PEAK INSIGHTS 2017

China's drive for food self-sufficiency – The role of agricultural insurance

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Foreword from CEO

Having previously focused on narrowing insurance protection gaps in urban areas, this second edition of Peak Insights touches on rural areas, where the inhabitants are generally less wealthy than their city dwelling counterparts.

Specifically, we look at agricultural insurance in China, where premiums have grown substantially in the past ten years to become the world's second largest agricultural insurance market after the United States.

For a country of over 1.4 billion inhabitants, food self-sufficiency and security are key concerns for the Chinese government. Today, roughly half of China's population live in rural areas, so assuring food self-sufficiency is essential to maintaining social stability.

Crop insurance plays a vital role in protecting the rural population against the impact of weather-related catastrophe events, which reduce yields and destroy assets and livelihoods.

To continuously narrow the protection gap, the Chinese government has launched an effective public-private partnership, subsidising agricultural insurance premiums and continuously implementing initiatives to better protect the interest of the rural households.

Closing the insurance protection gap goes to the heart of Peak Re's mission to support its clients in offering effective risk transfer and financing solutions for sustainable economic growth.

Sharing our insights and expertise with our clients is an opportunity to contribute to this overall goal.

The information presented in this publication is based on collected reports, presentations and information gathered through field visits by our team in Henan province.

Peak Re is grateful for the assistance provided by Zhongyuan Agricultural Insurance in arranging site visits and interviews in Henan province.

During the visits, Peak Re interviewed Zhongyuan's reinsurance team and branch managers, but also farm owners, employees, village committee head and agricultural specialists.

We hope this publication provides useful insights, in particular for insurers already operating in the market or considering entering this important segment.

We wish you a pleasant reading and we look forward to hearing your views.

Franz-Josef Hahn

Chief Executive Officer
Peak Reinsurance Company Limited

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Executive summary

China's agricultural insurance market is the second largest globally (source: Aon Benfield) after the United States. Yet, while the sector has a relatively long history in China, it only recently attained this impressive status.

The rapid transformation of the agricultural insurance market in China can be traced back to the introduction of premium subsidies in 2007. The Central government had started to view insurance as a financial tool to help stabilise farmers' incomes, as well as a way to achieve its goal of food self-sufficiency.

Under the government subsidy scheme farmers pay only 20% of the premium, making agricultural insurance feasible for insurers and affordable for farmers.

Until subsidies were introduced, agricultural insurance was viewed as prohibitively expensive by farmers.

Agricultural premium income at this time was disappointing and amounted to a mere USD 100 million in the two decades leading up the scheme's introduction. Given the small market size and the catastrophe-prone nature of agricultural output, the market loss ratio averaged 105% between 1982 and 1993 (source: PICC).

Since the introduction of premium subsidies, the agricultural insurance market has grown exponentially to USD 6.3 billion in 2016 (source: Agroinsurance International). Also, the area insured has expanded from about 10% of the total crop cultivated area in 2007 to 75% in 2016.

From a premium growth and covered area perspective, the subsidy scheme can be regarded as a success story.

However, despite its rapid growth, the scheme only covers 16% of the total value of China's agricultural production. Clearly, much remains to be done to narrow the agricultural insurance protection gap in China.

For example, the insurance limit does not currently cover the total cost of production and premium subsidies do not apply to all agricultural outputs. While the Central government recognizes that farmers would like to see higher limits and a larger scope of subsidies, pricing is naturally linked to the coverage limit.

An increase in limit would necessarily translate into higher premium subsidies which local governments may find difficult to fund due to their limited budgets.

Therefore, making agricultural insurance more attractive to Chinese farmers is a difficult task as it needs to strike a balance between the buyers' needs and the reality of government budgets.

The task is further complicated by distribution and administration issues (with a lack of transparency in premium payment and loss assessment) and a negative image of insurers among buyers (due to slow claims processes, low sums insured and a lack of transparency in coverage).

Small and mid-scale farms participate in the insurance scheme through group policies issued to counties and villages. Each county or village has established a committee which plays the role of an intermediary handling administration and claims.

This type of distribution can complicate matters and adversely impact the attractiveness of insurance with buyers.

The Central government is well aware of the challenges associated with narrowing the protection gap in rural areas.

There are a number of ways in which the appeal of agricultural insurance can be increased, including the push for higher sums insured and the development of revenue insurance.

The Central government may also steadily increase its share of the total subsidy, which would relieve the financial pressure for local governments and facilitate a meaningful reduction of the agricultural insurance protection gap in China.

1. Agricultural insurance in China

Agricultural insurance was first introduced in China in 1982, but the sector only really gained traction after the launch of the first pilot premium subsidy schemes in 2004, taking off in earnest with the nationwide roll-out of subsidies in 2007.

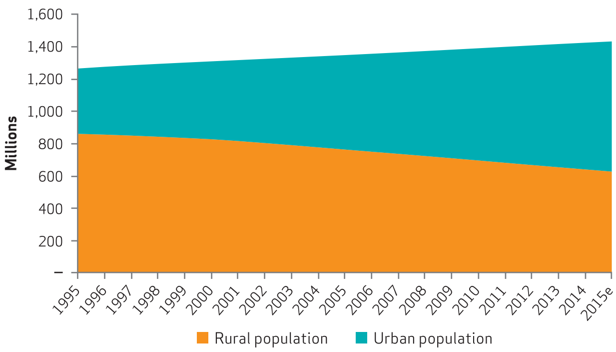
While premium income from agriculture insurance has grown substantially since 2007, the protection gap remains a concern. In 2014, agricultural insurance covered just 16.2% of the total value of agricultural production in 2014 (although this is a significant improvement on the 2.3% recorded in 2007, according to a presentation from CIRC in April 2016 at the 4th Aon Benfield Asia Pacific Agriculture Insurance Summit conducted in Chengdu).

1.1. Role of agricultural insurance in China

With a population of over 1.4 billion, self-sufficiency and food security are key concerns for the Central government. This is all the more challenging given major demographic and structural changes in China in recent decades, the result of economic development **(exhibit 1)** and a shift away from rural areas in favour of urban areas.

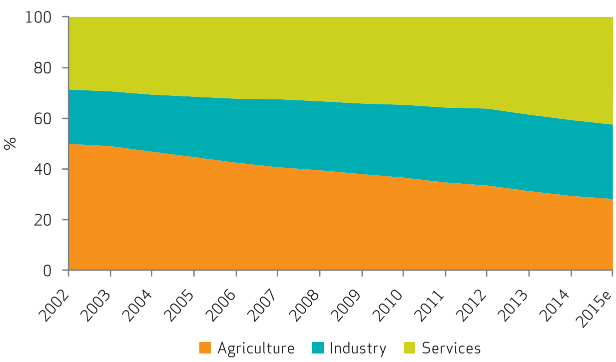
In 2014 just 45% of the Chinese population lived in rural areas, down from 61% in 2002, according to the Food and Agriculture Organization of the United Nations (FAO). At the same time, the number of agricultural workers in China has declined significantly to 30% of the total labour force in 2014 from 50% in 2002 **(exhibit 2)**.

Exhibit 1: Rural and urban population in China (1995-2015e)



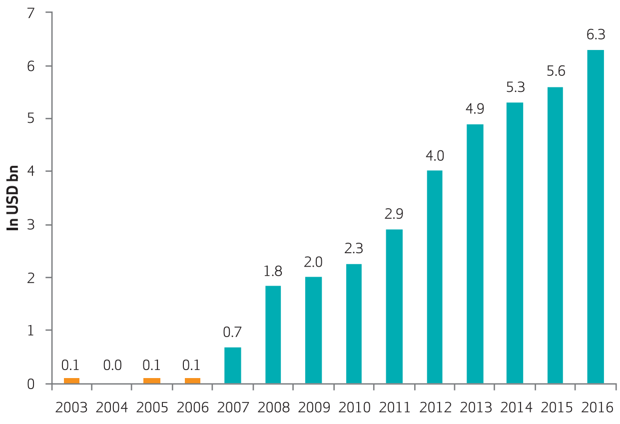
Source: FAO, FAOSTAT, Country indicators

Exhibit 2: Total employment in China – split by sector (2002-2015e)



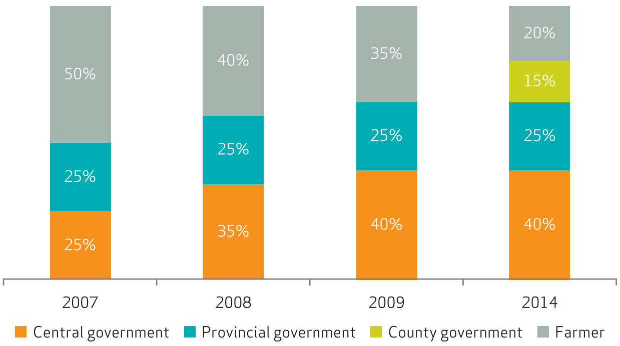
Source: The World Bank, Databank

Exhibit 3: China agriculture premium



Sources: Agroinsurance International (2017), Agricultural insurance in China: History, Development and Success factors; and Food and Agriculture Organization of the United Nations (2011), Agricultural insurance in Asia and the Pacific region
Note 1: Premium subsisidies were introduced in 2007 explaning the surge in the GPW in that year. Six provinces benefited from the subsidies program: Jiangsu, Jilin, Xinjiang, Hunan, Sichuan and Inner Mongolia.
Note 2: Premiums continue to report significant growth in 2008 with the subsidies program extended to cover more provinces.

Exhibit 4: Premium subsidy scheme for crop insurance



Sources: Agroinsurance International (2017), Agricultural insurance in China: History, Development and Success factors; and Food and Agriculture Organization of the United Nations (2011), Agricultural insurance in Asia and the Pacific region
Note: Since 2009, the level of premium subsidy depends on the province and type of crop. Provincial government subsidies are at least 25% of the premium, Central government subsidises 47.5% for Central and Western part of China and 45% for Eastern China.

In this context, the government has come to view agricultural insurance as a way to stabilise farmers' incomes through monetary compensation, as well as a form of indirect support for the agriculture sector.

Following unsuccessful attempts to develop an agricultural insurance sector in the 1980s and 1990s, the Chinese government launched pilot premium subsidy programs in 2004 in selected provinces.

The breakthrough came in 2007 with the steady adoption of premium subsidies on a national level and with wider coverage **(exhibits 3 and 4)**.

This report focuses on the development of agricultural insurance in China since 2007. For more information about the history of the sector, refer to **Appendix 1**.

1.2. Pricing and profitability

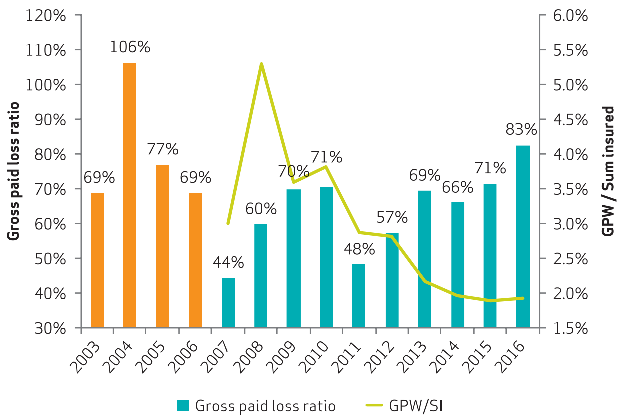
Data on the profitability of agricultural insurance in China is limited, and does not differentiate between crop, livestock, forestry and aquaculture. Only the overall gross paid loss ratio is made available in the Yearbook of China's Insurance, while the profitability of agricultural insurance in China is generally presented excluding the acquisition and management costs.

During the period 2007 to 2016, the sector's loss ratio fluctuated between 44% and 83% **(exhibit 5)**.

This is was an improvement on the pre-2007 loss ratio, although the ratio has deteriorated since 2011 due to price softening and the increased frequency of natural catastrophes.

As an estimate of profitability on a gross basis, Peak Re has calculated the average underwriting performance of four specialised agricultural insurers **(exhibit 6)**.

Exhibit 5: China agriculture gross paid loss ratio and pricing



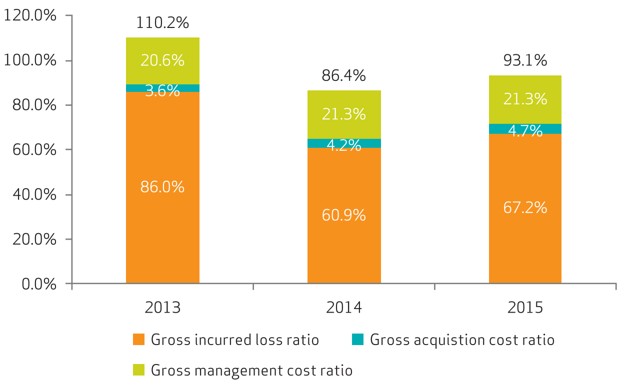
Sources: Agroinsurance International (2017), Agricultural insurance in China: History, Development and Success factors; and Food and Agriculture Organization of the United Nations (2011), Agricultural insurance in Asia and the Pacific region

Note 1: No split between crop, livestock, forestry and aquaculture. 90% of the crops are exposed to natural catastrophe while livestock is more likely to be hit by disease.

Note 2: The sum insured is based on a portion of production cost

Note 3: Area insured as % of total cultivated area improved from about 10% in 2007 to 45% in 2013 and 75% in 2016.

Exhibit 6: Gross combined ratio (average of four agricultural specialised insurers)



Source: Bestlink
Note: The four agricultural specialised insurers are Sunlight, Guoyuan, Anxin and Anhua which combined capture 20% of market agricultural premium in 2016.

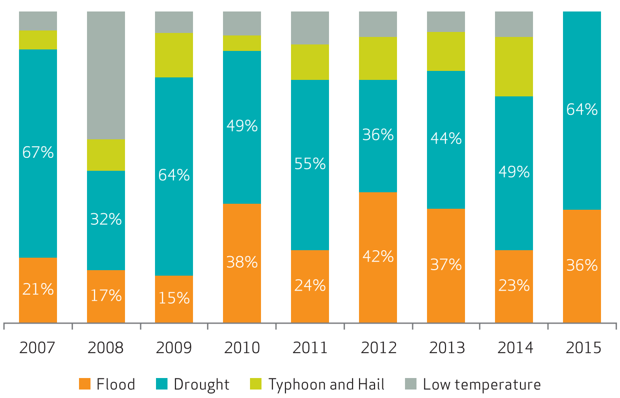
The acquisition cost, at less than 5%, is low because the majority of customers are small and mid-sized farms. These farms tend to enter insurance contracts under the appointed committee head who is a government employee.

Large farms typically buy insurance directly from insurers which have been establishing local branches and promoting risk transfer solutions to village committees and farmers.

As insurers expand their geographical footprint, further investment at a local level is expected, potentially increasing acquisition and management costs.

In terms of the major causes of loss, drought and flood are the two key weather perils affecting crops. Between 2007 and 2015, 51% of damage was caused by drought, followed by floods at 28% **(exhibit 7)**.

Exhibit 7: Damage by peril of affected agricultural area



Source: National Bureau of Statistics of China

Drought typically affects northeast China during the summer season (Jilin, Inner Mongolia, Heilongjiang) while flood damage is more likely along the main river basins (Yangtze River, Pearl River and the Three river Basins). Southern coastal provinces are chiefly impacted by excessive rainfall and typhoons. **Exhibit 8** offers an overview of major agriculture catastrophe events since 2007.

On pricing, a high level view of gross premium written (GPW) and the sum insured indicates a drastic softening trend from 2008 to 2015.

Rates continued to soften with the Agriculture Insurance Ordinance in December 2012, whereby pricing for government-subsidised agricultural insurance was required to consider the opinions of the local governments and farmers' representatives. In addition, each agricultural insurance product needs to be reported and approved by CIRC, which means that pricing and sum insured are indirectly decided by the government. As an indicative idea, in 2014 the ratios of GPW to sum insured were 5.7% for crop, 4.7% for livestock and 0.3% for forestry, according to CIRC.

Exhibit 8: Major agro catastrophe events

	Typhoon	Rainstorm	Flood	Drought	High temp.	Hailstorm	Snowstorm	Freeze
2007	Krona			Jilin				
2008							Nationwide	
2009				Liaoning				
2010	Conson		Southern & central provinces					Anhui
2011								Anhui
2012		Shandong						
2013			Northeast provinces	Yangtze river				
2014	Ramasun			Liaoning		Xinjiang		
2015	Chan Hom	Southeast provinces		Northeast provinces				
2016		Yangtze river		Northeast provinces		Xinjiang		

Source: Guy Carpenter presentation (2016), 2016 China Agro (Re)insurance Market Update
Note: Typhoon mainly affected Southest provinces

1.3. Agricultural insurance objectives

Creating a modern agriculture sector is one of the key strategic aims for the Chinese government under the current thirteenth five-year plan (2016-2020) for economic and social development. The plan states that the modernisation of the agriculture sector is essential to boost production yields for grain, and to ensure food quality and safety, while at the same time protecting the environment.

As a result, the government intends to continue its existing support for the sector, such as investing in agricultural research, educating farmers in modern techniques, investing in machinery and equipment, providing subsidies for major grains, adopting a minimum purchasing price policy for rice and wheat and a guaranteed minimum price for cotton and soybean, as well as managing the country's stock of corn.

The five-year plan also mentions the use of the Internet of Things in food production, distribution and operations, as well as information management. In terms of the role of financial services, pilot projects are planned enabling rural cooperatives to provide loans to their members.

On insurance, the scope of coverage will be extended and sum insured be increased.

The expanded role for insurance is in line with farmers' desire to see a broader scope of subsidies for agricultural insurance premiums and higher sum insured. The sum insured remains low because agricultural insurance policies only cover the costs of seeds, fertiliser, pesticide, irrigation and equipment. Other costs, such as labour, land rent, electricity and tax are not within the scope of coverage. Yet, land rent actually represents a sizeable portion of a farm's expenditure.

Subsequent to the five-year plan, CIRC announced plans to pilot expanded agricultural insurance in a notice issued in May 2017.

The pilot project is to be implemented in 200 counties in the 13 largest crops producing provinces in China, namely Hebei, Inner Mongolia, Liaoning, Jilin, Heilongjiang, Jiangsu, Anhui, Jiangxi, Shandong, Henan, Hubei, Hunan and Sichuan.

The project targets mid to large farms – eligible farms are those with a size of 10-15 times larger than the average size of the farms in the region. Participation is voluntary. The project will run in 2017 and 2018 and target China's three main crops of rice, wheat and corn.

Under the pilot, the insurance limit will continue to be calculated on the current basis (i.e. seeds, fertiliser, pesticide, irrigation and equipment) but with the addition of land rent.

Beyond traditional risk protection, CIRC is promoting the development of revenue insurance to better protect farmers' incomes.

Traditional insurance products provide indemnity against adverse events stipulated in the policy. The sum insured is agreed at the inception of the contract and the loss is determined as a percentage of the damage incurred. In contrast, revenue insurance would protect the insured from the consequence of low yields and/or low prices. This cover would be attractive for farmers whose income is linked to the volatility of the market price.

2. Barriers to closing the rural protection gap

The findings outlined in this section are supported by Peak Re's on-site visits in the province of Henan. This includes interviews with three branch managers of Zhongyuan Agricultural Insurance, one mid-sized farm owner, one large-farm manager, a manager at one mid-sized farm and one village committee head. The large farm is operated by a Chinese agricultural private company.

This analysis reveals a number of challenges in developing an efficient agricultural insurance sector, notably underwriting controls, low sum insured and the current complex claims reporting process. In particular, small farmers do not appear to be willing to purchase agricultural insurance, even though they may understand its role in mitigating losses from unforeseen events. Interestingly, Peak Re identified a similar reluctance to purchase insurance in its first Peak Insights "Narrowing insurance protection gaps through building trust and customer centricity" (to read the report, please refer to our web page: http://www.peak-re.com/our-publications/peak_insight/#downloadartticle).

2.1. Underwriting control and administration

Small and mid-sized farms participate in the insurance premium subsidy scheme through group policies issued to counties and villages, while large farms, companies and farmers associations purchase agricultural insurance directly from insurers.

Participation in group policies is administered by the county or village committee. Each committee has an appointed or elected head (this is a full-time position, paid by government).

Through this mechanism, small and mid-sized farm owners are made aware of the availability of insurance products, mainly through the local committee **(exhibit 9)**.

In 2014, there were 23,000 such committees in counties and 280,000 in villages with over 400,000 part-time coordinators, according to CIRC.

These offices record the size of each farm, the type of crops grown and personal information. According to the Aon Benfield's "Introduction to Agricultural Insurance in China", the committee head is also responsible for identifying farms that fall within flood prone areas.

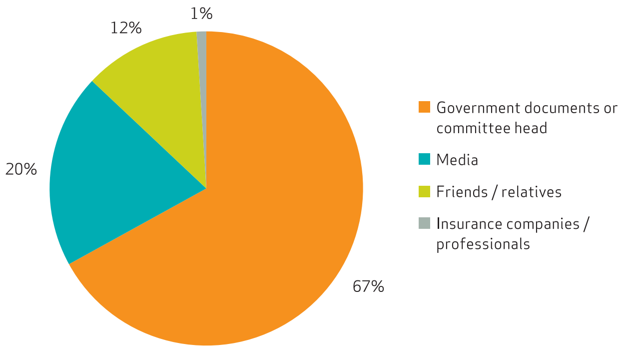
The committee head also handles claims reporting and settlement and may mediate in claims negotiation.

The committee system can save acquisition costs for insurers, but it also comes with a degree of complexity and raises questions for transparency and governance. The practice ultimately affects the effectiveness of agricultural insurance products and their ability to meet customers' needs.

For example, the committee system impedes communication between buyers and risk carriers, as well as resulting in frictional costs like premium collected but not fully reported to the insurer, or compensation not fully paid to farmers, or inflated cost of claims.

The latter also reflects a lack of transparency around loss assessment and loss adjustment methods as reported by Agroinsurance International in its "Agricultural insurance in China: History, Development and Success factors" report published in April 2017.

Exhibit 9: Sources of information on agricultural insurance in Hunan (2009)



Source: International Journal of Disaster Risk Science (2011), Agriculture insurance in China: History, experience, and lessons learned

In a bid to promote greater transparency and reduce frictional costs, the government has proposed a digital system for informing policyholders on policy status and claims processing via a website, SMS or WeChat messages.

It is hoped that this initiative (outlined in a notice on agricultural insurance premium subsidy and administration issued by the Ministry of Finance in December 2016) will reduce frictional costs, although it will not address the need for better communication between insurers and farmers.

Large farms, companies and farmers associations report similar issues when it comes to communication and loss evaluation.

In discussion with Peak Re, many farms highlighted the quality of service. Prior to enrolling with Zhongyuan Agricultural Insurance, a number of farms said that they had rarely met a representative of their previous insurer and that claims processing was often a headache.

2.2. Low sum insured

At present, labour cost and land rent are generally excluded from agricultural insurance in China, even though rent represents around half of the expenses per mu[1]. Land is an expensive asset in China due to its scarcity for agriculture **(exhibit 10)**.

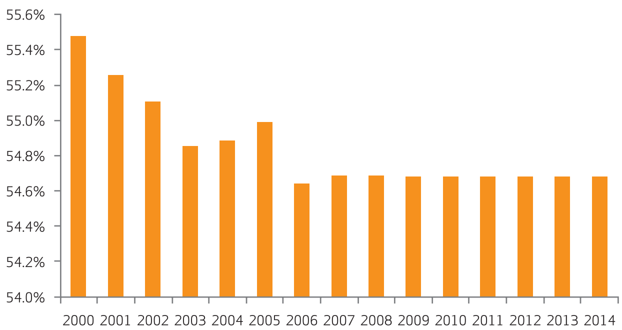
Therefore, traditional financial protection solutions compensate only a portion of the production cost incurred by farmers **(exhibit 11)**.

Under the Agriculture Insurance Ordinance, which was adopted in December 2012, insurance companies have to consider the views of local governments and farmers' representatives when designing agricultural insurance products that are subject to premium subsidies.

Consequently, local governments give their opinions on the sum insured and pricing based on the level of subsidy they are able to provide. Given the limited budget, product efficacy and adequacy may be undermined by affordability. One of the consequences of the Agriculture Insurance Ordinance has been cheaper insurance. Pricing has steadily decreased from around 3% of the sum insured in 2012 to 2% in 2014.

In a bid to address this issue, the Central government intends to steadily assume the subsidy contribution made by county governments. While this might relieve financial pressure for county governments, it remains to be seen if there is a positive impact on insurance limit and on the attractiveness of risk products.

Exhibit 10: Share of agricultural area in total land area (2000-2014)



Source: FAO, FAOSTAT

Notes:

(1) Agricultural area means cultivated land and land with pastures

(2) Land area is the country size excluding area under inland water bodies

Exhibit 11: Sum insured vs production cost covered in policy and total costs (2014)

In RMB / mu	Sum insured	Production cost covered		Total production cost	
		Value	SI / Cost	Value	SI / Cost
Rice	349.1	449.7	77.6%	1,151.1	30.3%
Wheat	337.0	407.3	82.7%	914.7	36.8%
Corn	273.8	350.0	78.2%	1,012.0	27.1%
Soybean	190.4	193.0	98.7%	625.9	30.4%

Source: China Insurance Regulatory Commission (May 2015), Update of China Agriculture Insurance Development and Reform

Note: 1ha = 15mu

[1] *"mu" is the surface measure used in China. For reference, 1ha equals to 15mu for easier calculation.*

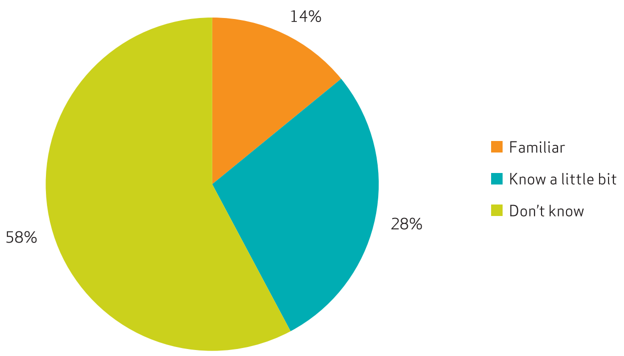
2.3. Claims settlement process

The intermediary role of the county / village committee is not limited to administrative tasks. The committee head often participates in the assessment of large losses and may even mediate in claims negotiations. However, the complexity and lack of transparency of the loss assessment and adjustment methods open the door to potential fraud and can extend the time needed to settle claims.

Interviewees told Peak Re that making a claim can be complex, while it can take a long time to receive claims payments. In addition, the committee system and a lack of familiarity with insurance can create misunderstandings between farmers and their insurers on eligible claims **(exhibit 12)**. These factors further limit the attractiveness of agricultural insurance to Chinese farmers, tarnishing insurers' image.

To tackle the above issues, the notice on agricultural insurance premium subsidy and administration issued by the Ministry of Finance in December 2016 stipulates that claims must be paid to the insured within ten days after agreeing compensation.

Exhibit 12: Degree of familiarity with policy details in Hunan (2009)



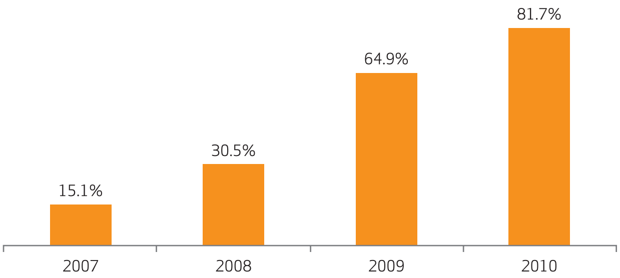
Source: International Journal of Disaster Risk Science (2011), Agriculture insurance in China: History, experience, and lessons learned

2.4. Unwillingness of rural households to purchase insurance

The average size of a household farm in China is around 0.6 hectares (ha), according to Aon Benfield. This is slightly smaller than in 2000 when the average size was almost 0.7ha, according to the FAO. However, farm size varies considerably across provinces. For example, the average is 0.1ha in Beijing while it almost reaches 4ha in Heilongjiang. Our interviews with a mid-sized farm owner and a committee head, revealed that smaller farms (e.g. 0.6ha or below) would not necessarily purchase insurance. **Exhibit 13** shows a drastic increase in awareness of agricultural insurance since the subsidy scheme was launched in 2007. Clearly, rural households are aware of the availability of agricultural insurance products, but this does not necessarily lead them to purchase cover.

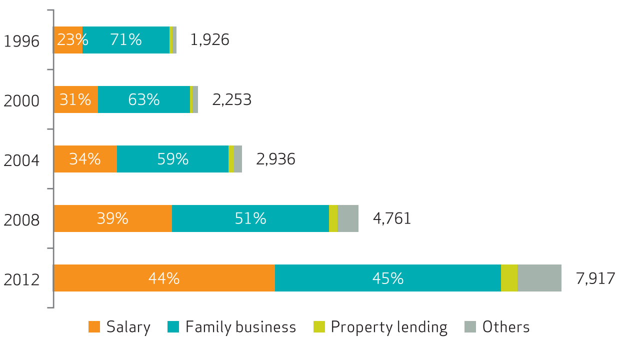
This is because some rural households' income may not necessarily depend on crop production, which may be solely for their own consumption. In 2012, 45% of annual income per capita of rural households in China was derived from a family owned business (e.g. agricultural production, family owned shop, etc.). This was followed by earned salary, which represented around another 45% **(exhibit 14)**. With economic development, income sources for rural households have changed. Revenue derived from employment has gained significant weight as people have migrated to urban areas for work. Some rural households lend their land to mid-sized and large farms, which offers them a stable income.

Exhibit 13: % of interviewed farmers aware of existence of agricultural insurance



Source: International Journal of Disaster Risk Science (2011), Agriculture insurance in China: History, experience, and lessons learned

Exhibit 14: Income per capita of rural households (in RMB)



Source: National Bureau of Statistic of China
Notes:
Family business refers to sale of agricultural production by the households, family owned shop, etc.
Others refers to redistribution of income which may refer to income / profit earned by the county / village

2.5. Differing attitudes to insurance

During the interviews, it was noted that attitudes towards insurance depend on past experience and cost. Peak Re interviewed representatives of three farms that purchased insurance and one that did not.

Generally, the mid-sized farm owner and village committee share a negative experience of their previous insurers (low sum insured and slow claims processing). If the government increases the sum insured, resulting into an upward adjustment of premium, the mid-sized farm owner indicated that he would continue to purchase insurance cover, although he would not welcome the additional cost which would reduce revenue. The large-farm, in contrast, would also welcome a move to increase the cover limit, but recognised the need to pay an additional premium, which may represent just a small amount compared to the company's revenue.

2.6. Limited product availability

Interestingly, both the large-farm manager and the mid-sized farm manager have farms that do not historically or currently insure, due to the unavailability of products and the fact that there is no insurance branch in the county.

In order to further boost the level of coverage and product satisfaction, the Chinese government is pushing for more innovation, like the development of revenue insurance. Such products will also be subject to premium subsidy.

Decisions on which crop to grow are typically based on government subsidy and market prices. If the market price of a certain crop drops substantially, a farmer can end up with a significant short-fall in income. In this situation, revenue insurance can compensate for the loss of expected income, improving the financial condition of the farmers. While revenue insurance could be attractive to farmers, insurers will need to monitor the insureds' understanding of the terms and conditions. Misunderstandings arise where farmers believe that compensation will always be 100% of the cover limit.

Conclusion

Ten years on from the introduction of nationwide premium subsidies, the agricultural insurance market in China has grown spectacularly. However, the protection gap remains significant. In order to become more meaningful from an overall Chinese economic and social policy perspective, the current scheme needs to move to the next level by meeting the farmers' most pressing needs of higher coverage and greater subsidy. This publication has identified a few specific economic, commercial and institutional levers which may serve this objective and help narrow or even close remaining insurance protection gaps in rural areas.

Currently, insurers mainly offer traditional agricultural insurance with a cover limit that only compensates a portion of the incurred production cost. For example, the sum insured for the main crops only covers approximately one third of the incurred production cost, casting doubt on the ultimate relevance of existing insurance products from the buyer's point of view.

In addition, fiscal pressures need to be balanced with legitimate claims for higher subsidised insurance limits. A key bottleneck in this respect is the limited budget at county level. As the Central government steadily replaces county governments as co-sponsors of the scheme, the prospects for higher insurance limits and larger coverage scope are improving.

Finally, and probably the main priority, the current governance of underwriting, administration and claims processing needs to be reviewed. As described in this report, small and mid-sized farms (representing a significant portion of customers) enrol in insurance by subscribing to policies issued to counties and villages which use local committees as intermediaries between risk carriers and policyholders. These committees play a dominant role across the entire insurance value chain and potentially have a negative impact on the appeal and transparency of agricultural insurance.

The government recognises the need to address these issues, and measures are being taken to make agricultural insurance more attractive to farmers and relieve the financial burden to county level authorities. These attempts include improving transparency on policy status and claims processing, accelerating claims payment and decreasing the cost of insurance. In response to the demand for higher insurance limit, the Central government is also promoting revenue insurance which is expected to provide greater income stability to the buyers.

In addition to the current initiatives and pilot projects, Peak Re believes that a greater involvement of agriculture specialists in the claims settlement process would ensure a more accurate evaluation of losses. This would reduce frictional cost for insurers and help them to provide a more comprehensive explanation of settlement values to insureds.

Appendix 1: History of agricultural insurance in China

A. Development of agricultural insurance before 2007

The first phase in the development of the agricultural insurance market in China occurred between 1982 and 2004 with PICC being the only insurer to provide agricultural insurance protection nationally. However, this pilot project was abandoned by PICC in 2004 after 22 years of unfavourable results and without public financial support in this area. Indeed, the loss ratio between 1982 and 1993 fluctuated between 72% and 136%, while the annual average during this period was 105%. This high average loss ratio was driven by a lack of quality data and knowledge, as well as the centralisation of decision-making for agricultural insurance. Hence, the project failed due to its high loss ratio in 1994.

In parallel, the Production and Construction Corps of Xinjiang established the Agriculture Insurance Company of Xinjiang Corps (now known as China United P&C Insurance) in 1986. It offered agricultural insurance solely in Xinjiang and was granted a nationwide license in 2002 to write all types of property and casualty risk. It recorded an average loss ratio for agriculture insurance of 72% from 1987 to 2006 (the ratio fluctuated between 56% and 110%). Heilongjiang Farm Reclamation operated from 1993 to 2003, but its agricultural insurance division was privatised in 2004 to form Sunlight Mutual Agricultural Insurance in 2005.

From this unsatisfactory start, the Chinese government decentralised the decision-making process, transferring responsibility to local governments. Pilot premium subsidy programs were launched in 2004 for the first time. China United P&C Insurance was part of the programs offering agricultural insurance for rice and wheat in Xinjiang province while PICC worked in collaboration with local governments on a national level. With these pilot programs, specialised agricultural insurers emerged in the market in 2004 and 2005. They are Anxin Agricultural Insurance (Shanghai, founded in 2004, previously a PICC regional branch), Anhua Agricultural Insurance (Beijing, also established 2004, formed from seven companies) and Sunlight Agricultural Mutual Insurance (Heilongjiang, 2005). Groupama SA (France) opened a branch in Chengdu, Sichuan province in 2004[2]. The second major phase mainly started in 2007 with the introduction of premium subsidies.

[2] *Groupama China branch was converted into a wholly owned subsidiary in December 2010. It became a joint-venture between the French Groupama S.A. and Aviation Industry Corporation of China in June 2011 and was renamed to the current name Groupama AVIC in March 2012.*

B. Surge of agricultural insurance premium since 2007

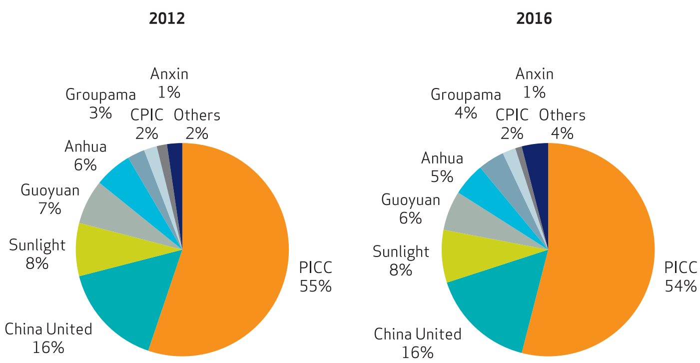
In 2007, the Chinese government introduced premium subsidies with a larger coverage scope. This initiative was intended to boost the penetration of agricultural insurance. It saw agricultural insurance premiums in China grow by more than 500% in 2007 compared to 2006 whereby 50% of the crop insurance premiums and 75% of livestock insurance premiums were subsidised **(exhibit 5)**.

The premium subsidy programs steadily extended to cover more provinces and commodities. For example, crop premium subsidies were introduced initially in six provinces (Jiangsu, Jilin, Xinjiang, Hunan, Sichuan and Inner Mongolia) and covered five major crops (corn, wheat, rice, cotton and soybean) **(exhibit 4)**.

In 2008, the program was extended to include peanuts and rapeseed. In 2009, the program was expanded to Heilongjiang, Liaoning, Hebei, Shandong, Henan, Hubei, Anhui, Zhejiang, Jiangxi, Fujian and Hainan.

After premium subsidies applied to a larger range of agriculture commodities, Guoyuan Agricultural Insurance was established in 2008 in Anhui. In 2015, Zhongyuan Agricultural Insurance was founded based in Henan. Among the 26 insurers offering agricultural insurance, six specialised in the field (Anxin Agricultural Insurance, Anhua Agricultural Insurance, Sunlight Agricultural Mutual Insurance, Guoyuan Agricultural Insurance, Groupama AVIC and Zhongyuan Agricultural Insurance). Market shares have been stable since 2012 as shown in **exhibit 15**.

Exhibit 15 China agricultural insurance market share in 2012 and 2016



Sources: CIRC (2013), China Insurance Yearbook and Agroinsurance International (2017), Agricultural insurance in China: History, Development and Success factors

Appendix 2: Examples of equipment

Photos from Peak Re's on-site visits in Henan province:
Mid-scale farm – 24 hours monitoring screen (Xuchang prefecture-level city)
The farm records activities in the farming land, the seed development and germination centers, the expansion of the farm and surroundings all day long.

Large-scale farm – equipments (Kaifeng city)
The large farm cultivates various crops in 5100mu (equivalent to 340ha) out of its total superficie of 5300mu (slighly more than 353ha). Below are some example of large sale equipments used by the farm.



Sources: Peak Re

References

1. Agroinsurance International (2017), Agricultural insurance in China: History, Development and Success factors, http://agroinsurance.com/wp-content/uploads/2017/04/Agricultural-insurance-in-China-Agroinsurance-International.pdf
2. Aon Benfield (2016), Introduction to Agricultural Insurance in China
3. Capital University of Economics and Business (2014), China agricultural insurance: several important issues to be addressed, http://www.circ.gov.cn/web/site0/tab7313/info3907145.htm
4. China Insurance Regulatory Commission, Yearbook of China' s Insurance (2009 to 2014)
5. China Insurance Regulatory Commission (May 2015), Update of China Agriculture Insurance Development and Reform
6. China Insurance Regulatory Commission (2016), presentation, China agriculture insurance: reforms and innovation
7. China Property & Casualty Reinsurance Co. (2014), The development of Agricultural insurance in China, https://www.casact.org/education/reinsure/2014/handouts/Paper_3229_handout_2138_0.pdf
8. Food and Agriculture Organization of the United Nations (2011), Agricultural insurance in Asia and the Pacific region
9. Food and Agriculture Organization of the United Nations, FAOSTAT, http://www.fao.org/faostat/en/#data
10. Guy Carpenter (2016), presentation, 2016 China Agro (Re)Insurance Market Update
11. International Journal of Disaster Risk Science (2011), Agriculture insurance in China: History, experience, and lessons learned, https://link.springer.com/article/10.1007/s13753-011-0007-6
12. Ministry of Finance of the People's Republic of China (2016), Notice on agricultural insurance premium subsidy and administration, http://jrs.mof.gov.cn/zhengwuxinxi/zhengcefabu/201701/t20170125_2527637.html
13. Ministry of Finance of the People's Republic of China (2017), Notice on implementation of pilot project in main crops provinces, http://jrs.mof.gov.cn/zhengwuxinxi/zhengcefabu/201705/t20170527_2610952.html
14. National Bureau of Statistic of China database, http://data.stats.gov.cn/english/easyquery.htm?cn=C01
15. National Development and Reform Commission PRC (2016), The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China (2016-2020), http://en.ndrc.gov.cn/newsrelease/201612/P020161207645765233498.pdf
16. OECD (2016), Agricultural policy monitoring and evaluation, http://www.oecd-ilibrary.org/content/book/agr_pol-2016-en
17. OECD and Food and Agriculture Organization of the United Nations (2016), OECD-FAO Agriculture Outlook 2016-2025, http://stats.oecd.org/index.aspx?queryid=71236
18. The World Bank (2007), China: Innovations in Agricultural Insurance, https://openknowledge.worldbank.org/bitstream/handle/10986/12401/686070v10ESW0P0Ag0Ins000Main0Report.pdf?sequence=1

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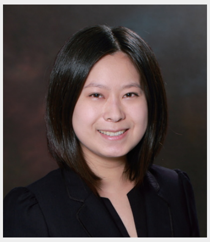

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Special thanks
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