieved from FAOSTAT and CRSY, and if soybean is also considered, China has not met its 95% target since 2008, and its grain self-sufficiency rate continues to drop. Furthermore, data from the Chinese government note that rapid urbanization and severe pollution have challenged China's goal of retaining 1.8 billion Mu of cultivated farmland. As a result, a going-out strategy has been adopted in China's recent food security policies and statements, which support and encourage Chinese companies to invest in overseas farmlands and other agricultural resources. Thus, China's long-standing inward-looking food security approach, specifically the grain self-sufficiency policy, has gradually shifted to an outward-looking food

security approach, identified as the grain self-supporting strategy. Data collected from the Land Matrix confirm that, with grain supply from the current Chinese-owned overseas farmlands, China can safeguard its 95% grain self-supporting rate.

The research indicates that four approaches have been applied to guide the recent Chinese overseas farmland investments and protect production from the investments. These approaches include using Chinese SOEs, national champion firms, the SSC strategy, and bilateral agreements (FTAs and CSAs). If the PRAI, an international norm for promoting and measuring global overseas farmland investments, are applied to China's investments, three major findings are revealed. First, the Chinese overseas investments in Africa are more likely to increase rice production through an SSC so that less dependence of African countries on global grain markets will ease China's own position in the global market. These investments, therefore, generally fulfill the PRAI requirements, especially concerning the improvement of local food security, economic viability, and social sustainability. Second, however, China's overseas farmland investments in Asia, Eastern Europe, and South America show its disregard for human rights in terms of food security and food sovereignty within the local community. Although the bilateral agreements between China and the host countries are always used to justify China's farmland investments and to reduce concerns about neo-colonialism, concerns have surged among civil society organizations, scholars, and the media. Their criticism centers around China's investment behaviors being in violation of the PRAI. International action to observe the PRAI is, hence, advocated in regulating the bilateral overseas land investment contracts. Third, China's land investments in the developed countries show respect for local land codes, which are considered to be in the spirit of the PRAI. At the same time, its desire to take advantage of the bilateral agreements, FTAs in particular, to develop broader and deeper investment portfolios is a new development. This developing issue deserves future research attention.

The findings of this study are consistent with Relley's analysis in 2012 (Relley, 2012), which indicated that China is prone to follow inter-

national norms in countries where international aid institutes are strongly involved (such as Africa) and where China has restricted influence (such as developed areas). However, one important question remains. The agricultural going-out strategy is driven by Chinese SOEs and national champion firms, while the return on investment is protected and justified by the signed bilateral agreements, which are ratified by the WTO, one of the international norm-setters. On the other hand, attempts to establish an international legal apparatus to implement the PRAI to regulate the bilateral agreements are driven largely by UN bodies—the FAO and WB, in particular—which are also setters of international norms. To some extent, both the bilateral agreements and the PRAI are international norms. Therefore, rather than measuring the degree to which China is following the dominant norms and practices, future research should be focused on whether China is beginning to adopt favorable international norms that have been implemented within international institutions.

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