



**CATOLICA
LISBON**
BUSINESS & ECONOMICS

CREDIT RISK ASSESSMENT & ANALYSIS REPORT

PING AN

Finance · Technology

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Introduction

Ping An Insurance Group was founded in 1988 in Shenzhen, China. Ping An was part of the first chapter in China’s economic miracle. It was not only the first joint-stock company in China but also offered the first individual life insurance policy.

Company Overview

Starting from the insurance sector, in 1998 Ping An has expanded its activities into the banking sector, marking an important turning point. Since then, Ping An has never stopped and today is considered one of the most important holding companies in the world, operating in many sectors, such as, Insurance, Banking, Trust, Securities, Asset Management and Technology. Through its technology department, the company is developing new solutions and patents with AI, blockchain and cloud technology, making innovation the real workhorse of the next decade. Currently Ping An has 362 000 employees and it’s ranked 21st on the Fortune Global 500 List with a market capitalization around \$155 billion and a revenue increase in the last 4 years culminating with \$174 billion in 2020.

Ping An faces many other industries by offering a multitude of different services through subsidiaries. For example, it operates in the health care ecosystem through companies such as Ping An Good Doctor and Ping An Life.

Other important sectors in which Ping An operates through subsidiaries are the Auto Services Ecosystem and Smart City Ecosystem. All these activities make clear how Ping An revenues are the results of a wide range of different sectors and businesses, thanks to an innovation based industrial model.

Industry Overview

Ping An can be considered an important pillar of the insurance sector, especially in Asia, which of course experienced a hit due to Covid-19 pandemic. The sector rapidly recovered thanks to measures and innovations that have improved cost-efficiency, without forgetting the help that financial institutions have received from various governments around the globe. Government programs aimed at ensuring that people have enough money to live on, for example, have helped to keep bank accounts and insurance policies open, while financial assistance to corporations has limited the magnitude of stock price drops. The basic premise is that the presence of a functional financial system is a crucial requirement for any type of quick economic recovery once the epidemic is ended. M&A is really important in this market, allowing firms to build a strong network of relationships and expanding their business portfolio outside the insurance sector.

Fig.1- Chinese insurance sector

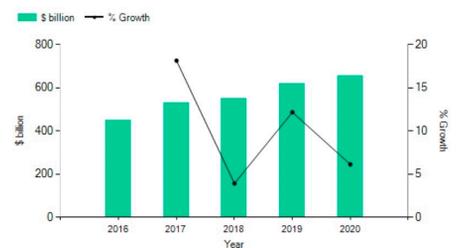


Fig.2-Forces driving competition in the insurance market in China, 2020



SWOT Analysis

Strengths

- **Distribution and Reach:** huge number of stores backed up by a strong distribution network that ensures that its products are easily accessible in a timely way
- **Broad network:** In FY2020, Ping An not only served 218.4 million customers but also had 545.3 M app users and 598 million internet users
- **Automation:** of various stages of production enabling for more efficient resource utilization, cost reduction, consistency in product quality and the capacity to scale up and down activities in response to market demand.
- **Skilled and Diversified Labor force:** heavy investment in staff training, resulting in highly skilled and motivated personnel
- **Penetrating new markets:** innovation to successfully develop new products and expand into new areas.
- **Business Diversity:** Well diversified business operations with large and diverse product portfolio and a number of unique product offerings

Threats

- **Competition:** technological developments by competitors and new entrants are decreasing Ping An's overall market share
- **Exchange Rate:** fluctuation of exchange rates affect their international sales
- **Political Uncertainty and Regulatory Changes:** can be limiting to performance. China's insurance regulatory structure is facing considerable changes, which could increase the firm's costs.
- **Threatening war:** possible consequences for both China and the world arising from the escalation of the conflict between Ukraine and Russia
- **Fluctuation of interest rates:** Ping An's investment portfolio contains interest rate-sensitive investments including municipal and corporate bonds, which are highly sensitive to monetary policies of government, domestic and international economic and political conditions.

Weaknesses

- **R&D:** Even though Ping An spends more on R&D than the industry average, it spends far less than a select players who have gained a considerable competitive edge as a result of their innovative products
- **Quality Control:** lower budget for the quality control department than its competitors, which can lead to inconsistency and the risk of quality loss
- **Highly centralized decision-making process:** decreases the efficiency of operations by prolonging them
- **Excessive dependence on the domestic market:** Ping An's operations in Mainland China account for 95% of the company's revenue. The firm's vulnerabilities to regional economic, social, and political situations increases when it is reliant on a particular geographic region

Opportunities

- **Strategic Initiatives:** Strategic initiatives remain an important aspect of the company's growth strategy. In July 2021 Ping An-Shionogi Co., Ltd, a joint venture between the firm and Shionogi & Co., Ltd, was established in Shanghai, China
- **Chinese payments industry:** possible growth opportunities from the growing cards and payments channel in China. The rise of digital-only banks, expanding population, and growth in nominal GDP per capita are expected to stimulate growth in cards and payment channels.
- **Online Costumers:** The corporation has invested a lot of money into the internet platform in the last few years, gaining access to a new sales channel. In the coming years, the corporation can capitalize on this opportunity by better understanding its customers and meeting their demands through big data analytics
- **Expansion of Chinese banking industry:** promising prospects for the industry, with projections of CNY 5,385.45 billion in 2023. Ping An will likely benefited from this market expansion.

Peer Analysis

Our peer selection has been made following different criteria, that allow us to perform, depending on the competitor, a right comparison with Ping An. **China Life Insurance Co Ltd** was selected based on **total revenues, total assets, total liabilities** and **market capitalization**. **PICC Property and Casualty Co Ltd** was selected based on **EBITDA margin**, and last but not least, **China Pacific Insurance Group Co Ltd** was selected based on **EBITDA margin, total assets** and **market capitalization**. Furthermore, all 3 companies are based in China, and they all operate in the financial products and services market as Ping An. As we can see from our analysis (appendix 3.) Ping An is the biggest company (in relation to market capitalization) in comparison to these 3 competitors, followed by China Life Insurance Co Ltd, China Pacific Insurance Group Co Ltd and then PICC Property and Casualty Co Ltd.

Financial Reports' Analysis

Balance Sheet

Ping An's **balance sheet** has been growing every year since 2016, reflecting the development of its traditional *Life/Health Insurance* business, as well as its dynamic *banking segment*, through the implementation of digital platforms connecting products/services across business segments (**connecting Fintech and Healthtech**).

| Balance Sheet (in Millions CNY) | 2021 F | 2020 | 2019 | 2018 | 2017 | 2016 |
|---|------------------|------------------|------------------|------------------|------------------|------------------|
| Goodwill | 23,280 | 23,031 | 20,927 | 20,520 | 20,507 | 20,639 |
| Tangible Fixed Assets | 55,035 | 58,021 | 59,203 | 45,371 | 43,037 | 36,147 |
| Intangibles Assets | 29,481 | 27,490 | 27,787 | 29,383 | 33,428 | 36,550 |
| Long Term Investments | 8,505,400 | 7,853,595 | 6,717,429 | 5,769,326 | 4,984,038 | 4,132,841 |
| Other Long Term Assets (net of Other Long Term Liab.) | -855,419 | -693,877 | -573,070 | -552,675 | -482,040 | -329,474 |
| Working Capital | 18,598 | -254,249 | -153,878 | -180,710 | -135,693 | -118,465 |
| Total Operating Assets | 7,776,375 | 7,014,011 | 6,098,398 | 5,131,215 | 4,463,277 | 3,778,238 |
| Net Debt | 4,421,999 | 3,985,140 | 3,482,801 | 2,974,999 | 2,593,818 | 2,232,230 |
| Insurance Reserves | 2,477,580 | 2,040,966 | 1,763,227 | 1,472,573 | 1,281,542 | 1,058,547 |
| Minority Interest | 270,835 | 225,345 | 179,209 | 127,135 | 114,566 | 103,012 |
| Equity | 843,417 | 762,560 | 673,161 | 556,508 | 473,351 | 383,449 |
| Total Debt & Equity | 7,776,375 | 7,014,011 | 6,098,398 | 5,131,215 | 4,463,277 | 3,778,238 |

| Key Ratios | 2021 F | 2020 | 2019 | 2018 | 2017 | 2016 |
|-------------------------|-------------|--------------|--------------|--------------|--------------|-------------|
| NOPAT Margin | 13.1% | 15.1% | 15.7% | 13.8% | 12.4% | 11.4% |
| Asset Turnover | 14.7% | 17.3% | 19.1% | 19.0% | 20.0% | 18.9% |
| Operating ROA | 1.9% | 2.6% | 3.0% | 2.6% | 2.5% | 2.1% |
| Interest After Tax/Debt | 0.6% | 0.6% | 0.5% | 0.5% | 0.4% | 0.5% |
| Leverage | 396.9% | 403.4% | 408.6% | 435.2% | 441.2% | 459.1% |
| ROE | 7.4% | 10.9% | 13.1% | 12.0% | 11.6% | 9.8% |

On the assets' side, growth is driven by « *Long Term Investments* », which mainly include **financial assets** (insurance products, loans and advances to customers, etc ...). The accounting treatment of financial assets is a critical accounting policy for Ping An, since they represent 55% of the total assets in 2020, **as reported** by the company. Also informative is to observe a structural tendency for a **negative working capital**, although not surprising since main *operating assets and liabilities* are **non-current** (related to financial assets and policy liabilities). The key aspects (ie- operational risk) of the Balance Sheet management for Ping An are the **matching of assets/liabilities' maturities**, as well as the appropriate provisioning of **Expected Credit Losses** finding their counterpart in Equity (impacting *Reserves*). In terms of Balance sheet's financing, the company **relies heavily on debt instruments**, namely bonds (Leverage > 400% over the last 5 years). The operating ROA shows a slowly increasing pattern, averaging 2.6% over the last 5 years, resulting from an **improvement in the NOPAT Margin** (cost efficiency), outweighing a lower asset turnover. The **return for shareholders (ROE)**, including insurance reserves as an Equity item (*own judgement*) is slightly improving, **averaging 11.5%**, but still lower than for the selected peers, due to a lower asset turnover and excess leverage. **To conclude**, the Balance sheet is growing organically (positive aspect), but *showing weakness on the financing side*, a source of additional risk, threatening the future ability to issue more debt (**increasing implied/estimated probabilities of default**).

Income Statement and Cash Flow Statement

Ping An's **revenues** have been rising over the last 5 years, increasing by an **average of 10% annually**, pushed by more and more retail customers (+37 M in 2020), captured thanks to the **integrated services' approach** of the group and the national development of internet

| Income Statement (in Millions of CNY) | 2021 F | 2020 | 2019 | 2018 | 2017 | 2016 |
|---|------------------|----------------|----------------|----------------|----------------|----------------|
| Total Revenue | 1,139,455 | 1,211,268 | 1,164,586 | 975,031 | 893,240 | 712,976 |
| SG & A | 329,466 | 269,968 | 279,772 | 325,562 | 251,297 | 212,688 |
| Losses, Benefits & Adjustments | 564,727 | 577,763 | 539,119 | 414,234 | 396,670 | 301,108 |
| Other Operating Expenses | 144,194 | 133,923 | 125,817 | 46,660 | 90,276 | 88,005 |
| Including Impairments | 72,656 | 72,682 | 60,756 | 38 | 41,371 | 46,403 |
| EBITDA | 189,493 | 229,614 | 219,878 | 188,575 | 154,997 | 111,175 |
| Depreciation & Amortization | 14,399 | 14,334 | 14,463 | 6,823 | 5,598 | 4,782 |
| Total OPEX | 1,052,785 | 995,988 | 959,171 | 793,279 | 743,841 | 606,583 |
| EBIT | 175,094 | 215,280 | 205,415 | 181,752 | 149,399 | 106,393 |
| Interest Expense (Net of Investment Income) | 28,614 | 26,436 | 20,098 | 18,227 | 14,623 | 14,068 |
| Net Income Before Taxes | 146,480 | 188,844 | 185,317 | 163,525 | 134,776 | 92,325 |
| Provision for Income Taxes | 21,293 | 28,405 | 20,374 | 42,699 | 34,762 | 22,043 |
| Minority Interest | 22,302 | 16,260 | 14,958 | 13,048 | 10,890 | 9,974 |
| Net Income attributable to the group | 102,885 | 143,999 | 149,407 | 107,404 | 89,088 | 62,994 |

accessibility for chinese people. In terms of segment, **revenue growth** is driven by the **Life/Health insurance**, and the **Banking** businesses.

The company is focused on **leveraging its customer base**, meaning that it seeks to increase the number of contracts per customer. The healthcare *ecosystem* is designed to generate synergies with its core financial businesses in customer retention and acquisition, as well as in product innovation. **SG&A and Insurance losses** constitute the main operating costs, on average **73% of Total Revenue**. Naturally, **impairments** are also an important cost for Ping An, about **5% on average of Total Revenue**. EBITDA is on an improvement path, driven by progressively **better margins** (cost efficiency) and customer acquisition. EBITDA margin is about 18% over the last 5 years. **Net Profit margin** also improved compared to 2016 (from 8.8% to 11.8%). The company's operating performance was not much affected by the COVID pandemic, revenue grew in 2020, but net margins decreased (higher financing costs).

Relatively to cash flows, Ping An has a track record of **net operating cash inflows** with an upward trend, investing cash outflows, consistent with the increase in Total Revenue. Financing operations always end up with net inflows, **caused by more and more debt issuances**. Finally, net change in cash tends to be positive (net inflow).

Debt Structure

Since 2020, Ping An issued 861 billion worth of bonds, especially in 2021 and 2022. The company uses a large portion of issuances to repay existing

| POST-COVID ("Merton Select" entire data) | | |
|--|------------------------|---|
| Maturity | Issued Amount (FV) | Weighted Average Maturity (years) in the sub-categories |
| 1 year or less | 716,470,000,000 | 0.44 |
| >1 year, equal or less than 5 years | 166,800,000,000 | 1.95 |
| > 5 years | 63,000,000,000 | 8.31 |
| Total Debt (FV) | 946,270,000,000 | 1.23 |

debt. In 2021, until half year, investing activities led to a net inflow, suggesting that the company is selling long term assets (investments), it is likely that the company is starting to have some trouble with its debt burden. It is unclear if the company is having important problems with its debt, or if it issued this amount of debt in 2021 because it was already anticipating higher inflation and thus future higher financing costs. We think that both reasons are here at play.

Quantitative Credit Risk Assessment Pre-Covid (2012-2019)

Accounting-Based Models

One possibility to assess credit risk of Ping An is through accounting based-models. The predictions from these type of models are based on financial ratios. Therefore, we should take into consideration that they are past looking and solely assess quantitative parameters when interpreting its insights.

Altman's Z-Score

Altman's Z-Score is a popular credit risk discriminant score and considers the firms' profitability, leverage, liquidity, solvency and activity ratios. Since Ping An is a non-manufacturing firm, we can use the modified Z'-Score formula:

$$Z - \text{Score} = 6.56 * \frac{\text{Current Assets} - \text{Current Liabilities}}{\text{Total Assets}} + 3.26 * \frac{\text{Retained Earning}}{\text{Total Assets}} + 6.72 * \frac{\text{EBIT}}{\text{Total Assets}} + 1.05 * \frac{\text{BV Equity}}{\text{BV Liabilities}}$$

| Ping An | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | Peer Average Pre-Covid |
|----------|--------|--------|--------|--------|--------|--------|--------|--------|------------------------|
| Z'-Score | -1.99 | -2.23 | -2.15 | -1.89 | -1.88 | -1.76 | -1.74 | -1.62 | 0.59 |
| PD | 87.96% | 90.30% | 89.54% | 86.93% | 86.74% | 85.27% | 85.05% | 83.42% | 37.87% |

In this approach, the greater the score, the smaller the probability of default. In Ping An's case (appendix 4.), their negative result indicates a severe financial distress heavily impacted by the first ratio (working capital), and more specifically by the higher increase in current liabilities in comparison to current assets. The other three ratios slightly increase over the period in analysis but not enough to compensate for it. In comparison with its peers, Ping An shows overall worse results. Eventhough their scores are higher, apart from China Life Insurance, all the other peers are also facing financial pressure.

Structural Models

Structural Models, in contrast with accounting-based models, use securities prices as an input. Securities prices should summarize all information available in the market as well as the expectations of investors. Structural Models are therefore assumed as forward-looking. However, these models assume that capital markets are reasonably efficient and that movements in prices are informative, which is not always true.

Corporate Bond Spread

Higher yields demanded by investors reflect mainly market expectations of a higher likelihood of issuer default. Therefore, corporate bond spreads should summarize all available information on the factors that influence the probability of default (PD). To calculate the corporate bond spread for Ping An, we considered 43 unsecured and senior unsecured bonds with a maturity below 10 years. This 10-year window was chosen to have the same time frame for the probabilities of default obtained from each method. We assumed a recovery rate of 40% as suggested by Refinitiv Eikon. Subsequently, with the intention to complete an analysis as precise as possible we just took the Ping An's yields from bonds issued before the Covid-19 pandemic hits, and together with the risk free corresponding maturities from China government bonds we calculated the spread. Finally all previously obtained results allowed us to calculate the probability of default. For the pre covid period (appendix 5.), Ping An obtained the majority of its ratings between B+ and BB-, according to S&P rating (appendix 9.).

ICR Sensitivity Analysis

ICR Sensitivity Analysis was made with the help of a Geometric Brownian Motion simulation. This tool allowed us to create 20,000 simulations on the next 10 years using the average growth and standard deviation of Ping An's Interest Coverage Ratio (ICR) between 2012 and 2019. The average ICR, for each year, was converted into an Implied Cumulative Probability of Default (using Aswath Damodaran's online data library) which consequently gave us a qualitative rating. Using the pre covid period data, the simulation predicts a structural decrease of Ping An ICR based on a negative historical average growth (appendix 6.). Bearing this in mind, the values go from 10.2 to 4.7 through the forecasted 10 years. Nevertheless, we must keep in mind this analysis is highly sensitive to its inputs and normal distribution dependent.

| Pre-Covid | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
|---------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Average | 10.2 | 9.5 | 8.8 | 8.1 | 7.5 | 6.9 | 6.4 | 5.9 | 5.5 | 5.1 | 4.7 |
| Credit rating | AA | AA | A+ | A+ | A+ | A | A | A | A- | A- | A- |
| PD | | 0.02% | 0.09% | 0.19% | 0.31% | 0.44% | 0.61% | 0.78% | 1.03% | 1.15% | 1.27% |

Merton Model

When using the Merton Model to estimate the probability of default, a few key assumptions must be made, some of which are general to the model and others that are specific to Ping An. The first issue to mention is that the Merton Model relies on a Geometric Brownian Motion to simulate future company value. This assumes a log-normal distribution of the changes in value of the company overtime. In this way, we can simulate values through the expression $S_t = S_0 * \exp[(\mu - \sigma^2/2)t + \sigma Wt]$, on which S_0 is the initial value chosen, μ is the mean of historical data, σ is the standard deviation and W is a Wiener process characterized by normally distributed and i.i.d differences is the random component of the formula. After all these steps, we noticed an extreme result regarding the default probability (100%). This is due to the extreme sensitivity to inputs of the Merton Model itself. The causes of these extreme results are undoubtedly attributable to the amount of debt, which is completely disproportionate in relation to the ROA.

| 31/12/2019 | | | | |
|---|--------------------|--------------------|-----------------------------|---------------------|
| PRE-COVID | Entire Debt | Maturity <= 1 year | Maturity > 1 AND <= 5 years | Maturity > 5 years |
| Solver Result for Value of Assets | CNY 11,565,099,136 | CNY 11,466,701,733 | CNY 11,510,010,523 | CNY 950,445,831,607 |
| Solver Result for Volatility of Assets | 9.5% | 9.3% | 9.3% | 31.0% |
| Operating ROA (EBIT/Total Assets) | 2.49% | 2.49% | 2.49% | 2.49% |
| Implied PD | 100.00% | 100.00% | 100.00% | 0.004% |
| Rating (Based on Refinitiv's Table for Structural Models) | CC | CC | CC | AA |

| 18/02/2022 | | | | |
|---|--------------------|--------------------|-----------------------------|--------------------|
| POST-COVID | Entire Debt | Maturity <= 1 year | Maturity > 1 AND <= 5 years | Maturity > 5 years |
| Solver Result for Value of Assets | CNY 13,697,325,682 | CNY 13,592,050,820 | CNY 13,649,439,810 | CNY 1,577,287,528 |
| Solver Result for Volatility of Assets | 10.4% | 10.5% | 10.6% | 0.001% |
| Operating ROA (EBIT/Total Assets) | 2.25% | 2.25% | 2.25% | 2.25% |
| Implied PD | 100.00% | 100.00% | 100.00% | 100.00% |
| Rating (Based on Refinitiv's Table for Structural Models) | CC | CC | CC | CC |

Moody KMV Model

Moody's KMV model, through Distance to Default (DD), allows us to measure the number of standard deviations that a company's asset value needs to change so that the firm defaults in T periods. Therefore, it is optimal to have a distance to default as high as possible. This model overcomes three main Merton Model limitations: the difficulty in estimating V_0 and σ_V ; the normality of the distribution of the assets' returns; and the simplistic debt structure. We analyzed two scenarios, one considering Ping An's total debt, and the other, total liabilities. On the first scenario and for the pre-covid period, Ping An obtained a negative value of distance to default and a very small positive value for the second one, entailing a high probability of default. These results go in line with the Ping An's financial situation previously mentioned and its high levels of leverage.

| Pre-Covid | Considering DEBT VALUE (only) | Considering TOTAL LIABILITIES | |
|---------------------|-------------------------------|-------------------------------|---|
| Distance to default | -39.94 | 3.65 | (Market Value of Assets - DP) / ((Market Value of Assets * Volatility of Assets) * STD + 0.5 * LTD) |
| Default point | 55300000000 | 5,55007E+12 | STD + 0.5 * LTD |
| Short-term Debt | 25000000000 | 3,55038E+12 | Ping An short-term debt (Merton Model pre-covid worksheet) |
| Long-term Debt | 60600000000 | 3,99939E+12 | Ping An long-term debt (Merton Model pre-covid worksheet) |

Credit Default Swaps

Investors can use a credit default swap to protect themselves against the issuer's default risk. We can derive the probability of default using the CDS spread, which indicates the price to be paid for the life of the contract until a possible default, reflecting the issuer's assessed default risk. Since neither Ping An or its Chinese peers have CDS, we selected two US peers, Aflac Inc and Traveler Companies Inc in order to perform this analysis and interlink the results to Ping An. Moreover, we calculated the average spread for the period between 2015 and 2019 for each of the CDS maturities (6M, 1Y, 2Y, 3Y, 4Y, 5Y, 7Y, 10Y, 20Y, 30Y) and added a country specific risk of China. The period analyzed does not start at 2012 as for the other models, since the CDS data initial date is 2015. From that, we calculated the default probability using the formula $\lambda = (s(t))/(1-R)$, considering a 40% recovery rate as suggested by Refinitiv Eikon. Afterwards we applied a weighted average of 49%-51% to Aflac and Traveler respectively, according to their market cap to estimate a value for Ping An (appendix 10.).

For the pre-covid period, as maturities increase, the CDS spread has a tendency to decrease. Moreover, the probabilities of default range from 3,338% (6 months maturity) to 2,004% (30 years maturity) which reflects a significant risk for the company. Nevertheless, we should keep in mind that this analysis is just an estimate for Ping An and does not entail its true values since it does not have its own CDS.

| CDS Maturity | Probabilities of Default | | | | | | | | | |
|--------------|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 6M | 1Y | 2Y | 3Y | 4Y | 5Y | 7Y | 10Y | 20Y | 30Y |
| Pre-Covid | 3,338% | 2,818% | 2,982% | 2,626% | 3,145% | 3,105% | 3,262% | 3,254% | 2,052% | 2,004% |

Quantitative Credit Risk Assessment Post-Covid (2020-2021)

Accounting-Based Models

Altman's Z-Score

The same Z-Score Model was used to assess the creditworthiness of Ping An during the COVID19 pandemic for the years of 2020 and 2021. The results are negative and similar to the pre-covid period ones, still indicating the financial distress situation of the firm. The mild improvements of the three last ratios (appendix 4.) were still not enough to outweigh the impact of the first one. Moreover, Ping An had registered impairments the years before already accounting for possible losses to be incurred in the future. This can explain the absence of a notorious difference between the two periods analysed. In comparison with its peers, Ping An remained the worse among all.

| Ping An | 2020 | 2021 | Peer Average Post-Covid |
|----------|--------|--------|-------------------------|
| Z'-Score | -1.62 | -1.44 | 0.59 |
| PD | 83.45% | 80.82% | 36.62% |

Structural Models

Corporate Bond Spread

For the post covid period, we used the same selection criteria as the pre pandemic period. Summarizing, we decided to take the Ping An yield from all the bonds ever issued in order to avoid exaggerate volatility caused by the smaller sample of 2020 and 2021 would have caused. Then we took the risk-free China government bonds with the relevant maturities in order to compute the spread, which has been used to get the probability of default. For this period, Ping An's rating was mainly between B+ and BB+ (appendix 5).

ICR Sensitivity Analysis

The same ICR Analysis was made on the next 10 years but having as a base the average growth and standard deviation of Ping An's Interest Coverage Ratio now also including the pos-covid period. The decreasing trend was continued and sharpened, going from an average of 8.1, having 2020 as starting point, to 2.6 on the forecasted 10 years. Translating to ratings, Ping An goes from A+ to B+. The worse values in comparison to pre covid analysis was a result of the high indebtedness of Ping An that was strongly reinforced from 2020 onwards.

| Post-Covid | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
|---------------|-------|-------|--------|-------|-------|-------|--------|-------|--------|--------|-----|
| Average | 8.1 | 7.3 | 6.5 | 5.8 | 5.2 | 4.6 | 4.1 | 3.7 | 3.3 | 2.9 | 2.6 |
| Credit rating | A+ | A | A | A- | A- | A- | BBB | BB+ | BB | B+ | B+ |
| PD | 0.05% | 0.14% | 25.00% | 0.36% | 0.66% | 1.62% | 82.00% | 8.81% | 20.17% | 21.37% | |

Merton Model

The already high debt levels of Ping An pre-Covid were causing financial distress to the company and during and after the Covid pandemic the situation has worsened. Liabilities (Debt only) on December 31st 2019 were equal to CNY 85,600,000,000 and after less than three years the debt as reached the incredible amount of CNY 946,270,000,000 on February 18th 2022.

The post Covid forecasts (appendix 7.) from the Merton Model showed us a 100% probability of default based on all the debt maturing timeframes (<1 year, 1<5 years, >5 years) due to the high amount of debt and a relative low ROA. The low amount of ROA is caused by the continuous increase of total assets (CNY 8,222,929,000 in 2019 to CNY 9,527,870,000 in 2020) , which is not followed by a relative increase in the net income level. (CNY 149,407,000 in 2019 to CNY 143,099,000 in 2020) These results highlight the Merton's strong sensibility to inputs. Therefore in our opinion, these results can't be reliable for a precise and efficient analysis.

Moody KMV Model

The same Moody's KMV model was applied for the pos-covid period, obtaining worse values than for pre covid. Due to its high levels of leverage, during post covid period Ping An has been issuing bonds in bulk to repay its existing debt, which as consequence increased Ping An's Debt value and total liabilities.

| Pos-Covid | Considering DEBT VALUE (only) | Considering TOTAL LIABILITIES | |
|---------------------|-------------------------------|-------------------------------|---|
| Distance to default | -571,26 | 3,09 | $(\text{Market Value of Assets} - \text{DP}) / (\text{Market Value of Assets} * \text{Volatility of Assets})$ |
| Default point | 8,3137E+11 | 6,87607E+12 | STD + 0,5*LTD |
| Short-term Debt | 7,1647E+11 | 4,18043E+12 | Ping An short-term debt (Merton Model pre-covid worksheet) |
| Long-term Debt | 2,298E+11 | 5,39129E+12 | Ping An long-term debt (Merton Model pre-covid worksheet) |

Credit Default Swaps

The same CDS approach was made for the pos covid period, considering an average of 2020 and 2021 spreads. For this period, the spreads show a more volatile evolution (appendix 10.). The probabilities of default slightly increase and range between 2.096—3.387%, which is a result of higher spreads observed in comparison to the pre covid period due to the impact of pandemic.

| CDS Maturity | Probabilities of Default | | | | | | | | | |
|--------------|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 6M | 1Y | 2Y | 3Y | 4Y | 5Y | 7Y | 10Y | 20Y | 30Y |
| Post-Covid | 3,369% | 2,848% | 3,036% | 2,702% | 3,247% | 3,230% | 3,387% | 3,376% | 2,150% | 2,096% |

Ping An's Current Situation and Prospective Outlook

Ping An is not enjoying good financial health at the moment. It has raised huge amount of debt, especially in the Covid-19 pandemic period, which confirms our negative outlook for the capital structure of the company.

Furthermore, China has become Ukraine's largest trading partner since 2019, with a trade turnover of 15.4 billion US dollar in 2020, of which Ukraine exports goods worth 7.1 billion US dollar. Moreover, China is also Russia's largest trading partner achieving on 2021 exports at \$67.6 billion, up 34%. Hence, China is nothing less than a silent gainer in the Russia-Ukraine Conflict and its neutrality is expected to be maintained, at least until the winter Olympic Games of 2022. Concerning Chinese Capital-market evolution Chinese insurers would benefit from a maturing capital market, loosening the constraints on investments in different asset classes, and an increase in availability of long term investment vehicles. More sophisticated asset management as well as a healthier Chinese equity markets should enable insurers to perform better asset allocation and in turn design longer-term products and improve their investment return. Being the Insurance inherently linked to the Fixed assets investment, we have bad news for Ping An since the investment grew by 4.9 percent in 2021, up from 2.9 percent growth in 2020 but slower than the 5.1 percent growth in 2019.

Although overall investment in infrastructure has continued to rise over the past decade, growth has slowed dramatically. This is in large part due to increased restrictions on local government debt and tighter regulations on the types of projects that governments can fund (that is, requirements for projects to be commercially viable and able to pay off debts). This has led to less borrowing by local governments and fewer eligible infrastructure projects for them to invest in. At the same time, large-scale nation-wide infrastructure projects, such as the construction of high-speed railways and shantytown renovation that were highly successful in stimulating growth and providing jobs have largely wound down, with few other large-scale projects to replace them.

Appendix

1. Financial Statements

PING AN - SIMPLIFIED INCOME STATEMENT

in Millions of CNY

| | 2021 F | 2020 | 2019 | 2018 | 2017 | 2016 | Descriptive Statistics | | |
|---|------------------|------------------|------------------|----------------|----------------|----------------|------------------------|------------|----------------------------|
| | | | | | | | % Average change (YoY) | Std.Dev. | Average % of Total Revenue |
| Total Revenue | 1,139,455 | 1,211,268 | 1,164,586 | 975,031 | 893,240 | 712,976 | 10% | 12% | |
| SG & A | 329,466 | 269,968 | 279,772 | 325,562 | 251,297 | 212,688 | 10% | 18% | 28% |
| Losses, Benefits & Adjustments | 564,727 | 577,763 | 539,119 | 414,234 | 396,670 | 301,108 | 14% | 16% | 45% |
| Other Operating Expenses | 144,194 | 133,923 | 125,817 | 46,660 | 90,276 | 88,005 | 28% | 83% | 10% |
| Including Impairments | 72,656 | 72,682 | 60,756 | 38 | 41,371 | 46,403 | 31939% | 71468% | 5% |
| EBITDA | 189,493 | 229,614 | 219,878 | 188,575 | 154,997 | 111,175 | 13% | 21% | 18% |
| Depreciation & Amortization | 14,399 | 14,334 | 14,463 | 6,823 | 5,598 | 4,782 | 30% | 47% | 1% |
| Total OPEX | 1,052,785 | 995,988 | 959,171 | 793,279 | 743,841 | 606,583 | 12% | 9% | 84% |
| EBIT | 175,094 | 215,280 | 205,415 | 181,752 | 149,399 | 106,393 | 12% | 22% | 17% |
| Interest Expense (Net of Investment income) | 28,614 | 26,436 | 20,098 | 18,227 | 14,623 | 14,068 | 16% | 12% | 2% |
| Net Income Before Taxes | 146,480 | 188,844 | 185,317 | 163,525 | 134,776 | 92,325 | 12% | 25% | 15% |
| Provision for Income Taxes | 21,293 | 28,405 | 20,374 | 42,699 | 34,762 | 22,043 | 9% | 46% | 3% |
| Minority Interest | 22,302 | 16,260 | 14,958 | 13,048 | 10,890 | 9,974 | 18% | 12% | 1% |
| Net Income attributable to the group | 103,430 | 143,099 | 149,407 | 107,404 | 89,088 | 62,394 | 14% | 30% | 11% |

PING AN - SIMPLIFIED BALANCE SHEET

in Millions of CNY

| Balance Sheet (in Millions CNY) | 2021 F | 2020 | 2019 | 2018 | 2017 | 2016 | Average % of Balance Sheet Total |
|---|------------------|------------------|------------------|------------------|------------------|------------------|----------------------------------|
| Goodwill | 23,280 | 23,031 | 20,927 | 20,520 | 20,507 | 20,639 | 0.4% |
| Tangible Fixed Assets | 55,035 | 58,021 | 59,203 | 45,371 | 43,037 | 36,147 | 0.9% |
| Intangibles Assets | 29,481 | 27,490 | 27,787 | 29,383 | 33,428 | 36,550 | 0.6% |
| Long Term Investments | 8,505,400 | 7,853,595 | 6,717,429 | 5,769,326 | 4,984,038 | 4,132,841 | 110.8% |
| Other Long Term Assets (net of Other Long Term Liab.) | -855,419 | -693,877 | -573,070 | -552,675 | -482,040 | -329,474 | -10.1% |
| Working Capital | 18,598 | -254,249 | -153,878 | -180,710 | -135,693 | -118,465 | -2.6% |
| Total Operating Assets | 7,776,375 | 7,014,011 | 6,098,398 | 5,131,215 | 4,463,277 | 3,778,238 | 100.0% |
| Net Debt | 4,421,999 | 3,985,140 | 3,482,801 | 2,974,999 | 2,593,818 | 2,233,230 | 57.7% |
| Insurance Reserves | 2,477,580 | 2,040,966 | 1,763,227 | 1,472,573 | 1,281,542 | 1,058,547 | 29.2% |
| Minority Interest | 270,835 | 225,345 | 179,209 | 127,135 | 114,566 | 103,012 | 2.9% |
| Equity | 843,417 | 762,560 | 673,161 | 556,508 | 473,351 | 383,449 | 10.7% |
| Total Debt & Equity | 7,776,375 | 7,014,011 | 6,098,398 | 5,131,215 | 4,463,277 | 3,778,238 | 100.0% |

| Key Ratios | 2021 F | 2020 | 2019 | 2018 | 2017 | 2016 |
|-------------------------|-------------|--------------|--------------|--------------|--------------|-------------|
| NOPAT Margin | 13.1% | 15.1% | 15.7% | 13.8% | 12.4% | 11.4% |
| Asset Turnover | 14.7% | 17.3% | 19.1% | 19.0% | 20.0% | 18.9% |
| Operating ROA | 1.9% | 2.6% | 3.0% | 2.6% | 2.5% | 2.1% |
| Interest After Tax/Debt | 0.6% | 0.6% | 0.5% | 0.5% | 0.4% | 0.5% |
| Leverage | 396.9% | 403.4% | 408.6% | 435.2% | 441.2% | 459.1% |
| ROE | 7.4% | 10.9% | 13.1% | 12.0% | 11.6% | 9.8% |

2. Aggregate Metrics

| 31/03/2019 | | | | |
|-----------------------------|-------------------|----------------|------------|----------|
| Ratios | Aggregate Metrics | Moody's Rating | S&P Rating | Number |
| EBITA/Average Assets | 2.7% | Caa-C | CCC-D | 7 |
| EBITA/Int. Expense | 10.3 | Baa | BBB | 4 |
| EBITA Margin | 17.8% | A | A | 3 |
| Operating Margin | 17.6% | A | A | 3 |
| (FFO+IntExp)/IntExp | 25.3 | Aa | AA | 2 |
| FFO/Debt | 12.4% | B | B | 6 |
| Retained Cash Flow/Net Debt | 12.1% | B | B | 6 |
| Debt/EBITDA | 17.9 | Caa-C | CCC-D | 7 |
| Debt/Book Cap | 81.8% | B | B | 6 |
| Capex/Depreciation | 0.8 | Caa-C | CCC-D | 7 |
| Revenue Volatility | 4.1 | Aaa | AAA | 1 |
| Average | | Ba | BB | 5 |

| 31/03/2020 | | | | |
|-----------------------------|-------------------|----------------|------------|----------|
| Ratios | Aggregate Metrics | Moody's Rating | S&P Rating | Number |
| EBITA/Average Assets | 2.4% | Caa-C | CCC-D | 7 |
| EBITA/Int. Expense | 8.2 | Baa | BBB | 4 |
| EBITA Margin | 17.9% | A | A | 3 |
| Operating Margin | 17.7% | Aa | AA | 2 |
| (FFO+IntExp)/IntExp | 20.0 | Aa | AA | 2 |
| FFO/Debt | 11.1% | Caa-C | CCC-D | 7 |
| Retained Cash Flow/Net Debt | 11% | B | B | 6 |
| Debt/EBITDA | 19.7 | Caa-C | CCC-D | 7 |
| Debt/Book Cap | 81.7% | B | B | 6 |
| Capex/Depreciation | 0.7 | Caa-C | CCC-D | 7 |
| Revenue Volatility | 4.9 | Aaa | AAA | 1 |
| Average | | Ba | BB | 5 |

| Moody's Rating | S&P Rating | Number |
|----------------|------------|--------|
| Aaa | AAA | 1 |
| Aa | AA | 2 |
| A | A | 3 |
| Baa | BBB | 4 |
| Ba | BB | 5 |
| B | B | 6 |
| Caa-C | CCC-D | 7 |

3. Peer Analysis

Peer Comparison extracted from Refinitiv Eikon, 2020 numbers in CNY chinese Yuan

| Identifier (GRID_REPORT.RIC) | Company Name | Total Revenue (FY0, CNY) | EBITDA (FY0, CNY) | EBITDA Margin, Percent (FY0) | Total Assets, Reported (FY0, CNY) | Total Liabilities (FY0, CNY) | Company Market Capitalization (CNY) |
|------------------------------|---|---------------------------|--------------------------|------------------------------|-----------------------------------|------------------------------|-------------------------------------|
| 601318.SS | Ping An Insurance Group Co of China Ltd | 1,211,268,000,000.00 | 302,485,000,000.00 | 25.0% | 9,527,870,000,000.00 | 8,539,965,000,000.00 | 983,880,200,718.14 |
| 601601.SS | China Pacific Insurance Group Co Ltd | 423,606,000,000.00 | 40,573,000,000.00 | 9.6% | 1,771,004,000,000.00 | 1,550,169,000,000.00 | 429,899,876,707.96 |
| 1299.HK | AIA Group Ltd | 328,331,475,000.00 | 46,581,975,000.00 | 14.2% | 2,127,939,525,000.00 | 1,712,505,825,000.00 | 877,085,875,653.89 |
| 2328.HK | PICC Property and Casualty Co Ltd | 414,963,000,000.00 | 97,917,000,000.00 | 23.6% | 646,801,000,000.00 | 456,770,000,000.00 | 150,971,795,009.78 |
| 601628.SS | China Life Insurance Co Ltd | 824,658,000,000.00 | 71,545,000,000.00 | 8.7% | 4,252,410,000,000.00 | 3,795,479,000,000.00 | 716,548,920,826.38 |
| 601336.SS | New China Life Insurance Co Ltd | 206,324,000,000.00 | 20,877,000,000.00 | 10.1% | 1,004,376,000,000.00 | 902,696,000,000.00 | 101,855,466,199.17 |
| 601319.SS | People's Insurance Company Group of China Ltd | 574,117,000,000.00 | 29,194,000,000.00 | 5.1% | 1,255,461,000,000.00 | 982,325,000,000.00 | 188,738,864,517.73 |
| 6060.HK | ZhongAn Online P & C Insurance Co Ltd | 18,493,163,000.00 | 1,089,157,000.00 | 5.9% | 45,673,436,000.00 | 28,280,101,000.00 | 36,933,755,509.75 |
| Peer Mean | | 398,641,805,428.57 | 43,968,161,714.29 | 11.0% | 1,586,237,851,571.43 | 1,346,889,275,142.86 | 357,433,507,774.95 |

AIA Group Ltd only reports in USD

| Selected Peers: | Criteria: |
|--------------------------------------|---|
| China Life Insurance Co Ltd | Based on Total Revenue, Total Assets, Total Liabilities, & Market Cap |
| PICC Property and Casualty Co Ltd | Based on EBITDA Margin |
| China Pacific Insurance Group Co Ltd | Based on EBITDA Margin, Total Assets, & Market Cap |

4. Altman Z-Score

| Ping An | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Peer Average Pre-Covid | Peer Average Post-Covid | α |
|----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------------|-------------------------|------|
| WC / Assets | -0.34 | -0.38 | -0.37 | -0.34 | -0.34 | -0.33 | -0.33 | -0.32 | -0.32 | -0.28 | -0.01 | -0.02 | 6.56 |
| Retained Earnings / Assets | 0.02 | 0.03 | 0.03 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.07 | 0.07 | 0.09 | 0.11 | 3.26 |
| EBIT / Assets | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 | 6.72 |
| BV of Equity / BV of Liabilities | 0.06 | 0.06 | 0.08 | 0.08 | 0.07 | 0.08 | 0.08 | 0.09 | 0.09 | 0.09 | 0.20 | 0.22 | 1.05 |
| Z'-Score | -1.989 | -2.231 | -2.147 | -1.895 | -1.878 | -1.756 | -1.738 | -1.616 | -1.618 | -1.438 | 0.593 | 0.587 | |
| PD | 87.96% | 90.30% | 89.54% | 86.93% | 86.74% | 85.27% | 85.05% | 83.42% | 83.45% | 80.82% | 37.87% | 36.62% | |

| Z-Score | Pre-Covid | | | | | | | | | Post-Covid | |
|--------------------------------------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|------------|--|
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | |
| Ping An | -1.9886 | -2.2305 | -2.1469 | -1.8949 | -1.8779 | -1.7560 | -1.7382 | -1.6159 | -1.6175 | -1.4382 | |
| China Life Insurance Co Ltd | 2.9326 | 0.6006 | 0.6937 | 2.2289 | 1.8509 | 1.5617 | 1.4777 | 1.3382 | 1.1923 | 1.3722 | |
| PICC Property and Casualty Co Ltd | -1.9637 | -1.5609 | 1.8903 | 0.2058 | 0.1575 | 0.1263 | 0.0739 | 0.1283 | 0.2263 | 0.1654 | |
| China Pacific Insurance Group Co Ltd | 0.6318 | 0.3692 | 0.2906 | 0.2813 | 0.1997 | 0.2064 | 0.2434 | 0.2574 | 0.2277 | 0.3369 | |
| Average Peer Group | 0.5336 | -0.1970 | 0.9582 | 0.9053 | 0.7360 | 0.6315 | 0.5983 | 0.5746 | 0.5488 | 0.6248 | |
| Median Peer Group | 0.6318 | 0.3692 | 0.6937 | 0.2813 | 0.1997 | 0.2064 | 0.2434 | 0.2574 | 0.2277 | 0.3369 | |

| | | X1 | | | | | | | | | | |
|----|-------|--------------|------------|----------|----------|--------------|---------|---------|---------|---------|-------------|---------|
| | | -0,40 | -0,30 | -0,20 | -0,10 | 0 | 0,1 | 0,2 | 0,3 | 0,4 | 0,5 | 0,6 |
| X3 | -0,08 | -2,932580261 | -2,2765803 | -1,62058 | -0,96458 | -0,308580261 | 0,34742 | 1,00342 | 1,65942 | 2,31542 | 2,971419739 | 3,62742 |
| | -0,06 | -2,798180261 | -2,1421803 | -1,48618 | -0,83018 | -0,174180261 | 0,48182 | 1,13782 | 1,79382 | 2,44982 | 3,105819739 | 3,76182 |
| | -0,04 | -2,663780261 | -2,0077803 | -1,35178 | -0,69578 | -0,039780261 | 0,61622 | 1,27222 | 1,92822 | 2,58422 | 3,240219739 | 3,89622 |
| | -0,02 | -2,529380261 | -1,8733803 | -1,21738 | -0,56138 | 0,094619739 | 0,75062 | 1,40662 | 2,06262 | 2,71862 | 3,374619739 | 4,03062 |
| | 0 | -2,394980261 | -1,7389803 | -1,08298 | -0,42698 | 0,229019739 | 0,88502 | 1,54102 | 2,19702 | 2,85302 | 3,509019739 | 4,16502 |
| | 0,02 | -2,260580261 | -1,6045803 | -0,94858 | -0,29258 | 0,363419739 | 1,01942 | 1,67542 | 2,33142 | 2,98742 | 3,643419739 | 4,29942 |
| | 0,04 | -2,126180261 | -1,4701803 | -0,81418 | -0,15818 | 0,497819739 | 1,15382 | 1,80982 | 2,46582 | 3,12182 | 3,777819739 | 4,43382 |
| | 0,06 | -1,991780261 | -1,3357803 | -0,67978 | -0,02378 | 0,632219739 | 1,28822 | 1,94422 | 2,60022 | 3,25622 | 3,912219739 | 4,56822 |
| | 0,08 | -1,857380261 | -1,2013803 | -0,54538 | 0,11062 | 0,766619739 | 1,42262 | 2,07862 | 2,73462 | 3,39062 | 4,046619739 | 4,70262 |
| | 0,1 | -1,722980261 | -1,0669803 | -0,41098 | 0,24502 | 0,901019739 | 1,55702 | 2,21302 | 2,86902 | 3,52502 | 4,181019739 | 4,83702 |
| | 0,12 | -1,588580261 | -0,9325803 | -0,27658 | 0,37942 | 1,035419739 | 1,69142 | 2,34742 | 3,00342 | 3,65942 | 4,315419739 | 4,97142 |

| | |
|---------------|-------|
| 10 percentile | -1,86 |
| 20 percentile | -1,08 |
| 30 percentile | -0,41 |
| 40 percentile | 0,35 |
| 50 percentile | 1,02 |
| 60 percentile | 1,69 |
| 70 percentile | 2,45 |
| 80 percentile | 3,12 |
| 90 percentile | 3,90 |

| | | |
|----|---|-------|
| X1 | (current assets – current liabilities) / total assets | -0,33 |
| X2 | retained earnings / total assets | 0,05 |
| X3 | earnings before interest and taxes / total assets | 0,02 |
| X4 | book value of equity / total liabilities | 0,08 |

| | |
|------|-------|
| MEAN | 1,02 |
| STD | 2,13 |
| MIN | -2,93 |
| MAX | 4,97 |

| | |
|---------------|---------------|
| Safe Zone | Z > 2.6 |
| Grey Zone | 1.1 < Z < 2.6 |
| Distress Zone | Z < 1.1 |

5. Corporate Bond Spread

| Pre-Covid | | | | | | Pos-Covid | | | | | |
|-----------|--------|-----------|----------|-------|--------|-----------|--------|-----------|-----------|-------|--------|
| Maturity | Yield | Risk-Free | Spread | PD | Rating | Maturity | Yield | Risk-Free | Spread | PD | Rating |
| 0.01 | 3.1834 | 1.3377 | 1.8457 | 0.03% | AA- | 0 | 2.0452 | 1.55358 | 0.491624 | 0.00% | AAA |
| 0.01 | 2.5286 | 1.3377 | 1.1909 | 0.02% | AA | 0.1 | 2.1678 | 1.54102 | 0.6267662 | 0.10% | BBB |
| 0.07 | 2.5694 | 1.4383 | 1.1311 | 0.13% | BBB | 0.2 | 2.3227 | 1.6474167 | 0.6752993 | 0.21% | BBB- |
| 0.17 | 2.6788 | 1.5389 | 1.1399 | 0.29% | BB+ | 0.3 | 2.8126 | 1.79385 | 1.0187214 | 0.44% | BB |
| 0.26 | 3.1191 | 1.659 | 1.4601 | 0.53% | BB- | 0.4 | 2.4641 | 1.943623 | 0.520502 | 0.31% | BB+ |
| 0.28 | 3.7591 | 1.659 | 2.1001 | 0.74% | BB- | 0.5 | 2.5424 | 1.89905 | 0.6433921 | 0.46% | BB |
| 0.32 | 3.5589 | 1.7691 | 1.7898 | 0.73% | BB- | 0.6 | 3.1449 | 1.839 | 1.3058889 | 0.91% | BB- |
| 0.40 | 3.6190 | 1.6091 | 2.0099 | 0.92% | BB- | 0.7 | 2.5837 | 1.899 | 0.68468 | 0.63% | BB- |
| 0.41 | 4.6907 | 1.6091 | 3.0816 | 1.20% | B+ | 0.8 | 2.5261 | 1.899 | 0.6270824 | 0.66% | BB- |
| 0.50 | 4.6169 | 1.9289 | 2.688 | 1.23% | B+ | 0.9 | 2.4809 | 2.0414 | 0.4395462 | 0.54% | BB- |
| 0.56 | 3.5990 | 1.3991 | 2.1999 | 1.18% | B+ | 1 | 2.8408 | 2.1111 | 0.7296818 | 0.86% | BB- |
| 0.56 | 4.6448 | 1.3991 | 3.2457 | 1.40% | B+ | 1.1 | 3.3466 | 2.1337 | 1.2129333 | 1.23% | B+ |
| 0.60 | 3.2389 | 1.7189 | 1.52 | 1.00% | B+ | 1.2 | 4.1779 | 2.0406 | 2.1373 | 1.54% | B+ |
| 0.65 | 3.6090 | 1.9289 | 1.6801 | 1.11% | B+ | 1.3 | 3.4455 | 2.2155487 | 1.2299138 | 1.33% | B+ |
| 0.69 | 3.2890 | 1.9289 | 1.3601 | 1.01% | B+ | 1.4 | 3.3186 | 1.9622368 | 1.3563632 | 1.42% | B+ |
| 0.74 | 2.8690 | 1.499 | 1.37 | 1.06% | B+ | 1.5 | 3.3566 | 2.2245333 | 1.1320417 | 1.36% | B+ |
| 1.22 | 5.0118 | 1.9025 | 3.1093 | 1.63% | B+ | 1.7 | 3.3126 | 2.0862 | 1.2264333 | 1.46% | B+ |
| 1.31 | 5.3282 | 2.1105 | 3.2177 | 1.64% | B+ | 1.8 | 3.5912 | 2.0862 | 1.50495 | 1.56% | B+ |
| 1.35 | 4.0090 | 2.274123 | 1.734877 | 1.51% | B+ | 1.9 | 3.2773 | 2.1489 | 1.1284 | 1.47% | B+ |
| 1.44 | 3.8054 | 2.0406 | 1.7648 | 1.54% | B+ | 2 | 2.6288 | 2.26345 | 0.36535 | 0.86% | BB+ |
| 1.46 | 3.4308 | 2.0406 | 1.3902 | 1.45% | B+ | 2.1 | 3.6925 | 0 | 3.6925 | 1.67% | BB- |
| 1.46 | 3.8008 | 2.0406 | 1.7602 | 1.54% | B+ | 2.2 | 4.0704 | 1.3898297 | 2.6805703 | 1.66% | BB- |
| 1.71 | 3.7414 | 1.553185 | 2.188215 | 1.63% | B+ | 2.3 | 3.0129 | 2.4144 | 0.5985 | 1.25% | BB |
| 2.12 | 3.6925 | 2.2325 | 1.46 | 1.59% | BB- | 2.4 | 2.7749 | 2.4448 | 0.3301 | 0.91% | BB+ |
| 2.16 | 2.5392 | 2.2331 | 0.3061 | 0.81% | BB+ | 2.5 | 3.2429 | 2.463873 | 0.779027 | 1.43% | BB |
| 2.18 | 4.8457 | 2.2331 | 2.6126 | 1.66% | BB- | 2.6 | 3.2272 | 2.3129 | 0.9143 | 1.51% | BB |
| 2.18 | 4.8263 | 2.2331 | 2.5932 | 1.66% | BB- | 2.7 | 3.1076 | 2.31335 | 0.794275 | 1.47% | BB |
| 2.27 | 2.3591 | 2.353094 | 0.006006 | 0.02% | AAA | 2.9 | 3.2346 | 2.2190603 | 1.0154898 | 1.58% | BB- |
| 2.33 | 3.8479 | 1.9879 | 1.86 | 1.64% | BB- | 3.1 | 3.6458 | 0.682959 | 2.962841 | 1.67% | BB+ |
| 2.50 | 3.2890 | 2.263 | 1.026 | 1.54% | BB- | 3.2 | 3.1990 | 2.461 | 0.738 | 1.51% | BB+ |
| 2.58 | 2.8190 | 1.937 | 0.882 | 1.50% | BB- | 3.3 | 3.2215 | 2.467 | 0.7545 | 1.53% | BB+ |
| 2.72 | 3.8980 | 2.1267 | 1.7713 | 1.65% | BB- | 3.4 | 3.0275 | 2.4867 | 0.5408 | 1.40% | BB+ |
| 4.43 | 3.9407 | 2.508727 | 1.431973 | 1.66% | BBB- | 3.6 | 3.6081 | 2.5334 | 1.0747 | 1.63% | BB+ |
| 4.50 | 3.8979 | 2.5434 | 1.3545 | 1.66% | BBB- | 3.7 | 3.1214 | 2.4703 | 0.65105 | 1.52% | BB+ |
| 7.19 | 2.8290 | 2.52 | 0.309 | 1.49% | BBB | 3.9 | 3.1556 | 1.263333 | 1.892267 | 1.67% | BB+ |
| | | | | | | 4.3 | 3.6226 | 1.8923135 | 1.7302865 | 1.67% | BB+ |
| | | | | | | 4.4 | 3.6113 | 2.4717 | 1.1396 | 1.66% | BBB- |
| | | | | | | 4.5 | 3.5524 | 2.5808 | 0.97155 | 1.65% | BBB- |
| | | | | | | 5.2 | 4.5157 | 2.5926 | 1.9231 | 1.67% | BBB- |
| | | | | | | 7.2 | 2.8290 | 2.7006 | 0.1284 | 1.01% | BBB+ |
| | | | | | | 9.7 | 3.4020 | 2.7355 | 0.6665 | 1.66% | BBB+ |

6. ICR Sensitivity Analysis

| Pre-Covid | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 |
|-------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| Interest Coverage Ratio | 10.22067 | 9.971581 | 10.21671 | 7.562767 | 9.805901 | 7.020373 | 7.873457 | 19.39477 |
| Growth Rate | 2% | -2% | 35% | -23% | 40% | -11% | -59% | |
| Average | -3% | | | | | | | |
| Standard Deviation | 34% | | | | | | | |

| Post-Covid | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 |
|-------------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Interest Coverage Ratio | 6.11918 | 8.143441 | 10.22067 | 9.971581 | 10.21671 | 7.562767 | 9.805901 | 7.020373 | 7.873457 | 19.39477 |
| Growth Rate | -25% | -20% | 2% | -2% | 35% | -23% | 40% | -11% | -59% | 0% |
| Average | -7% | | | | | | | | | |
| Standard Deviation | 31% | | | | | | | | | |

| With Pre-Covid data inputs | | | | | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Average ICR | 9.449 | 8.758 | 8.101 | 7.499 | 6.949 | 6.436 | 5.963 | 5.512 | 5.096 | 4.713 |
| Rating | AA | A+ | A+ | A+ | A | A | A | A- | A- | A- |
| Implied PD | 0.02% | 0.09% | 0.19% | 0.31% | 0.44% | 0.61% | 0.78% | 1.03% | 1.15% | 1.27% |

| With Pos-Covid data inputs | | | | | | | | | | |
|----------------------------|-------|-------|--------|-------|-------|-------|--------|-------|--------|--------|
| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Average ICR | 7.266 | 6.485 | 5.783 | 5.162 | 4.609 | 4.117 | 3.679 | 3.286 | 2.933 | 2.619 |
| Rating | A | A | A- | A- | A- | BBB | BB+ | BB | B+ | B+ |
| Implied PD | 0.05% | 0.14% | 25.00% | 0.36% | 0.66% | 1.62% | 82.00% | 8.81% | 20.17% | 21.37% |

| If interest coverage ratio is | | | |
|-------------------------------|-----------|-----------|-----------|
| greater than | ≤ to | Rating is | Spread is |
| -100000 | 0.499999 | D2/D | 14.34% |
| 0.5 | 0.799999 | C2/C | 10.76% |
| 0.8 | 1.249999 | Ca2/CC | 8.80% |
| 1.25 | 1.499999 | Caa/CCC | 7.78% |
| 1.5 | 1.999999 | B3/B- | 4.62% |
| 2 | 2.499999 | B2/B | 3.78% |
| 2.5 | 2.999999 | B1/B+ | 3.15% |
| 3 | 3.499999 | Ba2/BB | 2.15% |
| 3.5 | 3.999999 | Ba1/BB+ | 1.93% |
| 4 | 4.499999 | Baa2/BBB | 1.59% |
| 4.5 | 5.999999 | A3/A- | 1.29% |
| 6 | 7.499999 | A2/A | 1.14% |
| 7.5 | 9.499999 | A1/A+ | 1.03% |
| 9.5 | 12.499999 | Aa2/AA | 0.82% |
| 12.5 | 100000 | Aaa/AAA | 0.67% |

Based on Aswath Damodaran's online data library

7. Merton Model

| 31/12/2019 | | | | |
|---|--------------------|--------------------|-----------------------------|---------------------|
| PRE-COVID | Entire Debt | Maturity <= 1 year | Maturity > 1 AND <= 5 years | Maturity > 5 years |
| Solver Result for Value of Assets | CNY 11,565,099,136 | CNY 11,466,701,733 | CNY 11,510,010,523 | CNY 950,445,831,607 |
| Solver Result for Volatility of Assets | 9.5% | 9.3% | 9.3% | 31.0% |
| Operating ROA (EBIT/Total Assets) | 2.49% | 2.49% | 2.49% | 2.49% |
| Implied PD | 100.00% | 100.00% | 100.00% | 0.004% |
| Rating (Based on Refinitiv's Table for Structural Models) | CC | CC | CC | AA |

| 18/02/2022 | | | | |
|---|--------------------|--------------------|-----------------------------|--------------------|
| POST-COVID | Entire Debt | Maturity <= 1 year | Maturity > 1 AND <= 5 years | Maturity > 5 years |
| Solver Result for Value of Assets | CNY 13,697,325,682 | CNY 13,592,050,820 | CNY 13,649,439,810 | CNY 1,577,287,528 |
| Solver Result for Volatility of Assets | 10.4% | 10.5% | 10.6% | 0.001% |
| Operating ROA (EBIT/Total Assets) | 2.25% | 2.25% | 2.25% | 2.25% |
| Implied PD | 100.00% | 100.00% | 100.00% | 100.00% |
| Rating (Based on Refinitiv's Table for Structural Models) | CC | CC | CC | CC |

8. Moody's KMV Model

| Considering DEBT VALUE (only) of Ping An | Pre-Covid | Pos-Covid |
|--|-------------------|-------------------|
| Distance to default | -39,94 | -571,26 |
| Default point | 55 300 000 000 | 831 370 000 000 |
| Short-term Debt | 25 000 000 000 | 716 470 000 000 |
| Long-term Debt | 60 600 000 000 | 229 800 000 000 |
| Considering TOTAL LIABILITIES of Ping An | | |
| Distance to default | 3,65 | 3,09 |
| Default point | 5 550 072 000 000 | 6 876 072 174 529 |
| Short-term Liabilities | 3 550 376 000 000 | 4 180 425 829 057 |
| Long-term Liabilities | 3 999 392 000 000 | 5 391 292 690 943 |

9. S&P Rating

| Global Corporate Average Cumulative Default Rates By Rating Modifier (1981-2020) (%) | | | | | | | | | | | | | | | |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Rating | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| AAA | 0,00% | 0,03% | 0,13% | 0,24% | 0,34% | 0,45% | 0,51% | 0,59% | 0,64% | 0,70% | 0,72% | 0,75% | 0,78% | 0,84% | 0,90% |
| AA+ | 0,00% | 0,05% | 0,05% | 0,10% | 0,15% | 0,20% | 0,25% | 0,31% | 0,36% | 0,42% | 0,48% | 0,53% | 0,59% | 0,66% | 0,72% |
| AA | 0,02% | 0,03% | 0,08% | 0,21% | 0,35% | 0,47% | 0,59% | 0,70% | 0,78% | 0,87% | 0,95% | 1,00% | 1,10% | 1,16% | 1,22% |
| AA- | 0,03% | 0,08% | 0,16% | 0,23% | 0,31% | 0,41% | 0,47% | 0,52% | 0,57% | 0,62% | 0,68% | 0,73% | 0,75% | 0,80% | 0,84% |
| A+ | 0,05% | 0,09% | 0,19% | 0,31% | 0,41% | 0,50% | 0,60% | 0,71% | 0,83% | 0,96% | 1,08% | 1,21% | 1,36% | 1,54% | 1,68% |
| A | 0,05% | 0,14% | 0,21% | 0,32% | 0,44% | 0,61% | 0,78% | 0,94% | 1,11% | 1,32% | 1,48% | 1,60% | 1,72% | 1,79% | 1,95% |
| A- | 0,06% | 0,16% | 0,25% | 0,36% | 0,51% | 0,66% | 0,87% | 1,03% | 1,15% | 1,27% | 1,37% | 1,50% | 1,62% | 1,74% | 1,84% |
| BBB+ | 0,09% | 0,26% | 0,47% | 0,67% | 0,90% | 1,15% | 1,35% | 1,56% | 1,82% | 2,07% | 2,30% | 2,46% | 2,64% | 2,87% | 3,12% |
| BBB | 0,15% | 0,37% | 0,59% | 0,93% | 1,27% | 1,62% | 1,94% | 2,24% | 2,56% | 2,88% | 3,22% | 3,49% | 3,72% | 3,82% | 4,03% |
| BBB- | 0,24% | 0,69% | 1,27% | 1,93% | 2,63% | 3,24% | 3,78% | 4,28% | 4,69% | 5,04% | 5,43% | 5,75% | 6,05% | 6,51% | 6,86% |
| BB+ | 0,32% | 0,97% | 1,76% | 2,55% | 3,35% | 4,14% | 4,82% | 5,32% | 5,92% | 6,52% | 6,93% | 7,42% | 7,92% | 8,27% | 8,82% |
| BB | 0,48% | 1,52% | 2,96% | 4,34% | 5,76% | 6,88% | 7,92% | 8,81% | 9,67% | 10,43% | 11,25% | 11,86% | 12,34% | 12,68% | 13,08% |
| BB- | 0,96% | 2,92% | 5,01% | 7,15% | 9,03% | 10,83% | 12,34% | 13,78% | 14,92% | 15,92% | 16,68% | 17,46% | 18,21% | 18,94% | 19,62% |
| B+ | 1,98% | 5,42% | 8,82% | 11,73% | 14,02% | 15,80% | 17,43% | 18,86% | 20,17% | 21,37% | 22,41% | 23,14% | 23,92% | 24,65% | 25,35% |
| B | 3,13% | 7,35% | 11,11% | 14,19% | 16,69% | 18,97% | 20,62% | 21,87% | 23,07% | 24,26% | 25,02% | 25,78% | 26,37% | 26,89% | 27,44% |
| B- | 6,52% | 13,69% | 19,28% | 23,16% | 25,97% | 28,07% | 29,63% | 30,86% | 31,72% | 32,45% | 33,61% | 34,32% | 34,89% | 35,46% | 35,88% |
| CCC/C | 28,30% | 38,33% | 43,42% | 46,36% | 48,58% | 49,61% | 50,75% | 51,49% | 52,16% | 52,76% | 53,21% | 53,68% | 54,23% | 54,69% | 54,76% |
| Investment grade | 0,09% | 0,24% | 0,41% | 0,63% | 0,86% | 1,09% | 1,30% | 1,50% | 1,69% | 1,88% | 2,05% | 2,20% | 2,35% | 2,49% | 2,65% |
| Speculative grade | 3,71% | 7,19% | 10,18% | 12,63% | 14,64% | 16,30% | 17,68% | 18,83% | 19,86% | 20,81% | 21,61% | 22,29% | 22,93% | 23,49% | 24,04% |
| All rated | 1,53% | 3,00% | 4,27% | 5,35% | 6,25% | 7,01% | 7,64% | 8,18% | 8,67% | 9,12% | 9,50% | 9,83% | 10,13% | 10,41% | 10,69% |

Sources: S&P Global Ratings Research and S&P Global Market Intelligence's CreditPro

10. Credit Default Swaps

| Company Name | Total Revenue (FY0) | Total Assets, Reported (FY0) | Total Liabilities (FY0) | Company Market Capitalization |
|---|----------------------|------------------------------|-------------------------|-------------------------------|
| Ping An Insurance Group Co of China Ltd (CNY) | 1 211 268 000 000,00 | 9 527 870 000 000,00 | 8 539 965 000 000,00 | 983 880 200 718,14 |
| Aflac Inc (CNY) | 142 597 000 000,00 | 1 000 723 000 000,00 | 789 496 000 000,00 | 252 178 370 000,00 |
| Travelers companies Inc (CNY) | 224 596 000 000,00 | 765 212 000 000,00 | 581 719 000 000,00 | 263 593 538 347,00 |

| CDS Spreads | | | | | | | | | | |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 6M | 1Y | 2Y | 3Y | 4Y | 5Y | 7Y | 10Y | 20Y | 30Y |
| Aflac | | | | | | | | | | |
| Pre-Covid | 2,4536% | 2,1363% | 2,2081% | 1,9666% | 2,2416% | 2,1774% | 2,2148% | 2,1862% | 1,4703% | 1,4514% |
| Post-Covid | 2,4780% | 2,1622% | 2,2391% | 2,0020% | 2,2792% | 2,2149% | 2,2520% | 2,2200% | 1,4906% | 1,4625% |
| Traveler | | | | | | | | | | |
| Pre-Covid | 1,5719% | 1,2648% | 1,3881% | 1,2015% | 1,5476% | 1,5617% | 1,7107% | 1,7286% | 1,0026% | 0,9645% |
| Post-Covid | 1,5846% | 1,2750% | 1,4223% | 1,2564% | 1,6311% | 1,6726% | 1,8221% | 1,8398% | 1,0978% | 1,0621% |

| Probabilities of Default | | | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 6M | 1Y | 2Y | 3Y | 4Y | 5Y | 7Y | 10Y | 20Y | 30Y |
| Aflac | | | | | | | | | | |
| Pre-Covid | 4,089% | 3,560% | 3,680% | 3,278% | 3,736% | 3,629% | 3,691% | 3,644% | 2,451% | 2,419% |
| Post-Covid | 4,130% | 3,604% | 3,732% | 3,337% | 3,799% | 3,692% | 3,753% | 3,700% | 2,484% | 2,437% |
| Traveler | | | | | | | | | | |
| Pre-Covid | 2,620% | 2,108% | 2,313% | 2,003% | 2,579% | 2,603% | 2,851% | 2,881% | 1,671% | 1,607% |
| Post-Covid | 2,641% | 2,125% | 2,371% | 2,094% | 2,719% | 2,788% | 3,037% | 3,066% | 1,830% | 1,770% |

| Ping An | | 6M | 1Y | 2Y | 3Y | 4Y | 5Y | 7Y | 10Y | 20Y | 30Y |
|------------|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Pre-Covid | Probability of Default | 3,338% | 2,818% | 2,982% | 2,626% | 3,145% | 3,105% | 3,262% | 3,254% | 2,052% | 2,004% |
| | Rating | B | B | BB- | BB+ | BB+ | BBB- | BBB | BBB | A- | A- |
| Post-Covid | Probability of Default | 3,369% | 2,848% | 3,036% | 2,702% | 3,247% | 3,230% | 3,387% | 3,376% | 2,150% | 2,096% |
| | Rating | B | B | BB- | BB+ | BB+ | BBB- | BBB | BBB | A- | A- |

| Maturity | China Bonds (%) | US T-Bills / Bonds (%) | Country Specific Risk |
|----------|-----------------|------------------------|-----------------------|
| 6M | | 1,9090 | 0,4659 |
| 1Y | | 1,9164 | 0,8085 |
| 2Y | | 2,2080 | 1,0531 |
| 3Y | | 2,1458 | 1,2539 |
| 4Y | | 2,4689 | 1,3228 |
| 5Y | | 2,4683 | 1,4068 |
| 7Y | | 2,5200 | 1,4575 |
| 10Y | | 2,8610 | 1,8754 |
| 20Y | | 3,0519 | 2,8960 |
| 30Y | | 3,0811 | 3,0060 |