China’s Property-Liability Insurance Market: 
Characteristics, Trends, and Efficiency by Ownership

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Abstract
China’s insurance market is one of the most important emerging markets in the world. With over 1.7 trillion RMB (284 billion USD) in premiums written in 2013, China has become the fourth largest insurance market in the world. Property-liability insurance has a longer history in China and accounts for more than 36% of market share. This article discusses the characteristics, trends, and efficiency of China’s property-liability insurance market; in particular, it focuses on the difference in insurance operations and efficiency between domestic insurers and foreign insurers.
Introduction

The People’s Republic of China (PRC) has grown to become one of the top insurance markets in the world in the past 30 years. With 1.7 trillion RMB (USD 284 billion) in premiums written in 2013\(^1\), insurance operations from China generated 5.99 percent of the worldwide total and 21.74 percent of the Asian total (Swiss Re, 2014). The insurance sector is also a significant source of employment. In 2013, the Chinese insurance industry employed over 3.77 million people, including 2.9 million insurance agents and brokers (CIRC, 2014).

Property-liability (P-L) insurance has a long history in China’s insurance development and plays an important role in overall insurance growth in China. In 2013, the non-life sector (including P-L and health insurance) of China generated a premium income of USD 125.8 billion, representing 6.19 percent of the world’s non-life insurance total and 33.1 percent of the Asian non-life insurance total (Swiss Re, 2014)\(^2\). For the first time in history, China’s non-life insurance ranked third largest in the world.

Strong economic growth, speedy urbanization, globalization, and technological innovations have all contributed to China’s growing insurance industry. In the following sections, we will focus the discussion on the development of China’s insurance market, regulatory environment, characteristics, trends, and efficiency of China’s P-L insurers. The paper proceeds as follows. After discussing the key developments that have given rise to the Chinese insurance markets and institutions that exist today, we provide a description of the relevant institutions and regulations that make up the business environment in which insurers must currently operate. We then

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\(^1\) USD= 6.0518 CNY, Yahoo!Finance, 12/31/2013. It was 278 billion USD based on Swiss Re’s conversion.

\(^2\) It is worth noting that in Swiss Re’s statistics, non-life insurance premiums include premium income from P-L insurance and health insurance. This study only focuses on P-L insurance companies and does not include health insurance companies in the calculation in the rest of the paper.
provide a detailed quantitative overview of China’s P-L insurance by ownership, and compare the technical and scale efficiency of Chinese P-L insurers. The last section concludes this study.

**History of the Chinese Insurance Market**

The earliest insurance establishments in China can be traced back to 1805, when the Canton Insurance Society, a foreign insurance company, was first established to provide insurance services for foreign merchants clustered in a small area near Canton. Many foreign and joint venture companies followed as China’s economy in several coastal cities gradually modernized. Shanghai emerged as China’s financial center, and many insurance companies established businesses there before the Communist victory over the Nationalist government.

In 1949, the People’s Republic of China (PRC) was founded, and the government required all foreign insurance companies to terminate operation and exit the country. All domestic insurers were nationalized to form a state-owned insurance company, the People’s Insurance Company of China (PICC). During the 1949 – 1976 period, China ran a planned economic system. In both rural and urban areas, major aspects of economic life were predetermined by planning. Risks in economic activities were not always associated with the welfare of individuals and enterprises. This left little incentive and virtually no need for commercial insurance. Thus, the insurance company (PICC) existed, but its businesses were very limited.

Not until 1979, the year China adopted its “Reform and Open-up” economic policy, did China gradually restore the commercial market for insurance. The 1980-1985 period was considered resumption and restoration time (e.g., Zheng, 2007; Yao et al., 2007). The transfer of control rights from the state to firms created more demand for insurance, but the market was still
monopolized by PICC, and insurance assets were deposited with banks because no alternative investment channels existed or were allowed.

The period from 1986 to 1991 was the beginning of market-oriented reform for China’s insurance industry. It started with the establishment of the Farming Insurance Company of Xinjiang Production and Construction Group (FICX) in 1986, followed by the founding of Ping An Insurance Company, a shareholder-owned multi-line insurer in 1988 that ended PICC’s decades-long monopoly in China. In 1991, the Pacific Insurance Company was also established. Since then, the three insurance giants, PICC, Ping-An, and Pacific, have dominated China’s insurance market.

From 1992 forward, China has deepened its market-oriented reforms and has enjoyed rapid economic, industrial, and urban growth. These areas of growth have created immense business opportunities for insurance, which has served to attract a growing number of domestic and foreign investors. In 1992, the People’s Bank of China (PBOC), the institution regulating banking and insurance activities at the time, granted American International Group, Inc. (AIG) a license to sell individual life insurance, officially marking the opening of China’s insurance market to foreign capital.

In 2001, China joined the World Trade Organization (WTO). A year after, the State Council enacted the Regulations on Administration of Foreign-Funded Insurance Companies, which removed many of the restrictions imposed on foreign insurers trying to obtain business licenses in China. Consequently, an increasing number of foreign insurers have obtained licenses to establish branches or joint ventures in China’s market.

Insurance Regulatory Body and Insurance Law
In 1995, the People's Bank of China granted the right of insurance supervision to the Division of Insurance Supervision, a department established under the Department of Non-Banking Financial Institutions Supervision of PBOC (Zheng, 2007). In the same year, the first Insurance Law of China was enacted, which, following international insurance operations practices, mandated the separation of life and non-life insurance businesses. The development of the insurance industry accelerated after the passage of the Insurance Law and has kept its momentum ever since. As required by the Law, in 1996, PICC was divided into three independent companies, namely China Life Insurance, China Property Insurance, and China Reinsurance.

In November 1998, the China Insurance Regulatory Commission (CIRC) was established under the State Council and replaced PBOC as China’s insurance regulation agency.³ In 2002, the Insurance Law was modified for the first time since China joined the WTO. The main purpose was to facilitate the opening of China’s insurance market to foreign capital. In 2009, a new version of the Insurance Law came into effect, which provides more complete regulatory guidelines regarding standardizing insurance contracts, streamlining regulations on insurance market participants, and enhancing CIRC’s supervisory authority.

**Major Regulation Updates**

Over the past three decades, China’s insurance regulations have evolved together with the rapidly-changing industry and market. Among the many changes, the following regulation changes are of particular importance.⁴

**Adoption of new accounting standards**

A significant regulation update in China’s insurance industry is the adoption of new financial reporting standards that are closely aligned with the International Financial Reporting Standards

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³ See Chen et al. (2014) for additional descriptions of CIRC.
⁴ Chen et al. (2014) provide a good summary of the evolution of China’s insurance regulations and supervision before 2010, material which will not be repeated in this article.
(IFRS). Ever since 2006, the Ministry of Finance of the PRC has issued multiple provisions requiring enterprises and industries to implement the new international accounting standards. Following the provisions of Ministry of Finance, CIRC has issued several related regulations that required the insurance industry to begin adopting the new standards starting January 1st, 2007. These regulations required all insurance companies, including domestic and foreign insurance companies, to complete the adoption of new standards by 2009 (KPMG, 2009). The new accounting standards and resulting changes in insurance accounting have had significant impacts on premium income recognition, reserve estimation, profit allocation, taxes, and so on. For example, the new regulation on loss reserves suggests that liability should be measured according to principle-based guidance, not the rule-based guidance used by the old regulations. Furthermore, the new accounting standards use fair market value, which will cause operational performance to fluctuate. Net profit may fluctuate greatly when the real estate market and the value of financial instruments change.

**Permission of banks to hold shares in insurance companies**

In November 2009, The China Bank Regulatory Commission issued “Measures for the Administration of Pilot Projects for the Investment by Commercial Banks in the Equity of Insurance Companies”. The Measures started a pilot program that allowed commercial banks to invest in insurance companies, but each commercial bank could only invest in one insurance company. These regulations also placed strict controls on the selected parties regarding their corporate governance, related-party transactions, consolidated financial reporting, and business cooperation, etc.

**Diversification/relaxation of insurance investment channels**
Investment channels in China’s insurance market have become more diversified during the past decade. From 2004 to 2005, insurance capital was allowed to be directly invested in the stock market and in foreign markets. From 2006 to 2008, insurance capital could be used to invest indirectly in infrastructure projects and commercial banks’ equity. From 2009 to 2010, the new Insurance Law further allowed insurance assets to be invested in unlisted equity and real estate assets.

Prior to 2014, there was no limit on insurance companies’ investment in government bonds and quasi-government bonds. For corporate bonds, no limit was placed on investment in secured corporate bonds, but no more than 50% of assets could be invested in unsecured non-financial corporate bonds. Various ratings requirements were specified for financial institution bonds and non-financial institution bonds that insurers could invest in. For financial products, total investment in commercial bank wealth management products, bank loan securitization products, pooled trust products, and securities firms' asset management products could not exceed 30% of an insurer’s total assets, and, for any single item, no more than 20% of the product's total issuance. Within this category, total investments in infrastructure investment and real estate investment deals could not exceed 20% of the insurer’s total assets; for any single item, the ownership right should be less than 50% of the ownership interest in the deal. In addition, aggregate ownership rights held by all affiliated subsidiaries within the same insurance group in one single deal could not exceed a 60% ownership interest. Insurance companies could be permitted to use financial derivatives such as forwards, futures, options, and swaps for hedging purposes but not for speculation purposes. Total investments in equity interests in unlisted

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5 For example, financial bonds issued by state-owned policy banks are guaranteed and considered as quasi-government bonds.
6 The “assets” refers to an insurance company’s total assets at the previous quarter-end. It is the reported asset value based on fair market value accounting standard.
companies should not exceed 10% of an insurer’s total assets, with a 20% limit of ownership interest in any single equity by any one insurer and a 60% limit of ownership interest in any single equity by the whole insurer group (Jingu, 2013).

In February 2014, the CIRC further loosened controls on insurers’ investments channels. The new rule placed no ceilings on fixed-income investment and liquid assets (such as cash and demand deposits) and simplified the rules by categorizing insurers’ asset portfolios into five major classes. According to the new rule, investments in equities (listed and unlisted) and real estate are each capped at 30 percent of an insurer’s total assets (at quarter-end). Investment in other financial assets (which includes banks’ wealth management products and trusts) is limited to 25 percent of an insurer’s total assets (at quarter-end), while overseas investment is capped at 15 percent of an insurer’s total assets (at quarter-end). In addition, a five percent diversification rule is applied to any single investment.

**Further opening up the insurance market to foreign insurers**

CIRC has taken a series of steps to open the market to foreign insurers. Regulations on foreign insurers mainly lie in controlling the licensing of foreign insurers and the geographical areas and lines of business in which foreign insurers can operate. Over time, the threshold for foreign insurers has gradually relaxed, especially after China joined the WTO. Nowadays, foreign insurers are allowed to expand their business out of the tier I cities (Beijing, Shanghai, Guangdong, and Shenzhen). In 2012, foreign insurers were allowed to enter the third-party auto liability insurance market. Effective June 2014, CIRC allowed both foreign and domestic insurers to own more than one company in the same segment (life or non-life) of the industry. Foreign insurers can also now acquire a Chinese domestic insurer with approval from regulators.

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7 [http://www.circ.gov.cn/web/site0/tab5225/info3904709.htm](http://www.circ.gov.cn/web/site0/tab5225/info3904709.htm), extracted November 2014.
8 See also Leverty et al. (2009)’s appendix for formal and informal requirements for foreign insurers.
This will improve the economies of scale of foreign insurers in China and facilitate foreign insurers’ entry into China’s insurance market through mergers and acquisitions (Veysey, 2014).

**China’s Property–Liability Insurance**

In 2013, China grew to be the third largest non-life insurance (including P-L and health insurance) market in the world, with a premium income representing 6.19 percent of global non-life annual premiums and 33.1 percent of Asian non-life premiums. As the P-L industry has changed rapidly over time and has adopted the new accounting standards since 2007, the following analyses focus on the 2008-2013 period. The data used in this study come from the financial statements of individual companies and/or China Insurance Regulatory Commission (CIRC) yearbook(s), which is the official data source for the Chinese insurance industry.

This study is at the individual firm level, as individual companies need to report their own financial statements to CIRC annually and can be considered as “independent” decision makers. There are two types of firms in China’s P-L insurance market, based on the composition of ownership: domestic insurers and non-domestic insurers. In this study, we define non-domestic insurers to include both foreign insurers and joint venture insurers and, for the purpose of this study, refer to both as “foreign insurers.”

**Market Structure of China’s P-L Insurance Industry**

Table 1 shows the number of firms, premiums, and assets by ownership form over time, adjusted by the 2010 CPI. The number of firms increases from only two firms in 1982 (PICC and the Ming An Insurance Company-Hong Kong) to 22 firms in 2002. From 2002 to 2013, as a result of China joining the WTO, the opening of the insurance market also sped up. The total number of

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9 See also [http://www.circ.gov.cn/web/site0/tab5225/info3912625.htm](http://www.circ.gov.cn/web/site0/tab5225/info3912625.htm), extracted November 2014.

10 CPI data was extracted from National Bureau of Statistics of China, [http://data.stats.gov.cn/](http://data.stats.gov.cn/).
insurers increased to 64 in 2013, and the number of foreign insurers increased from 12 in 2002 to 21 in 2013.

Total premium income of the industry increased by more than 10 times from 1982 to 1992, and then increased by two times from 1992 to 2002. The average real annual growth rate from 2008 to 2013 was about 19%. The marginal rate of premium growth during the same period, however, is decreasing slightly year by year. The total premium income of the industry in 2013 is 585.9 billion RMB (in real 2010 RMB).

The premium share of foreign insurers also increased over time. In 2002, foreign insurers accounted for 0.46% of total premium share, increasing to 1.66% in 2013. While there are quite a few foreign insurers operating in China’s market (21 firms in 2013), the market share they have is rather small. This shows that foreign insurers are facing growth challenges in China’s market after their entry.

[Insert Table 1 here]

Table 2 presents real GDP, population, insurance density, and insurance penetration for China’s P-L insurance industry. With a population of 1.36 billion and a GDP of 51.3 trillion RMB (real 2010 value) in 2013, China has become the second largest economy in the world (OECD, 2013). Strong GDP growth has provided solid support for the development of the insurance market. However, compared with other sectors of the economy, China’s insurance industry is still underdeveloped. The total P-L insurance premium income to GDP ratio was only 1.12% in 2013, not a significant increase from that of decades ago. Per capita spending on P-L insurance products increased significantly from 5 RMB in 1982 to 424 RMB in 2013; however, this is still much lower than the insurance expenditures of many other countries in the world.
In sum, China's insurance industry is still in its early development stage by international standards, with considerable growth opportunities as well as challenges.

Table 3 demonstrates the top one-, four-, and ten-firm concentration ratios, as well as the Herfindahl indices for China’s P-L insurance industry, based on both assets and premiums written. Until 2002, the Chinese P-L insurance market had been dominated by the largest insurance company – PICC Property and Casualty Co., with an asset share of 62% and premium share of 47.5% in 2002. The top four companies consisted of 94.3% of the industry total assets and generated 96.8% of total premiums in 2002. PICC’s monopolistic power has been reduced significantly in recent years, with a 29.2% share of assets and 34.4% share of industry premiums in 2013. The total market share of the top four and top ten insurers also reduced in recent years, suggesting that the concentration has been decreasing and the market has become more competitive. The Herfindahl indices demonstrate the same trend. However, China’s P-L insurance market is still moderately concentrated overall – the industry’s premium Herfindahl index of 1,734 in 2013 is well above the benchmark level of 1,500 for a moderately concentrated market.11

Assets, Liabilities, Income, and Expenses by Ownership

As an emerging market with continuous entry of new insurers into the market, assets and liabilities of China’s insurance industry have been evolving over time. As a result, we provide the aggregate balance sheet and income statement for the most recent year (2013) to demonstrate

11 The U.S. Department of Justice generally considers markets in which the Herfindahl index is between 1,500 and 2,500 points to be moderately concentrated and considers markets in which the Herfindahl index is in excess of 2,500 points to be highly concentrated. See U.S. Department of Justice (2010), http://www.justice.gov/atr/public/guidelines/hhi.html.
the assets composition, liability composition, and income and expense items for the industry. Separate demonstrations are provided for domestic insurers and foreign insurers to differentiate their operating and asset management strategies.

Table 4 provides the pro forma balance sheet. The total assets of the domestic insurers amounted to 1.06 trillion RMB (not adjusted for inflation). Of these total assets, long-term deposits accounted for 22.63 percent, financial assets for sale accounted for 20.11 percent, and hold-to-maturity investment accounted for 11.94 percent of total assets, while cash and deposits accounted for 5.85%. Reinsurance receivable and recoverable from reinsurance for unearned premiums reserve and loss reserve in total accounted for 10.03 percent of total assets. On the liability side, the total liabilities of domestic insurers in 2013 were 823.7 billion RMB, giving an overall leverage ratio (liability divided by policyholders’ surplus) of 341.7 percent. Unearned premiums were the largest liability, amounting to 34.80 percent of total liabilities, and loss reserves accounted for 28.12 percent of total liabilities. Deposits from policyholders accounted for 12.12 percent of total liabilities, while reinsurance liabilities (reinsurance accounts payable) accounted for 4.86 percent. The total policyholders’ surplus was 241.1 billion RMB, 73.34 percent of which was paid-in capital. 14.78 percent was in earned surplus, and 0.66 percent was in retained earnings.

The aggregate balance sheet for foreign insurers differs significantly from that of domestic insurers. The total assets for foreign insurers in 2013 were 30.4 billion RMB (not adjusted for inflation). Reinsurance assets (reinsurance receivable and recoverable from reinsurance for unearned premiums reserve and loss reserve) were the largest assets for foreign insurers, amounting to 39.4 percent of total assets. Long-term deposit was the second largest asset source for foreign insurers, amounting to 22.40 percent of total assets. Foreign insurers also
put a significantly higher percentage of assets in cash and deposits (19.52 percent) than domestic insurers. The total liabilities for foreign insurers in 2013 were 21.15 billion RMB, giving an overall leverage ratio (liability divided by policyholders’ surplus) of 228.4 percent. Loss reserves were the largest liability, amounting to 56.33 percent of total liabilities, while unearned premium reserves accounted for 19.35 percent. Reinsurance liabilities (reinsurance accounts payable) accounted for 11.72 percent of total liabilities, which was also higher than the percentage of reinsurance liabilities for domestic insurers. The total policyholders’ surplus was 9.26 billion RMB; this net amount was almost all from paid-in capital, as this group of insurers had large negative retained earnings in 2013.

[Insert Table 4 here]

Table 5 presents the pro forma income statement for China’s P-L industry in 2013, with separate statements for domestic and foreign insurers. For domestic insurers, the industry’s premiums earned were 521.7 billion RMB. The industry’s net investment income was 35.9 billion RMB. The net claim cost incurred (claim expenses and changes in loss reserve, net of reinsurance) was 334.6 billion RMB, accounting for 63% of the total expenses. Second was business and management expense (122.2 billion RMB), which accounted for 23% of total expenses. Service fees and commission expenses (57.6 billion RMB) accounted for 10.85% of total expenses, while reinsurance expenses (335 million RMB) accounted for only 0.06% of total expenses. Domestic insurers in total earned 27.5 billion RMB in net income.

For foreign insurers, the premiums earned in aggregate were 6.2 billion RMB. The net investment income of the industry was 386 million RMB, and the net claim cost incurred (claim expenses and changes in loss reserve, net of reinsurance) was 3.44 billion RMB, accounting for 47.1% of the total expenses. Second was business and management expense (2.76 billion RMB),
which accounted for 37.85% of total expenses. Service fees and commission expenses (780 million RMB) accounted for 10.68% of total expenses, but all were recovered from their reinsurers through ceded reinsurance commissions/expenses (802 million RMB). Reinsurance expenses (653 million RMB) accounted for 8.94% of total expenses, much higher than that for domestic insurers. Foreign insurers in total suffered a 697 million RMB loss in net income, mainly due to high business and management expenses and reinsurance expenses.

[Insert Table 5 here]

**Market Share by Line of Business for Domestic and Foreign Insurers**

As the economy grows, the demand for various insurance products also grows. Accordingly, China’s P-L insurance industry now offers many more types of insurance products than in the past. Figure 1 shows the number of firms by line of business in 2008 and 2013. There were 45 firms with by-line data in 2008, and 63 firms with by-line data in 2013. In 2008, 98 percent of the firms in the market offered commercial property insurance, liability insurance, and accident injury insurance. 73 percent of insurers offered homeowners insurance, and 78 percent offered auto insurance (which included both physical damage and liability coverage). 89 percent offered construction risks insurance, and 91 percent offered cargo transportation insurance. In contrast, there were a relatively small number of firms participating in hull insurance, credit and guarantee insurance, specialty insurance, agriculture insurance, short-term health insurance, and other insurance markets.

As the number of licensed insurers increased from 2008 to 2013, the number of firms increased in almost all lines of business in 2013. Percentage-wise, a significantly higher percentage of insurers conducted business in auto insurance and homeowners insurance in 2013 than in 2008, largely due to the opening of the auto insurance market to foreign insurers in 2012.
In addition, there was a percentage increase in almost all lines in 2013 except for accident injury insurance and other insurance, suggesting that more insurers are diversifying their lines of business in 2013 than in 2008.

Table 6 presents the market share by line of business in China’s P-L insurance industry for domestic insurers and foreign insurers respectively. Analyses are first presented for domestic insurers. From 2008 to 2013, more than 70.0 percent of the premiums written for domestic insurers came from automobile insurance in each year. In 2008, auto insurance alone comprised 70.36 percent of total premiums; the number increased to 73.68 percent in 2013. Commercial property insurance was the second largest category, with a market share of 8.36 percent in 2008 and 5.61 percent in 2013. Agriculture insurance was the third largest category, with a relatively stable 4 percent market share. The market share for credit and guarantee insurance increased from 1.57 percent in 2008 to 4.24 percent in 2013.

For foreign insurers, commercial property insurance, liability insurance, and cargo transportation insurance were the top three lines of business in 2008, each with more than 20 percent of market share of total premiums written by foreign insurers. Thanks to the ease of entry for foreign insurance companies into the auto insurance market, auto insurance has started to play a more important role in the business portfolios of these foreign insurers. In 2013, premiums from auto insurance accounted for 23.93 percent of the total premiums written by foreign insurers, followed by commercial property insurance and liability insurance. The share of agriculture insurance also increased significantly in 2012 and 2013.
Putting the numbers together, domestic insurers dominated foreign insurers in all lines of business. Foreign insurers’ main businesses were in commercial insurance categories. In terms of total premiums written, foreign insurers accounted for 13.28% in cargo transportation insurance, 7.29% in liability insurance, 5.69% in commercial property insurance, and 5.57% in construction risks and had very small market share in other lines. With fewer regulatory restrictions and more than 20 companies operating in the market, foreign insurers should have significant room to grow in China’s P-L insurance market.

**Financial Performance of China’s P-L Insurers**

**Overall profitability**

Table 7 displays four important measures relating to investment performance and profitability of firms in the industry: pretax return on revenues (ROR, net income before tax divided by premiums earned), yield on invested assets (ROI, investment income divided by total invested assets), return on equity (ROE, net income divided by policyholders’ surplus), and return on assets (ROA, net income before tax divided by total assets). Both mean and median values are presented for domestic and foreign insurers, as well as the value difference between the two types of firms.

2008 witnessed bad performance for both domestic and foreign insurers. Due to the adverse impact of the financial crisis and increased competition in the soft insurance market, China’s P-L insurance industry suffered significant operating losses and, as a result, earned negative ROR, ROE and ROA. Only ROI was positive in 2008. Starting in 2009, however, the situation improved, with the median domestic insurers realizing positive operational profits. However, foreign insurers still suffered operating losses, at both median and mean levels, and experienced negative ROR, ROE and ROA between 2009 and 2013. With only a few exceptions,
domestic insurers demonstrated higher profitability and investment return than foreign insurers during the period studied, which raised an interesting issue for further study. There is no obvious trend in these performance measures for domestic insurers during the period studied, but the numbers in general have become less negative for foreign insurers over time, suggesting improvement of foreign insurers’ operations over time.

[Insert Table 7 here]

**Capacity, expense and overall liquidity**

Table 8 presents the capacity ratio (underwriting leverage ratio, defined as net premiums written over surplus), overall liquidity ratio (financial leverage, defined as total assets over total liability), and total expense ratio (defined as total operating expenses over net premiums written) of domestic and foreign insurers over time. The average capacity ratio (based on median value) of domestic insurers during the period 2008-2013 was 186.3 percent, while it was only 40.9 percent for foreign insurers, suggesting that foreign insurers have tremendous capacity to grow their businesses with the capital amounts they hold. The average value of the overall liquidity ratio (based on median value) of domestic insurers during the period 2008-2013 was 139.2 percent, and the value for foreign insurers was 187.6, suggesting that foreign insurers operate with lower financial leverage and have greater liquidity in paying out debts. However, the median and mean liquidity ratio has been increasing for domestic insurers and decreasing for foreign insurers. The difference became positive in 2013. This trend suggests that China’s domestic insurers have become more aware of the importance of liquidity ability. It may also reflect the fact that domestic insurers were able to generate more profits in recent years, with part of the earnings being used to boost their capital level, while foreign insurers only realized losses in recent years, which gradually eroded their capital level. The table also shows that foreign
insurers had a higher total expense ratio than domestic insurers (on average more than 20% higher during the period 2008-2013, based on either mean or median value). Higher operating expenses, along with slower premium growth, may be the major factors driving the negative profits of foreign insurers. However, the total operating expenses ratio for foreign insurers has been decreasing over time, from 75.4% in 2008 to 59.3 percent in 2013 (based on median value).

[Insert Table 8 here]

**Underwriting, investments, and operating performance**

Two important ratios are often considered when measuring the performance of P-L insurers. The first is the combined ratio, which measures the underwriting profitability of the industry. The second is the overall operating ratio, which measures the overall profitability of the industry by taking into account both underwriting and investment performance. The combined ratio is calculated as the sum of the loss ratio (loss incurred\(^{12}\) divided by premiums earned), the expense ratio (underwriting expenses divided by net premiums written), and the policyholder dividend ratio (dividends to policyholders divided by premiums earned). A combined ratio below 100 percent indicates the industry has made an underwriting profit. The overall operating ratio is calculated as the difference between the combined ratio and the investment income ratio (net investment income divided by premiums earned). An operating ratio below 100 percent indicates the industry’s operations are profitable.

Table 9 displays the operating performance of China’s P-L industry from 2008 to 2013, with decompositions in underwriting performance and investment performance. Separate panels are presented for domestic and foreign insurers. For domestic insurers, the median loss ratio was approximately 60 percent for most of these years, except for 2010, when the ratio fell to 54.71 percent, and 2011, when the loss ratio was 57.66 percent. The median expense ratio

\(^{12}\) Information on loss adjustment expenses incurred is not available in our database.
(underwriting and other business expenses) ranged from 29.57 percent in 2010 to 40.49 percent in 2008. As a result, the median combined ratio (sum of the loss, expense, and policyholder dividend ratios) was below 100 percent for most of this period, save for 2008, when the median ratio was 105.56 percent. This indicated that the median firm in the industry typically made money from underwriting. The median investment income ratio ranged from 4.38 percent in 2010 to 6.48 percent in 2013, but the mean value was much higher than the median and varied significantly from year to year. Taking into account investment income, median domestic insurers achieved an operating ratio lower than 100 percent in every year, suggesting that the industry was profitable.

The ratios seem to be more volatile for foreign insurers. The median loss ratio for foreign insurers was slightly lower than that of domestic insurers in almost all years (except for 2013, when foreign insurers’ ratio was 8.11 percent higher in median value). But foreign insurers operated with a much higher expense ratio than domestic insurers, resulting in a higher combined ratio. Foreign insurers managed to have a higher investment income ratio than domestic insurers (as measured by median value), which offset the negative underwriting results to some extent. Overall, majority of foreign insurers suffered operating losses for more than half of the years studied.

[Insert Table 9 here]

**Loss ratio by line of business**

Underwriting performance may vary across lines of business. It is important for insurers to study the loss payment pattern of insurance lines, which can help determine the amount of risk and the investment strategy they should adopt. Table 10 presents loss ratios by line. As premiums earned by line data is not available in the database, we impute it from the existing information available.

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13 The policyholder dividend ratio was calculated but not shown in the table as the number was quite small.
First, we calculate the overall ratio of premiums earned over direct premiums written for each firm based on aggregate data. We then multiply the direct premiums written of each line of business by the calculated ratio to obtain premiums earned by line for each firm. Here it is assumed that the same proportion of direct premiums written will be earned for each line of business.

For domestic insurers, the median value shows that short-term health insurance in general had a higher loss ratio than other lines. Credit and guarantee insurance and specialty insurance had lower loss ratios. Commercial property insurance, auto insurance and agriculture insurance also had a relatively higher loss ratio in most of the years studied.

There is no clear pattern on loss ratios for foreign insurers. In general, they carry higher loss ratios for commercial property insurance, cargo transportation insurance, auto insurance, short-term health insurance, and specialty insurance in some years studied.

[Insert Table 10 here]

**Reinsurance Usage**

The pro-forma balance sheet and income statements show that domestic insurers and foreign insurers differ significantly in their reinsurance assets, liability, and expenses. In this section, we provide additional information with respect to the role of reinsurance in China’s P-L insurance market. Table 11 presents reinsurance premiums ceded and assumed, reinsurance recoverable over assets, and reinsurance payable over liability. Based on the sample median, domestic insurers on average (average of median values during 2008-2013) ceded 11.73 percent of direct premiums written to reinsurers and assumed only 0.13 percent from other insurers. On average reinsurance recoverable accounted for about 5.99 percent of total assets, and reinsurance payable accounted for about 3.11 percent of total liability.
Foreign insurers depended more heavily on reinsurance. During the 2008-2013 period, median foreign insurers on average ceded 53.69 percent of direct premiums written to reinsurers and assumed 17.40 percent of premiums from other insurers. On average, 18.87 percent of total assets were reinsurance assets, and 12.21 percent of liabilities were reinsurance liability. The use of reinsurance provides surplus relief for primary insurers, and enables primary insurers to expand underwriting capacity, adequately diversify insurable risks, and stabilize and smooth financial performance. However, the heavy use of reinsurance by foreign insurance companies cannot be justified by the fact that foreign insurers had very low underwriting leverage (net premiums written over surplus ratio, as shown in table 8), reasonable/comparable loss ratios as domestic insurers, and negative profits throughout the study period. It might be interesting to further look at the reinsurance policies of foreign insurers in China, especially the impact of parent companies on operations of these firms.

[Insert Table 11 here]

**Frontier Efficiency of China’s P-L Insurers**

Financial performance and analyses provided in previous sections shed some light on the performance of Chinese P-L insurers from various perspectives, but they do not capture the multidimensionality of a firm’s production process. In this section, we estimate the frontier efficiency of the insurance companies in the industry, since the frontier efficiency measure is a more sophisticated performance measure than any single financial ratio and has become the state-of-the-art method of measuring business performance (Cummins and Weiss, 2013). Extensive frontier efficiency studies have been observed in the insurance industry, but only a few of these involved analyses of China’s insurance market. Representative work focusing on the efficiency of China’s insurance industry includes Leverty et al. (2009), Chen et al. (2009), and
Yao et al. (2007). More recent work, such as Eling and Luhnen (2010) and Huang and Eling (2013) performed cross-country efficiency studies on insurance, and China was included as one country sample.

**Methodology**

Frontier efficiency analysis draws information on a firm’s overall performance by separating production units performing well from those performing poorly. This is done by estimating “best practice” efficiency frontier consisting of the fully efficient firms in a given industry and comparing all firms in the industry to that frontier. In this article, we estimate the technical efficiency, pure technical efficiency, and scale efficiency of China’s P-L insurance companies using the Data Envelopment Analysis (DEA) method, a non-parametric approach (Cooper, Seiford, and Tone, 2000). Extensive literature has discussed the advantages and disadvantages of parametric and non-parametric approaches and their application in the insurance industry (see review by Cummins and Weiss, 2013). The DEA method is adopted here as it has become a more popular approach in recent years and has advantages in dealing with small samples.

We employ input-oriented distance functions to estimate production frontiers. The input-oriented distance function was introduced by Shephard (1970). It relies on the *input attainability* assumption that all output vectors can be obtained from the rescaling of any non-zero input vectors.\(^{14}\) In this way, technical efficiency measures a firm’s ability to minimize the inputs utilized to produce a given bundle of outputs; in other words, it represents the radial contraction in inputs for a firm to produce a given output vector if it operated on the production frontier. Fully efficient firms lie on the production frontier and have efficiency scores equal to 1.0. Inefficient firms have efficiency scores between 0 and 1.

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\(^{14}\) Please refer to Cummins and Xie (2013) for details on mathematical programming of technical efficiency, pure technical efficiency, and scale efficiency.
Farrell (1957) technical efficiency can be measured with respect to constant returns to scale (CRS) production frontiers (technical efficiency), with respect to variable returns to scale (VRS) production frontiers (pure technical efficiency), and with respect to non-increasing returns to scale (NIRS) production frontiers (Aly, et al., 1990). A firm has achieved full pure technical efficiency if it operates on the VRS frontier and full technical efficiency if it operates on the CRS frontier. In this way, technical efficiency can be expressed as the product of pure technical efficiency and scale efficiency. Scale efficiency for a given firm is measured as the total technical efficiency not explained by pure technical efficiency, i.e., scale efficiency equals technical efficiency divided by pure technical efficiency. If scale efficiency is equal to 1.0, the firm is on the CRS frontier; and if scale efficiency is less than 1.0, the firm is not on the CRS frontier. If scale efficiency is less than 1.0 and pure technical efficiency is not equal to NIRS efficiency, then the firm operates with increasing returns to scale (IRS); if scale efficiency is less than 1.0 and pure technical efficiency is equal to NIRS efficiency, then the firm is characterized by decreasing returns to scale (DRS) (Aly, et al. 1990).

**Inputs and outputs for efficiency measurement**

Existing literature has used three methods in measuring outputs in studying insurance frontier efficiency: the asset (intermediation) approach, the user-cost approach, and the value-added approach (Cummins and Weiss, 2013). Due to data availability, studies on China’s insurance market also differ in the definition of inputs and outputs. This study adopts a modified version of the value-added approach to define insurance outputs (Berger and Humphrey, 1992; Cummins and Weiss, 2000) and uses a set of inputs and outputs similar to Leverty et al. (2009).
Three input variables are defined: labor and business materials, debt capital, and financial equity capital. The labor and business materials input is defined as the sum of service fees and commission expenses, business and management expenses, and reinsurance expenses, minus ceded reinsurance commissions/expenses. Debt capital is defined as the sum of loss reserves and unearned premiums reserves, which are funds borrowed by the insurers from their policyholders. Financial equity capital is measured by the average of the beginning and end-of year equity capital of insurers. All input variables are deflated by the 2010 CPI to obtain the real value.

Four output variables, based on the three principal types of services provided by property-liability insurers (risk pooling and risk bearing, real financial services, and financial intermediation services), are defined for this study: incurred losses of auto insurance, incurred losses of other short-tail lines, incurred losses of other long-tail lines, and total invested assets of the P-L insurance company.

In insurance literature, for P-L insurers, the most commonly used proxy for risk-pooling and risk bearing services is the present value of losses incurred, and four separate insurance outputs are usually calculated: personal lines short-tail losses, personal lines long-tail losses, commercial lines short-tail losses, and commercial lines long-tail losses. The tail refers to the length of the loss payment period. However, Chinese P-L insurers’ financial reporting does not provide for such refined separation. For example, auto insurance accounted for more than 70 percent of the total market share, but in financial reporting, there is no distinction between personal auto and commercial auto, and there is no separate reporting for liability coverage and physical damage coverage. Everything is put into one category: automobile insurance. As a result, three insurance outputs are defined in this study: incurred loss of auto insurance, incurred loss of auto insurance, incurred loss of auto insurance.

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15 The financial reporting of China’s insurance companies does not allow for the separation of labor input and business materials input.
loss of other short-tail insurance and incurred loss of other long-tail insurance. As in Leverty et al. (2009), due to data constraints, we do not have loss payment patterns for each line of business and therefore will not be able to estimate present value of incurred losses. But as argued in that paper, this does not represent a serious problem, since the vast majority of insurance in China is short tail insurance.

The value-added of the financial intermediation function of P-L insurers reflects P-L insurers’ ability to earn net interest margin by investing premiums collected from policyholders, after the reasonable rate credited to policyholders. The quantity of the intermediation output is measured by the average of the beginning and end-of-year invested assets. The values of losses incurred and invested assets are also deflated to real 2010 values using the consumer price index (CPI).

The sample for efficiency analyses starts with all firms in the industry, and we then eliminate firms with zero or negative equity, premiums, or inputs. A firm is also eliminated from the sample if it has zero or negative invested assets. Firms staying in the sample also need to have at least one non-zero insurance output.

Table 12 presents the mean and standard deviation of efficiency results. Panel A shows the efficiency score for all firms for which efficiency estimation is available. The average technical efficiency score for domestic firms during the 2008-2013 period is 0.84, while the score is only 0.73 for foreign insurers. Domestic insurers are more efficient than foreign insurers because they are more scale efficient. The average pure technical efficiency is the same for domestic and foreign insurers (0.88 for both groups during the 2008-2013 period), but domestic insurers are more scale efficient, with an average scale efficiency score of 0.95, compared with an average scale efficiency score of 0.84 for foreign insurers.
As an emerging insurance market, there are new entrants to the market each year. New firms tend to be small and lack scale efficiency, which may drive the differences we have observed in panel A. As a robustness check, panel B reports the efficiency score only for those insurers that have valid operations throughout 2008-2013. For this group of insurers, we find that the average technical efficiency score is 0.88 for domestic insurers and only 0.73 for foreign insurers. The average pure technical efficiency score is 0.90 for domestic insurers and 0.86 for foreign insurers. The average scale efficiency score is 0.97 for domestic insurers and 0.85 for foreign insurers. Consistently positive differences between domestic and foreign insurers in all three types of efficiency are observed for year 2009 to 2013, which support the conclusion that domestic insurers are more efficient than foreign insurers in China’s P-L insurance market. Foreign insurers have considerable room to improve their scale economies in China’s P-L insurance market.

Conclusion

The Chinese insurance market has become one of the most important insurance markets in the world because of its fast growth, size, and potential. This article analyzes China’s P-L insurance market by reviewing its characteristics and trends since 1982, with a focus on the recent period of 2008-2013. Strong economic growth, modernization of China’s economy, and innovations in computing and communication technology, as well as a more efficient regulatory system, have provided the insurance industry ample growth opportunities. As one of the most dynamic insurance markets in the world, the current analyses can shed some light on the development of the industry in the future.

In the past two decades, China’s P-L insurance market has become more competitive, especially in the commercial property and liability insurance market. Meanwhile, more
companies have underwritten homeowner’s insurance and auto insurance in 2013 than in 2008. This can be attributed to China’s gradual issuance of new licenses to insurance companies and the step-by-step opening of the market to foreign insurers. However, the market is still very concentrated overall and has plenty of opportunity for increased competition.

Domestic insurers and foreign insurers behave differently in this market. Until now, foreign insurers only accounted for a very small market share in China’s P-L insurance industry. Foreign insurers have their own niches in some commercial lines, such as liability insurance and cargo transportation insurance. Foreign insurers operate with much higher expense ratios, mainly due to higher reinsurance expenses and business management expenses. Higher business management expenses might be attributed to the fact that foreign insurers, for a long period of time, could only establish branch offices in big tier I cities, where labor and materials are more expensive. In addition, commercial lines are more demanding in the quality of services, which may increase the acquisition costs and claim adjustment expenses. Foreign insurers have very low underwriting leverage, which implies an inefficient use of equity capital, and good capacity to grow their businesses. Foreign insurers on average cede more than 40 percent of their direct premiums to reinsurers. High reinsurance expenses might be one of the reasons that foreign insurers suffer operating losses. Meanwhile, the low underwriting leverage of foreign insurers does not support the extensive usage of reinsurance as there is little need for surplus relief. Furthermore, the frontier efficiency analyses demonstrate that foreign insurers are less technically efficient than domestic insurers, mainly due to foreign insurers’ lack of scale efficiency.

The relative inefficiency of foreign insurers in China’s P-L insurance market has drawn much attention from the insurers, regulators, and consulting firms. Based on foreign direct
investment (FDI) theory, (developing) countries attract multinationals that are superior at knowledge, management and technology to enhance the productivity of domestic firms and increase economic growth (Javorcik, 2004; Borensztein, et al., 1998). Multinationals are expected to outperform domestic companies in developing markets. The low efficiency of foreign insurers in China contradicts to what is predicted by the theory. In 2013, 50% of foreign P-L insurers recorded significant operating losses. Research finds that technology advantages failed to deliver the expected results, and foreign P-L insurers face many challenges ranging from personnel issues, regulations, domestic competitions, to brand awareness and customer retention, etc. (Ernst & Young, 2014). Analyses from our study provide further information on the issue. Foreign insurers need strategies to be more effective in adapting to China’s insurance market to achieve faster growth and lower expenses.

In the near future, China’s P-L insurance industry will continue its growth, even if the speed of growth may slow down along with the overall economy. The industry will continue to face some challenges, such as maintaining healthy growth while enhancing market competition; managing exceptional and catastrophic risks such as typhoon, floods and earthquakes; and dealing with the nation’s rapidly increasing healthcare expenditures. For foreign insurers, it is essential to find ways to enhance scale economies, cut operating expenses, use equity capital more efficiently, and adjust reinsurance strategies in order to boost overall profitability and operational efficiency.
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### Tables and Figures

#### Table 1. The Chinese Property-Liability Insurance Industry: Market Share by Ownership

| Year | Number of Companies | Total Assets | Total Premiums Written (1) | Number of Foreign Companies (2) | Total Assets: Foreign | Total Premiums Written: Foreign |
|------|---------------------|--------------|---------------------------|---------------------------------|----------------------|-------------------------------|
| 1982 | 2                   | 10,525       | 4,827                     | 1                               | 11                   | 9                             |
| 1992 | 5                   | 115,010      | 55,896                    | 1                               | 57                   | 61                            |
| 2002 | 22                  | 288,810      | 161,334                   | 12                              | 2,129                | 750                           |
| 2008 | 45                  | 423,995      | 246,634                   | 15                              | 9,458                | 3,504                         |
| 2009 | 50                  | 484,806      | 309,919                   | 18                              | 11,461               | 3,986                         |
| 2010 | 51                  | 570,222      | 386,497                   | 19                              | 13,300               | 5,298                         |
| 2011 | 58                  | 702,566      | 449,362                   | 20                              | 14,973               | 6,306                         |
| 2012 | 62                  | 872,229      | 512,953                   | 21                              | 17,978               | 8,031                         |
| 2013 | 64                  | 986,644      | 585,915                   | 21                              | 27,396               | 9,703                         |

Source: China Insurance Regulatory Commission (CIRC) yearbooks 2008-2014, for insurers with positive asset and premium. (1) Total Premiums Written includes reinsurance premiums assumed. (2) Including foreign insurers and joint venture insurers. Premiums and Assets are in millions of RMB adjusted to constant price level using the Consumer Price Index (CPI), with 2010 = 1.0. CPI data come from National Bureau of Statistics of China, [http://data.stats.gov.cn/](http://data.stats.gov.cn/).

#### Table 2. The Chinese Property-Liability Insurance Industry: Insurance Density and Insurance Penetration

| Year | GDP       | Population | Direct Premiums Written | Insurance Density (RMB) | Insurance Penetration (%) |
|------|-----------|------------|-------------------------|-------------------------|--------------------------|
| 1982 | 2,494,622 | 1017       | 4,827                   | 5                       | 0.19                     |
| 1992 | 6,062,023 | 1172       | 55,896                  | 48                      | 0.92                     |
| 2002 | 14,881,281| 1285       | 161,334                 | 126                     | 1.08                     |
| 2008 | 32,209,634| 1328       | 245,467                 | 185                     | 0.76                     |
| 2009 | 35,213,487| 1335       | 308,433                 | 231                     | 0.88                     |
| 2010 | 40,151,280| 1341       | 383,369                 | 286                     | 0.95                     |
| 2011 | 44,890,457| 1347       | 445,881                 | 331                     | 0.99                     |
| 2012 | 48,040,007| 1354       | 509,608                 | 376                     | 1.06                     |
| 2013 | 51,270,665| 1361       | 576,757                 | 424                     | 1.12                     |

Note: Premiums and GDP are in millions of RMB adjusted to constant price level using the Consumer Price Index (CPI), with 2010 = 1.0. GDP and population data come from National Bureau of Statistics of China, [http://data.stats.gov.cn/](http://data.stats.gov.cn/).
### Table 3. Concentration Ratios for the Chinese Property-Liability Insurance Industry

| Year | Assets (%) | Total Premiums Written (%) |
|------|------------|-----------------------------|
|      | Top 1     | Top 4 | Top 10 | Herfindahl | Top 1 | Top 4 | Top 10 | Herfindahl |
| 1982 | 99.9      | 100  | 100    | 9979       | 99.8  | 100  | 100    | 9963       |
| 1992 | 94.0      | 99.5 | 100    | 8850       | 95.9  | 99.6 | 100    | 9204       |
| 2002 | 62.0      | 94.3 | 97.6   | 4642       | 47.5  | 96.8 | 98.0   | 4042       |
| 2008 | 34.7      | 60.1 | 86.3   | 1569       | 42.2  | 72.7 | 88.1   | 2150       |
| 2009 | 35.2      | 62.0 | 83.1   | 1581       | 39.8  | 70.6 | 85.2   | 1975       |
| 2010 | 35.7      | 65.4 | 84.1   | 1689       | 39.9  | 73.0 | 86.4   | 2087       |
| 2011 | 36.0      | 69.7 | 83.9   | 1749       | 36.9  | 72.1 | 87.0   | 1912       |
| 2012 | 30.8      | 64.2 | 83.9   | 1429       | 34.9  | 69.8 | 85.4   | 1772       |
| 2013 | 29.2      | 64.2 | 83.6   | 1363       | 34.4  | 69.6 | 85.1   | 1734       |

Source: Calculated from CIRC yearbook firm data. Based on all the firms in the Chinese property-liability insurance industry.

### Table 4. Simplified Balance Sheet of the Chinese Property-Liability Insurance Industry, 2013

#### Domestic Insurers

| Assets                        | % of Total Assets | Liabilities                                        | % of Total Liability |
|------------------------------|-------------------|----------------------------------------------------|-----------------------|
| Cash and deposits            | 5.85              | Financial assets sold for repurchase               | 4.07                  |
| Other financial assets (1)   | 5.25              | Other financial liability (4)                      | 2.91                  |
| Other receivable (2)         | 4.50              | Reinsurance accounts payable                       | 4.86                  |
| Reinsurance receivable       | 3.67              | Other payable (5)                                  | 9.56                  |
| Recoverable: unearned premiums reserve from reinsurance | 2.87          | Deposits from policyholders                        | 12.12                 |
| Recoverable: loss reserve from reinsurance | 3.48          | Reserve for unearned premiums                      | 34.80                 |
| Long-term deposits           | 22.63             | Reserve for outstanding claims                     | 28.12                 |
| Financial assets for sale    | 20.11             | Other debts (6)                                    | 3.57                  |
| Hold to maturity investments | 11.94             |                                                    |                       |
| Other assets (3)             | 19.7              |                                                    |                       |

#### Total Liabilities 823,694

| Paid-in capital      | 73.34 |
|----------------------|-------|
| Additional paid-in capital | 7.17  |
| Treasury stock       | 0     |
| Earned surplus       | 14.78 |
| Retained surplus     | 0.66  |
| Miscellaneous        | 4.05  |

**Policyholder surplus** 241,071

Total Assets 1,064,765

Total Liabilities and Capital 1,064,765
### Foreign and Joint Venture Insurers

| Assets                                      | % of Total Assets | Liabilities                                      | % of Total Liability |
|---------------------------------------------|-------------------|-------------------------------------------------|----------------------|
| **Cash and deposits**                       | 19.52             | Financial assets sold for repurchase            | 0                    |
| Other financial assets (1)                  | 0.70              | Other financial liability (4)                   | 0.73                 |
| Other receivable (2)                        | 4.66              | **Reinsurance accounts payable**                | 11.72                |
| **Reinsurance receivable**                  |                   | Other payable (5)                               | 3.05                 |
| Recoverable: unearned premiums reserve from reinsurance | 7.15              | Deposits from policyholders                     | 0.02                 |
| Recoverable: loss reserve from reinsurance  | 4.11              | **Reserve for unearned premiums**               | 19.35                |
|                                            |                   | Reserve for outstanding claims                  | 56.33                |
| **Total Liabilities**                       | 21,149            | Other debts (6)                                 | 8.80                 |
| **Long-term deposits**                      | 22.40             | **Total Liabilities**                           | 21,149               |
| Financial assets for sale                   | 3.14              | **Paid-in capital**                             | 120.15               |
| Hold to maturity investments               | 0                 | Additional paid-in capital                      | 5.76                 |
| Other assets (3)                            | 10.17             | Treasury stock                                  | 0                    |
|                                            |                   | Earned surplus                                  | 1.75                 |
|                                            |                   | Retained earnings                               | -28.99               |
|                                            |                   | Miscellaneous                                   | 1.34                 |
| **Policyholder surplus**                    | 9,261             | **Total Liabilities and Capital**               | 30,410               |
| **Total Assets**                            | 30,410            | **Total Liabilities and Capital**               | 30,410               |

Note: Total assets, liability, and policyholders’ surplus are in RMB million and are not adjusted for inflation. (1) “Other financial assets” includes assets such as lending to banks and other financial institutions, trading financial assets, derivative assets, and buying back the sale of financial assets; (2) “Other receivable” includes assets such as interest receivable, premium receivable, and subrogation recovery receivable; (3) “Other assets” includes assets such as long-term stock, statutory deposits, real estate investment, fix assets, intangible asset, deferred tax assets, and miscellaneous asset categories; (4) “Other financial liability” includes liability such as short-term borrowing, loans from other banks, trading financial liabilities, derivative liability, and premiums received in advance; (5) “Other payable” includes items such as service fee and commission payable, wage payable, tax payable, interest payable, claims payable, policyholder's dividends payable, and debt payable; (6) “Other debts” includes long-term borrowing, deferred tax liability, and miscellaneous debt items.
Table 5. Simplified Income Statement for the Chinese Property-Liability Insurance Industry, 2013

### Domestic Insurers

| **Total Revenues** | **567,202** |
|--------------------|-------------|
| Premiums earned    | 521,679     |
| Total Premium income | 639,596    |
| Including: Reinsurance premiums assumed | 7,709 |
| Minus: Reinsurance premiums ceded | 83,108 |
| Minus: Change in unearned premium reserve | 34,809 |
| Investment income (Loss) | 35,930 |
| Including: Affiliated company and joint venture investment income | 76 |
| Profits/losses on changes in fair value | 6,535 |
| Currency exchange gains | -181 |
| Other income | 3,240 |

| **Total Expenses** | **531,370** |
|--------------------|-------------|
| Surrender Payments | 0 |
| Claims Expenses | 352,886 |
| Minus: Claims collected from reinsurers | 41,878 |
| Change in loss reserve | 30,843 |
| Minus: Loss reserves recoverable from reinsurer | 7,254 |
| Policyholders' dividends | 1 |
| Reinsurance expenses | 335 |
| Business taxes and surcharges | 32,718 |
| Service fees and commission expenses | 57,637 |
| Business and management expenses | 122,154 |
| Minus: Ceded reinsurance commissions/expenses | 29,287 |
| Impairment expenses | 2,520 |
| Miscellaneous | 10,695 |

**Operating profit/loss** | **35,832** |

| **Total profit/loss before tax** | **36,180** |
| Minus: Income tax | **8,679** |

**Net profit/loss** | **27,501** |

### Foreign and Joint Venture Insurers

| **Total Revenues** | **6,632** |
|--------------------|-------------|
| Premiums earned | 6,157 |
| Total Premium income | 10,770 |
| Including: Reinsurance premiums assumed | 2,457 |
| Minus: Reinsurance premiums ceded | 3,770 |
| Minus: Change in unearned premium reserve | 843 |
| Investment income (Loss) | 386 |
| Including: Affiliated company and joint venture investment income | 0 |
| Profits/losses on changes in fair value | 0 |
| Currency exchange gains | -54 |
|                                |       |
|--------------------------------|-------|
| Other income                  | 143   |
| **Total Expenses**            | **7,302** |
| Surrender Payments            | 0     |
| Claims Expenses               | 4,373 |
| Minus: Claims collected from reinsurers | 1,512 |
| Change in loss reserve        | 6,442 |
| Minus: Loss reserves recoverable from reinsurer | 5,862 |
| Policyholders' dividends      | 0     |
| Reinsurance expenses          | 653   |
| Business taxes and surcharges | 375   |
| Service fees and commission expenses | 780   |
| Business and management expenses | 2,764 |
| Minus: Ceded reinsurance commissions/expenses | 802 |
| Impairment expenses           | 29    |
| Miscellaneous                 | 62    |
| **Operating profit/loss**     | -670  |
| Total profit/loss before tax  | -632  |
| Minus: Income tax             |       |
| **Net profit/loss**           | -697  |

Note: Numbers in the table are in millions of RMB and are not adjusted for inflation.
Table 6. Chinese Property-Liability Insurance Industry: Direct Premiums Written by Line (% of Total)

### Domestic Insurers

| Line of Insurance           | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Number of Firms            | 30    | 31    | 33    | 37    | 41    | 42    |
| Commercial property insurance | 8.36  | 7.11  | 6.53  | 6.67  | 6.08  | 5.61  |
| Homeowners insurance       | 0.54  | 0.59  | 1.35  | 0.59  | 0.57  | 0.54  |
| Automobile insurance       | 70.36 | 72.74 | 74.50 | 73.84 | 73.43 | 73.68 |
| Liability insurance        | 3.09  | 2.87  | 2.66  | 2.88  | 3.06  | 3.12  |
| Construction risks insurance | 1.56  | 1.72  | 1.77  | 1.51  | 1.09  | 1.16  |
| Cargo transportation insurance | 2.56  | 1.81  | 1.70  | 1.79  | 1.54  | 1.35  |
| Hull insurance             | 1.60  | 1.40  | 1.26  | 1.19  | 1.01  | 0.83  |
| Credit and guarantee insurance | 1.57  | 2.52  | 2.88  | 3.57  | 3.11  | 4.24  |
| Specialty insurance        | 1.15  | 0.81  | 0.66  | 0.79  | 0.97  | 0.61  |
| Agriculture insurance      | 4.48  | 4.51  | 3.40  | 3.72  | 4.02  | 4.62  |
| Direct premiums written: Total (Million RMB) | 242,061 | 295,923 | 398,604 | 466,049 | 544,188 | 638,335 |
| % Change (year to year)    | 22.3  | 34.7  | 16.9  | 16.8  | 17.3  | 22.3  |

### Foreign and Joint Venture Insurers

| Line of Insurance          | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Number of Firms            | 15    | 18    | 19    | 20    | 21    | 21    |
| Commercial property insurance | 25.52 | 28.54 | 28.02 | 26.13 | 23.29 | 21.46 |
| Homeowners insurance       | 0.17  | 0.15  | 0.19  | 0.16  | 0.20  | 0.46  |
| Automobile insurance       | 3.34  | 7.02  | 6.58  | 15.23 | 17.30 | 23.93 |
| Liability insurance        | 22.39 | 20.41 | 21.35 | 18.89 | 17.76 | 15.58 |
| Construction risks insurance | 8.67  | 5.53  | 6.64  | 5.15  | 4.51  | 4.34  |
| Cargo transportation insurance | 28.09 | 22.21 | 24.33 | 21.11 | 17.19 | 13.13 |
| Hull insurance             | 0.81  | 0.22  | 1.35  | 0.72  | 0.53  | 0.58  |
| Credit and guarantee insurance | 1.99  | 2.36  | 2.18  | 1.72  | 1.11  | 1.10  |
| Specialty insurance        | 0.60  | 0.68  | 0.98  | 1.05  | 0.62  | 0.30  |
| Agriculture insurance      | 0.24  | 0.46  | 1.12  | 1.38  | 7.91  | 11.24 |
| Direct premiums written: Total (Million RMB) | 3,242 | 3,731 | 4,713 | 6,297 | 8,055 | 10,060 |
| % Change (year to year)    | 15.1  | 26.3  | 33.6  | 27.9  | 24.9  | 22.3  |

Source: China Insurance Regulatory Commission (CIRC) yearbooks 2008-2014; including insurers with positive total direct premiums written. Direct premiums written: Total (Million RMB) is not adjusted for inflation.
Table 7. Profitability of Chinese Property-Liability Insurers, by Ownership (in %)

| Year | Domestic |         |         |         | Foreign |         |         |         | Domestic - Foreign |
|------|----------|---------|---------|---------|---------|---------|---------|---------|-------------------|
|      | ROR      | ROI     | ROE     | ROA     | ROR     | ROI     | ROE     | ROA     | ROR               | ROI    | ROE    | ROA    |
|      | Median   |         |         |         | Median   |         |         |         | Median            |        |        |        |
| 2008 | -19.05   | 3.99    | -32.11  | -9.76   | -53.67  | 3.30    | -10.51  | -7.81   | 34.62             | 0.69   | -21.60 | -1.95  |
| 2009 | 1.80     | 4.21    | 5.10    | 0.94    | -28.01  | 2.15    | -5.62   | -4.19   | 29.81             | 2.06   | 10.72  | 5.13   |
| 2010 | 4.13     | 3.90    | 10.24   | 2.94    | -25.43  | 1.84    | -5.11   | -3.01   | 29.56             | 2.06   | 15.35  | 5.95   |
| 2011 | 4.88     | 2.89    | 7.10    | 2.18    | -15.06  | 2.72    | -2.10   | -1.19   | 19.94             | 0.17   | 9.20   | 3.37   |
| 2012 | 4.30     | 4.08    | 5.19    | 2.11    | -3.74   | 3.32    | -1.17   | -0.80   | 8.04              | 0.76   | 6.36   | 2.91   |
| 2013 | 2.15     | 4.78    | 3.51    | 1.13    | -12.78  | 3.22    | -0.89   | -0.08   | 14.93             | 1.56   | 4.40   | 1.21   |
| Mean |          |         |         |         | Median   |         |         |         | Median            |        |        |        |
| 2008 | -36.34   | 3.34    | -27.47  | -8.38   | -73.63  | 3.54    | -13.05  | -6.18   | 37.29             | -0.20  | -14.42 | -2.20  |
| 2009 | -11.92   | 3.89    | -0.75   | -1.08   | -47.86  | 2.22    | -7.94   | -3.91   | 35.94             | 1.67   | 7.19   | 2.83   |
| 2010 | -0.62    | 3.41    | 9.07    | 1.74    | -47.65  | 1.92    | -12.91  | -4.69   | 47.03             | 1.49   | 21.98  | 6.43   |
| 2011 | -8.95    | 2.83    | 0.80    | 0.94    | -38.40  | 2.60    | -12.64  | -3.87   | 29.45             | 0.23   | 13.44  | 4.81   |
| 2012 | -5.98    | 4.02    | 4.12    | 1.18    | -21.07  | 3.26    | -9.10   | -3.24   | 15.09             | 0.76   | 13.22  | 4.42   |
| 2013 | -15.12   | 4.54    | 2.04    | 0.08    | -15.21  | 2.79    | -11.75  | -3.71   | 0.09              | 1.75   | 13.79  | 3.79   |

Note: ROR: Pretax return on revenues, defined as net income before tax/premiums earned; ROR: Yield on invested assets, defined as investment income/total invested assets (average of beginning and end-of-year); ROE: Return on equity, defined as net income/policyholders’ surplus (average of beginning and end-of-year); and ROA: Return on assets, defined as net income before tax/total assets (average of beginning and end-of-year).

Table 8. Major Financial Ratios of Chinese Property-Liability Insurers, by Ownership (in %)

| Year | Domestic |         |         |         | Foreign |         |         |         | Domestic - Foreign |
|------|----------|---------|---------|---------|---------|---------|---------|---------|-------------------|
|      | Capacity Ratio | Total Expense Ratio | Liquidity ratio | Capacity Ratio | Total Expense Ratio | Liquidity ratio | Capacity Ratio | Total Expense Ratio | Liquidity ratio |
|      | Median     |         |         |         | Median   |         |         |         | Median            |        |        |        |
| 2008 | 184.8     | 47.3    | 129.2   | 25.0    | 75.4    | 215.5   | 159.9   | -28.1   | 86.3              |
| 2009 | 202.2     | 42.2    | 129.1   | 27.5    | 77.4    | 215.0   | 174.7   | -35.2   | 85.9              |
| 2010 | 255.3     | 36.6    | 129.4   | 43.8    | 63.5    | 197.1   | 211.5   | -26.9   | 67.7              |
| 2011 | 157.9     | 37.2    | 139.6   | 29.2    | 58.5    | 192.4   | 128.7   | -21.3   | 52.8              |
| 2012 | 148.0     | 44.0    | 155.8   | 53.2    | 57.9    | 167.5   | 94.9    | -13.9   | 11.7              |
| 2013 | 169.8     | 43.2    | 152.2   | 66.7    | 59.3    | 137.8   | 103.2   | -16.1   | 14.4              |
| Mean |          |         |         |         | Median   |         |         |         | Median            |        |        |        |
| 2008 | 222.6     | 51.2    | 163.4   | 34.1    | 88.3    | 297.3   | 188.5   | -37.1   | 133.9             |
| 2009 | 228.7     | 47.0    | 175.3   | 34.4    | 84.5    | 309.8   | 194.2   | -37.5   | 134.5             |
| 2010 | 245.6     | 38.9    | 151.2   | 61.2    | 74.4    | 279.4   | 184.3   | -35.6   | 128.2             |
| 2011 | 203.0     | 45.5    | 225.7   | 58.1    | 66.5    | 281.0   | 144.9   | -21.0   | 55.3              |
| 2012 | 155.9     | 51.4    | 231.4   | 67.1    | 56.7    | 210.1   | 88.9    | -5.3    | 21.3              |
| 2013 | 172.7     | 48.6    | 191.5   | 85.4    | 63.3    | 174.7   | 87.3    | -14.8   | 16.8              |

Note: Capacity ratio: Net premiums written/surplus; total expense ratio: Total operating expenses/net premiums written; and liquidity ratio: Assets/liability.
Table 9. Operating Performance of Chinese Property-Liability Insurers, by Ownership (in %)

|          | Domestic |            |            |            |            |
|----------|----------|------------|------------|------------|------------|
|          | Loss ratio | Expense ratio | Combined ratio | Investment Ratio | Operating Ratio |
| Median   | 2008: 61.04 | 40.49 | 105.56 | 6.22 | 98.95 |
|          | 2009: 59.12 | 34.62 | 97.95 | 5.74 | 84.04 |
|          | 2010: 54.71 | 29.57 | 83.66 | 4.38 | 78.49 |
|          | 2011: 57.66 | 32.01 | 89.26 | 4.75 | 83.19 |
|          | 2012: 60.14 | 35.76 | 93.85 | 6.23 | 89.23 |
|          | 2013: 60.37 | 36.09 | 94.84 | 6.48 | 86.59 |
| Mean     | 2008: 60.27 | 43.65 | 110.29 | 8.57 | 98.22 |
|          | 2009: 57.65 | 38.65 | 103.62 | 9.38 | 83.48 |
|          | 2010: 52.87 | 32.02 | 84.99 | 8.05 | 76.44 |
|          | 2011: 54.71 | 39.11 | 97.76 | 8.37 | 83.48 |
|          | 2012: 58.3 | 44.2 | 104.73 | 37 | 91.64 |
|          | 2013: 58.3 | 39.35 | 100.1 | 21.42 | 84.49 |

|          | Foreign |            |            |            |            |
|----------|----------|------------|------------|------------|------------|
|          | Loss ratio | Expense ratio | Combined ratio | Investment Ratio | Operating Ratio |
| Median   | 2008: 57.85 | 72.77 | 142.74 | 16.78 | 122.81 |
|          | 2009: 57.64 | 71.85 | 137.61 | 11.76 | 122.16 |
|          | 2010: 44.61 | 56.13 | 114.9 | 10.78 | 105.69 |
|          | 2011: 45.39 | 51.99 | 100.37 | 12.16 | 83.36 |
|          | 2012: 58.9 | 46.75 | 107.2 | 9.49 | 98.17 |
|          | 2013: 68.48 | 50 | 119.37 | 7.65 | 116.43 |
| Mean     | 2008: 76.22 | 78.56 | 156.4 | 46.12 | 109.16 |
|          | 2009: 61.72 | 75.96 | 151.57 | 30.89 | 119.37 |
|          | 2010: 62.89 | 66.29 | 138.52 | 96.04 | 107.31 |
|          | 2011: 49.35 | 58.47 | 106.58 | 24.04 | 89.24 |
|          | 2012: 66.36 | 49.32 | 115.59 | 12.94 | 102.45 |
|          | 2013: 76.25 | 55.3 | 131.73 | 11.08 | 117.33 |

|          | Domestic - Foreign |            |            |            |            |
|----------|--------------------|------------|------------|------------|------------|
|          | Loss ratio | Expense ratio | Combined ratio | Investment Ratio | Operating Ratio |
| Median   | 2008: 3.19 | -32.28 | -37.18 | -10.56 | -23.86 |
|          | 2009: 1.48 | -37.23 | -39.66 | -6.02 | -38.12 |
|          | 2010: 10.1 | -26.56 | -31.24 | -6.40 | -27.20 |
|          | 2011: 12.27 | -19.98 | -11.11 | -7.41 | -0.17 |
|          | 2012: 1.24 | -10.99 | -13.35 | -3.26 | -8.94 |
|          | 2013: -8.11 | -13.91 | -24.53 | -1.17 | -29.84 |
| Mean     | 2008: -15.95 | -34.91 | -46.11 | -37.55 | -10.94 |
|          | 2009: -4.07 | -37.31 | -47.95 | 62.69 | -35.89 |
|          | 2010: -10.02 | -34.27 | -53.53 | -87.99 | -30.87 |
|          | 2011: 5.36 | -19.36 | -8.82 | 0.33 | -5.76 |
|          | 2012: -4.55 | -5.12 | -10.86 | 24.06 | -10.81 |
|          | 2013: -17.95 | -15.95 | -31.63 | 10.34 | -32.84 |

Note: Loss ratio: loss incurred/premiums earned; expense ratio: underwriting and other business expenses/net premiums written; combined ratio: loss ratio + expense ratio + policyholder dividend ratio; investment income ratio: net investment income/premiums earned; and operating ratio: combined ratio - investment income ratio.
Table 10. Chinese Property-Liability Insurance Industry Loss Ratio by Line, 2008-2013 (in %)

### Domestic Insurers

| Line of Insurance            | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|------------------------------|-------|-------|-------|-------|-------|-------|
| **Median**                   |       |       |       |       |       |       |
| Commercial property insurance| 80.2  | 45.9  | 40.0  | 38.4  | 44.6  | 54.0  |
| Homeowners insurance         | 19.2  | 16.4  | 14.5  | 16.6  | 16.5  | 17.6  |
| Automobile insurance         | 59.9  | 60.7  | 56.0  | 58.0  | 61.3  | 59.1  |
| Liability insurance          | 40.1  | 40.7  | 41.6  | 38.0  | 44.6  | 37.4  |
| Construction risks insurance | 29.8  | 15.9  | 19.5  | 28.6  | 32.2  | 21.6  |
| Cargo transportation insurance| 40.1  | 31.7  | 33.0  | 32.2  | 40.1  | 49.2  |
| Hull insurance               | 31.2  | 34.9  | 29.4  | 38.4  | 41.3  | 35.5  |
| Credit and guarantee insurance| 9.9   | 4.3   | 2.1   | 4.7   | 7.6   | 18.1  |
| Specialty insurance          | 13.1  | 62.8  | 0.0   | 23.6  | 0.6   | 0.2   |
| Agriculture insurance        | 51.0  | 61.9  | 59.0  | 48.5  | 54.4  | 59.5  |
| Short-term health insurance  | 89.1  | 90.4  | 78.8  | 70.2  | 57.5  | 76.8  |
| Accident injury insurance    | 38.8  | 35.4  | 30.0  | 29.2  | 29.7  | 32.2  |
| Other                        | 13.2  | 22.2  | 15.5  | 30.8  | 14.0  | 23.2  |
| **Mean**                     |       |       |       |       |       |       |
| Commercial property insurance| 73.4  | 49.4  | 41.2  | 42.2  | 45.2  | 52.0  |
| Homeowners insurance         | 36.8  | 24.2  | 28.1  | 20.4  | 21.5  | 27.1  |
| Automobile insurance         | 56.9  | 54.5  | 58.0  | 54.7  | 62.5  | 58.1  |
| Liability insurance          | 37.4  | 38.6  | 40.6  | 39.7  | 43.3  | 38.0  |
| Construction risks insurance | 35.5  | 23.1  | 28.9  | 31.9  | 38.3  | 30.0  |
| Cargo transportation insurance| 44.1  | 39.4  | 39.0  | 34.1  | 41.1  | 55.8  |
| Hull insurance               | 38.5  | 36.8  | 40.9  | 49.3  | 52.0  | 45.7  |
| Credit and guarantee insurance| 50.4  | 72.7  | 29.6  | 23.7  | 40.8  | 41.4  |
| Specialty insurance          | 45.5  | 113.0 | 13.7  | 48.4  | 25.8  | 17.8  |
| Agriculture insurance        | 73.0  | 84.6  | 63.9  | 49.7  | 62.9  | 64.0  |
| Short-term health insurance  | 88.7  | 98.9  | 98.5  | 65.5  | 76.2  | 87.6  |
| Accident injury insurance    | 35.2  | 35.5  | 30.4  | 28.1  | 31.9  | 31.3  |
| Other                        | 52.0  | 33.5  | 49.5  | 32.8  | 27.1  | 49.6  |

### Foreign Insurers

| Line of Insurance            | 2008  | 2009  | 2010  | 2011  | 2012  | 2013  |
|------------------------------|-------|-------|-------|-------|-------|-------|
| **Median**                   |       |       |       |       |       |       |
| Commercial property insurance| 54.6  | 40.4  | 29.6  | 24.8  | 34.6  | 60.4  |
| Homeowners insurance         | 39.5  | 25.6  | 0.0   | 5.5   | 11.9  | 13.1  |
| Automobile insurance         | 88.2  | 116.7 | 51.1  | 52.8  | 64.7  | 47.9  |
| Liability insurance          | 15.6  | 19.4  | 19.9  | 28.7  | 27.2  | 38.2  |
| Construction risks insurance | 4.3   | 9.5   | 12.2  | 20.0  | 17.3  | 34.9  |
| Insurance Type                        | Mean |
|--------------------------------------|------|
| Cargo transportation insurance       | 65.1 |
| Hull insurance                       | 52.2 |
| Credit and guarantee insurance       | 92.4 |
| Specialty insurance                  | 16.5 |
| Agriculture insurance                 | 132.7|
| Short-term health insurance           | 27.5 |
| Accident injury insurance             | 32.7 |
| Other                                | 2.8  |
|                                      |      |
| Commercial property insurance         | 51.0 |
| Homeowners insurance                  | 43.9 |
| Automobile insurance                  | 22.8 |
| Liability insurance                   | 24.8 |
| Construction risks insurance          | 33.7 |
| Cargo transportation insurance        | 67.0 |
| Hull insurance                       | 81.3 |
| Credit and guarantee insurance        | 32.2 |
| Specialty insurance                  | 133.1|
| Agriculture insurance                 | 32.4 |
| Short-term health insurance           | 75.9 |
| Accident injury insurance             | 17.7 |
| Other                                | 26.3 |

Note: Loss ratio: losses incurred/premiums earned. As premiums earned by line data is not available, we impute it by first calculating the ratio of total premiums earned over direct premiums written for each firm, and then multiply the direct premiums written of each line of business by the calculated ratio to obtain premiums earned by line for each firm.
Table 11. Chinese Property-Liability Insurance Industry: Reinsurance Usage by Ownership

| Year | Domestic Median | Domestic Mean | Foreign Median | Foreign Mean | Domestic – Foreign Median | Domestic – Foreign Mean |
|------|----------------|---------------|----------------|--------------|--------------------------|------------------------|
|      | % Reinsurance ceded/DPW | % Reinsurance assumed/DPW | % Reinsurance recoverable/Asset | % Reinsurance payable/ Liability | % Reinsurance ceded/DPW | % Reinsurance assumed/DPW | % Reinsurance recoverable/Asset | % Reinsurance payable/ Liability |
| 2008 | 14.08 | 0.15 | 5.87 | 2.54 | 53.2 | 15.8 | 15.08 | 18.53 |
| 2009 | 11.58 | 0.07 | 6.26 | 3.52 | 61.33 | 13.77 | 12.28 | 10.2 |
| 2010 | 11.97 | 0.09 | 7.22 | 3.26 | 49.9 | 13.7 | 20.79 | 9.65 |
| 2011 | 11.01 | 0.07 | 6.11 | 3.48 | 44.92 | 15.86 | 17.97 | 12.94 |
| 2012 | 12.26 | 0.21 | 4.68 | 3.39 | 50.76 | 20.81 | 24.84 | 12.12 |
| 2013 | 9.46 | 0.16 | 5.78 | 2.46 | 62 | 24.43 | 22.23 | 9.83 |
| Average: Median | 11.73 | 0.13 | 5.99 | 3.11 | Average: Mean | 12.67 | 2.82 | 7.66 | 5.05 |
| Average: Mean | 13.94 | 0.39 | 10.15 | 5.12 | 51.94 | 26.6 | 15.83 | 16.64 |
| 2008 | 12.98 | 0.31 | 7.77 | 5.02 | 55.28 | 22.99 | 17.73 | 12.56 |
| 2009 | 12.28 | 3.71 | 7.94 | 5.58 | 48.38 | 31.18 | 16.65 | 12.6 |
| 2010 | 12.29 | 4.03 | 7.48 | 5.56 | 49.94 | 30.67 | 18.98 | 15.09 |
| 2011 | 13.77 | 5.18 | 6.11 | 5.44 | 50.99 | 32.9 | 23.89 | 14.01 |
| 2012 | 10.77 | 3.3 | 6.52 | 3.55 | 55.14 | 37.43 | 27.54 | 11.36 |
| Average: Mean | 12.67 | 2.82 | 7.66 | 5.05 |                  |                  |                  |                  |

Note: DPW denotes direct premiums written.
Table 12. Efficiency of Chinese Property-Liability Insurers, by Ownership

**Panel A - All insurers**

|       | Domestic |          |          | Foreign |          |          | Domestic - Foreign |          |          |
|-------|----------|----------|----------|---------|----------|----------|------------------|----------|----------|
|       | TE       | PTE      | SCALE    | TE      | PTE      | SCALE    | TE               | PTE      | SCALE    |
| Mean  |          |          |          |         |          |          |                  |          |          |
| 2008  | 0.88     | 0.90     | 0.97     | 0.83    | 0.92     | 0.91     | 0.05             | -0.02    | 0.06     |
| 2009  | 0.86     | 0.88     | 0.97     | 0.65    | 0.82     | 0.81     | 0.21             | 0.06     | 0.16     |
| 2010  | 0.83     | 0.86     | 0.97     | 0.81    | 0.89     | 0.90     | 0.02             | -0.03    | 0.07     |
| 2011  | 0.80     | 0.86     | 0.92     | 0.68    | 0.91     | 0.75     | 0.12             | -0.05    | 0.17     |
| 2012  | 0.86     | 0.89     | 0.95     | 0.74    | 0.89     | 0.83     | 0.12             | 0.00     | 0.12     |
| 2013  | 0.80     | 0.86     | 0.92     | 0.67    | 0.82     | 0.82     | 0.13             | 0.04     | 0.10     |
| Std   |          |          |          |         |          |          |                  |          |          |
| 2008  | 0.22     | 0.20     | 0.08     | 0.19    | 0.14     | 0.16     | 0.03             | 0.06     | -0.08    |
| 2009  | 0.17     | 0.16     | 0.05     | 0.27    | 0.20     | 0.26     | -0.10            | -0.04    | -0.21    |
| 2010  | 0.19     | 0.18     | 0.04     | 0.22    | 0.19     | 0.14     | -0.03            | -0.01    | -0.10    |
| 2011  | 0.20     | 0.16     | 0.13     | 0.22    | 0.14     | 0.21     | -0.02            | 0.02     | -0.08    |
| 2012  | 0.19     | 0.16     | 0.09     | 0.24    | 0.15     | 0.20     | -0.05            | 0.01     | -0.11    |
| 2013  | 0.23     | 0.17     | 0.15     | 0.28    | 0.20     | 0.24     | -0.05            | -0.03    | -0.09    |

**Panel B: Insurers with data throughout 2008-2013**

|       | Domestic |          |          | Foreign |          |          | Domestic - Foreign |          |          |
|-------|----------|----------|----------|---------|----------|----------|------------------|----------|----------|
|       | TE       | PTE      | SCALE    | TE      | PTE      | SCALE    | TE               | PTE      | SCALE    |
| Mean  |          |          |          |         |          |          |                  |          |          |
| 2008  | 0.88     | 0.89     | 0.97     | 0.83    | 0.92     | 0.91     | 0.05             | -0.03    | 0.06     |
| 2009  | 0.85     | 0.87     | 0.96     | 0.60    | 0.81     | 0.77     | 0.25             | 0.06     | 0.19     |
| 2010  | 0.87     | 0.89     | 0.98     | 0.77    | 0.87     | 0.89     | 0.10             | 0.02     | 0.09     |
| 2011  | 0.89     | 0.93     | 0.96     | 0.71    | 0.90     | 0.79     | 0.18             | 0.03     | 0.17     |
| 2012  | 0.92     | 0.94     | 0.97     | 0.75    | 0.86     | 0.86     | 0.17             | 0.08     | 0.11     |
| 2013  | 0.88     | 0.90     | 0.97     | 0.70    | 0.81     | 0.86     | 0.18             | 0.09     | 0.11     |
| Std   |          |          |          |         |          |          |                  |          |          |
| 2008  | 0.22     | 0.20     | 0.09     | 0.19    | 0.14     | 0.16     | 0.03             | 0.06     | -0.07    |
| 2009  | 0.18     | 0.17     | 0.06     | 0.27    | 0.20     | 0.27     | -0.09            | -0.03    | -0.21    |
| 2010  | 0.11     | 0.11     | 0.03     | 0.22    | 0.20     | 0.15     | -0.11            | -0.09    | -0.12    |
| 2011  | 0.11     | 0.09     | 0.06     | 0.20    | 0.15     | 0.19     | -0.09            | -0.06    | -0.13    |
| 2012  | 0.11     | 0.09     | 0.06     | 0.24    | 0.16     | 0.17     | -0.13            | -0.07    | -0.11    |
| 2013  | 0.15     | 0.12     | 0.06     | 0.20    | 0.20     | 0.00     | -0.05            | -0.08    | 0.06     |

Note: TE: technical efficiency; PTE: pure technical efficiency; and SCALE: scale efficiency
Figure 1. Chinese Property-Liability Insurance: Number of Firms by Line of Business