2021

Markel Corporation

Annual Report & Form 10-K

THE CORPORATE PROFILE

Markel Corporation is a diverse financial holding company serving a variety of niche markets. Our principal business markets and underwrites specialty insurance products.

In each of our businesses, we seek to provide quality products and excellent customer service so that we can be a market leader.

Our financial goals are to earn consistent underwriting and operating profits and superior investment returns to build shareholder value.

THE MARKEL STYLE

Markel has a Commitment to Success. We believe in hard work and a zealous pursuit of excellence while keeping a sense of humor. Our creed is honesty and fairness in all our dealings.

The Markel way is to seek to be a market leader in each of our pursuits. We seek to know our customers' needs and to provide our customers with quality products and service.

Our pledge to our shareholders is that we will build the financial value of our Company. We respect our relationship with our suppliers and have a commitment to our communities.

We are encouraged to look for a better way to do things…to challenge management. We have the ability to make decisions or alter a course quickly. The Markel approach is one of spontaneity and flexibility. This requires a respect for authority but a disdain of bureaucracy.

At Markel, we hold the individual's right to self-determination in the highest light, providing an atmosphere in which people can reach their personal potential. Being results-oriented, we are willing to put aside individual concerns in the spirit of teamwork to achieve success.

Above all, we enjoy what we are doing. There is excitement at Markel, one that comes from innovating, creating, striving for a better way, sharing success with others…winning.

Highlights

Financial Highlights

(dollars in millions, except per share data)	**2021**	2020	2019
Gross premium volume	**$ 11,439**	$ 9,267	$ 8,780
Earned premiums	**$ 6,503**	$ 5,612	$ 5,050
U.S. GAAP combined ratio	**90 %**	98 %	94 %
Markel Ventures segment operating revenues	**$ 3,644**	$ 2,795	$ 2,055
Total operating revenues	**$ 12,846**	$ 9,735	$ 9,526
Net income to common shareholders	**$ 2,389**	$ 798	$ 1,790
Comprehensive income to shareholders	**$ 2,078**	$ 1,192	$ 2,094
Total investments, cash and cash equivalents and restricted cash and cash equivalents (invested assets)	**$ 28,292**	$ 24,927	$ 22,258
Total assets	**$ 48,449**	$ 41,710	$ 37,474
Senior long-term debt and other debt	**$ 4,361**	$ 3,484	$ 3,534
Shareholders' equity	**$ 14,695**	$ 12,800	$ 11,071
Debt to capital	**23 %**	21 %	24 %
Per Share Data			
Common shares outstanding (at year end, in thousands)	**13,632**	13,783	13,794
Diluted net income per common share	**$ 176.51**	$ 55.63	$ 129.07
Book value per common share	**$ 1,034.56**	$ 885.72	$ 802.59
5-Year CAGR in book value per common share [(1)]	**11 %**	10 %	8 %
Closing stock price per common share	**$ 1,234.00**	$ 1,033.30	$ 1,143.17
5-Year CAGR in closing stock price [(1)]	**6 %**	3 %	11 %

(1) CAGR—compound annual growth rate

Operating Highlights

- Gross premium volume exceeded $11 billion
- Comprehensive income to shareholders of $2.1 billion
- Combined ratio of 90%, including three points of catastrophe losses
- Operating cash flows totaling $2.3 billion
- Book value per common share was $1,034.56 at December 31, 2021, representing a 17% increase for the year
- Expansion of Markel Ventures through the acquisition of Buckner HeavyLift Cranes and Metromont
- Celebrated 35 years as a public company with record performance across each of our engines

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2021

To Our Business Partners,

Greetings

Several years ago, we laid out our aspirational goal to "Build one of the world's great companies." We defined that as a company driven by the idea and architecture of Win-Win-Win. We believe that if a company aspires to be great, the customers need to win, the employees need to win, and the shareholders need to win.

Customers win when we serve them. We provide something they want or need, and we do it in such a way that they end up better off because they did business with us.

Employees win because they can provide for their families and their communities. Our people win because they can continuously learn, be creative, and reach their full personal potential over time.

Shareholders win because when our customers and our employees win, the capital our shareholders provided us with to operate the business earns a fair and durable return.

We believe that this Win-Win-Win structure is the ultimate in sustainable business. We think it goes without saying that this ethos, which underlies and pervades Markel, sets an excellent standard when viewed in the context of the current popular focus on ESG (Environmental, Social, and Governance) principles that should guide any business.

It seems to us that ESG phrasing is a set of new words for old things.

Good environmental, social, and governance *principles* have, and always will, describe Markel well.

We are not perfect, and we never will be. Principles are qualitative. They are the intangible but powerful ideas and beliefs that drive actions and behaviors. They can never be precisely measured or metricized. Things like love, kindness, concern, and empathy for fellow human beings, are the most important things in the world but we don't believe there is a score for them. You either have these principles at the core of your existence or you do not.

We live and act them out every day. Exactly how they are lived and what specific actions take place may change over time as our knowledge and understanding increases. The principles though are unchanging and simply cannot be measured with precision. As always, we will continue to do our best to act in accord with our principles.

Financial Highlights

(in millions, except per share data)	**2021**	2020	2019	2018	2017	2016	2015	2014	2013
Total operating revenues	**$12,846**	9,735	9,526	6,841	6,062	5,612	5,370	5,134	4,323
Gross written premiums	**$11,439**	9,267	8,780	7,864	5,507	4,797	4,633	4,806	3,920
Combined ratio	**90 %**	98 %	94 %	98 %	105 %	92 %	89 %	95 %	97 %
Invested assets	**$28,292**	24,927	22,258	19,238	20,570	19,059	18,181	18,638	17,612
Invested assets per common share	**$2,075.42**	1,808.50	1,613.62	1,385.24	1,479.45	1,365.72	1,302.48	1,334.89	1,259.26
Net income (loss) to common shareholders	**$ 2,389**	798	1,790	(128)	395	456	583	321	281
Comprehensive income (loss) to shareholders	**$ 2,078**	1,192	2,094	(376)	1,175	667	233	936	459
Shareholders' equity	**$14,695**	12,800	11,071	9,081	9,504	8,461	7,834	7,595	6,674
Book value per common share	**$1,034.56**	885.72	802.59	653.85	683.55	606.30	561.23	543.96	477.16
5-Year CAGR in book value per common share [1]	**11 %**	10 %	8 %	7 %	11 %	11 %	11 %	14 %	17 %
Closing stock price per share	**$1,234.00**	1,033.30	1,143.17	1,038.05	1,139.13	904.50	883.35	682.84	580.35
5-Year CAGR in closing stock price per share [1]	**6 %**	3 %	11 %	12 %	21 %	17 %	18 %	15 %	14 %

[1] CAGR - compound annual growth rate

We cannot imagine operating our business in any other way.

We've believed in these timeless and valuable principles since the founding of this company in 1930 and we always will.

2021

In this year's report we will do our best to update you on what took place in 2021. We'll review the annual numbers since this is an annual financial report. But we'll also go beyond one-year time frames by providing you with five-year time buckets to get a longer term (and more meaningful) perspective. Finally, as we do each and every year, we'll provide you with a 21-year chart of data at the bottom of these pages that shows the results of our efforts over decades.

While numbers show quantifiable financial data, we also hope to share a sense of the qualitative side and the humanity of Markel. The story contains the secret as to how those lovely numbers came to be.

We hope to give you insight into how we think and act. More importantly, we hope that by the time you finish reading this report you'll share our optimism about the future. Our narrative describes a durable and sustainable approach. We are incredibly optimistic about our ability to continue on this path of building one of the world's great companies. Thank you for being a part of this great adventure.

"Building one of the world's great companies" captures the essence of our dream. This is not a dream that takes place in the middle of the night only to be forgotten by sunrise. We live it each and every day.

We thank you as fellow customers, employees, and shareholders for being part of it.

A dream like this is fun. It is worthy, it is hard work, and it is joyful. It is not a common way that businesses describe themselves, it only happens over long periods of time, and it only matters if it helps other people.

Markel is more than the sum of the individual businesses that make up the holding company. Markel is an idea. Markel is a dream.

We're glad you're along for the ride. Let's keep going.

2021 Financial Results

We operate with the dual time horizon at Markel of, "Forever……and Right Now."

2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	**20-Year CAGR [(1)]**
3,000	2,630	2,225	2,069	1,977	2,551	2,576	2,200	2,262	2,092	1,770	1,397	**12 %**
2,514	2,291	1,982	1,906	2,213	2,359	2,536	2,401	2,518	2,572	2,218	1,774	**10 %**
97 %	102 %	97 %	95 %	99 %	88 %	87 %	101 %	96 %	99 %	103 %	124 %	
9,333	8,728	8,224	7,849	6,893	7,775	7,524	6,588	6,317	5,350	4,314	3,591	**11 %**
969.23	907.20	846.24	799.34	702.34	780.84	752.80	672.34	641.49	543.31	438.79	365.70	**9 %**
253	142	267	202	(59)	406	393	148	165	123	75	(126)	
504	252	431	591	(403)	337	551	64	273	222	73	(77)	
3,889	3,388	3,172	2,774	2,181	2,641	2,296	1,705	1,657	1,382	1,159	1,085	**14 %**
403.85	352.10	326.36	282.55	222.20	265.26	229.78	174.04	168.22	140.38	117.89	110.50	**12 %**
9 %	9 %	13 %	11 %	10 %	18 %	16 %	11 %	20 %	13 %	13 %	18 %	
433.42	414.67	378.13	340.00	299.00	491.10	480.10	317.05	364.00	253.51	205.50	179.65	**10 %**
(2)%	(3)%	4 %	(1)%	3 %	19 %	22 %	12 %	19 %	7 %	6 %	15 %	

At the time of our initial public offering in 1986 we in essence said, "If you give us some money right now, we will use it to build a business that will be worth more over time." In 1986 we operated almost exclusively in the realm of insurance-related operations. Since that time, we've grown to become a holding company with three engines of Insurance, Markel Ventures, and Investments.

During 2021, we refined and explicitly described the role of the holding company. It's where the buck stops when it comes to matters of Culture, Capital, and Leadership.

We address our culture constantly through things like the message of this annual report, ongoing observance and discussion of the principles laid out in the creedal statement of the Markel Style, and our daily behavior.

We added to our capital this year from successfully operating our businesses.

Our leaders admirably captained their ships through unchartered and turbulent waters. They built their skills by doing so and we continue to attract and develop the leaders who will guide Markel in years to come.

Financially, we had a great year at your company and we're optimistic about where we're headed.

Here are some numbers to start framing the scope and scale of our progress.

In 1986, we reported total revenues of $33 million, comprehensive income-equivalent of $5 million, and each Markel share sold for $9.75.

In 2021, we're reporting total revenues of $12.8 billion, comprehensive income* of $2.1 billion, and at December 31, 2021 each Markel share sold for $1,234 (FYI - if our share price increases at a compound annual growth rate of 13.5638%, each share will sell for $5,678 in 12 years).

We can summarize the big picture as follows:

Time Horizon #1-Forever

It's working.

Time Horizon #2-Right Now

It's working.

*Comprehensive income means something different in GAAP accounting today than it did in 1986. We'll get to that with some comments about accounting later. Sorry.

Right Now-Status Report on the Three Engines of Markel

2021 stands as a milestone year for Markel. Each of our three engines performed beautifully throughout the year with record performance from each and every engine.

In total, they combined to report 2021 total revenues of $12.8 billion compared to $9.7 billion in 2020, and comprehensive income of $2.1 billion compared to $1.2 billion a year ago.

We've designed Markel to be a resilient and durable holding company. In any given year, we ought to be able to make forward progress even if only one of the three engines performs well. It is a thing of beauty to see what happens when all three of our engines run well. 2021 was such a year.

A nearly indescribable amount of human effort went into producing these record numbers. The ongoing pandemic continues to make each and every day harder than what we would otherwise hope. But the people of Markel, in every business, endured and flourished.

In 1986, we said in the very first words of the Markel Style that "We believe in hard work and a zealous pursuit of excellence while keeping a sense of humor." We also stated that, "Our creed is honesty and fairness in all our dealings."

2021 showed those attributes in spades.

To our employees reading this report: Each of you played a role in figuring out how to manage inconsistent health and safety conditions, changing workplace structures, supply chain roulettes, disrupted work, family, travel and other plans and everything else 2021 threw at you.

Thank you.

You did it and you produced record results while doing so. Wow!

We also want to provide a longer-term view of how things are going. We started the practice of looking at a few key statistics cumulatively over five-year horizons in last year's annual report. We provide the data in this format for several reasons. First, we think that longer term measurements tend to be more accurate. The effects of short-term volatility fade away and a better picture of real economic

performance begins to emerge. We also base our incentive compensation calculations on five-year results since we think they are more meaningful than volatile year-by-year measurements. We think this approach puts management and shareholders side-by-side. We're not in this for the short-term and we don't think our shareholders are either. We're both rooting for great long-term returns. Here are some cumulative key measurements over the last three five-year periods.

(dollars in millions, except per share data)	2017 - 2021	2012 - 2016	2007 - 2011
Total revenues	$ 45,010	$ 23,439	$ 11,452
Earned premiums	$ 26,125	$ 16,910	$ 9,665
Underwriting profits	$ 943	$ 1,092	$ 384
ILS and Program Services revenues	$ 1,211	N/A	N/A
ILS and Program Services operating loss	$ (13)	N/A	N/A
Markel Ventures revenues	$ 11,747	$ 4,276	$ 715
Markel Ventures EBITDA	$ 1,392	$ 495	$ 77
Net investment income	$ 2,038	$ 1,689	$ 1,383
Comprehensive income to shareholders	$ 6,163	$ 2,799	$ 1,208
Closing stock price per share, at end of period	$1,234.00	$ 904.50	$ 414.67

Insurance Engine

Our overarching goal in insurance is to build a leading global specialty insurance organization. The 2021 results from our insurance engine were fantastic and demonstrate strong progress towards that goal.

In 2021, in our underwriting operations we produced total gross written premiums of $8.5 billion compared to $7.2 billion a year ago. This stands as a new record.

More importantly, this record volume produced record underwriting profits of $628 million compared to $128 million a year ago. The combined ratio improved to 90% in 2021 compared to 98% in 2020.

We also believe we've fundamentally improved the profitability and lowered the volatility of our underwriting operations compared to previous years. The cost of natural catastrophes continues to exceed historical averages. We've experienced our share of those high losses in recent years and that shows up in the five-year numbers. We've changed the nature and the mix of business we write to lower our exposure to natural catastrophes and 2021 shows encouraging results from our actions. We're optimistic that 2022 will provide further evidence of the fundamentally improved profitability of our underwriting operations.

Last year, we described our 10-5-1 initiative which set out the goal to grow our insurance underwriting operations to the level where it would produce $10 billion of annual premiums within five years at a 90% or better combined ratio which would yield $1 billion of underwriting profits.

We're pleased to report to you that we are on track. We hit all of the marks set out in our plans and we are optimistic that we'll be able to continue on that path in 2022. These goals describe what we thought we could do with our existing businesses. We did not contemplate any acquisitions to meet the targets.

We've never gone five years without acquisitions, and we suspect that could continue to be true. Regardless, we think we've got the people, the products, and the systems in place that can produce these results. Any acquisitions would be cherries on top of the sundae.

Our insurance businesses operate around the globe and involve unusual and complex risks. We need first rate professionals to understand the specific risks involved in the varied business we write. We need excellent claims professionals to make sure our customers are treated fairly when losses take place. We need sales professionals to connect us to opportunities to put business on the books. We need actuaries who work hand and glove with our underwriters to price, manage, and quantify the risks we assume in writing business.

We need IT professionals to empower all of us to understand and transact business in the same way a surgeon needs surgical instruments and all that goes into making an operating room function.

We need accounting professionals to accurately provide us with the status and results of our progress in the way pilots need navigation systems.

The list of what it takes to run our insurance-related operations goes on and on and on.

While the name "10-5-1" describes a goal of writing $10 billion of premium volume in five years with $1 billion of underwriting profits that goal is only an end result. It is an *outcome*. What "10-5-1" really describes is a *process* used to organize and systematize what it would take to achieve that outcome.

The beauty of the "10-5-1" program at Markel is that we used that *process* as a thinking tool to examine every aspect of our underwriting operations. Profitable growth doesn't just happen by itself. The discipline of "10-5-1" caused us to rethink and examine what we needed to do in every aspect of our insurance operations. We continue to reengineer our processes and we are pleased with the progress we're reporting to you in this year's results.

The reviews of our process that took place to develop the "10-5-1" goals help us to orchestrate and manage what it means to operate our underwriting operations at global scale.

We are not done with this sort of discipline. We think it is valuable to constantly review and examine each part of our operations in the same way a great football coach keeps studying film to find new ideas, improve execution, and manage the roster.

Insurance operations at Markel span the globe. We offer Insurance, Reinsurance, Insurance Linked Securities (ILS), and Program Services. The detailed financial reports following this letter will provide you with the greater details on these lines of business. Suffice it to say that across the board, results improved in 2021.

While our overall insurance engine results demonstrate strong performance, we know that investors continue to have questions regarding our ILS operations. We know that the aggregate results from ILS initiatives have not met our (or your) expectations.

To address that reality, here are some questions we'll attempt to answer.

Why participate in ILS?

What has happened so far?

What are the prospects?

Why participate in ILS? We wrote in previous annual reports that all customers in all industries everywhere around the globe want things to be "better, faster, and cheaper." This is the basis of competition in today's hyper competitive world, and we believe that ILS structures can accomplish that for many types of insurance products. We also believe that the ILS structure will address more types of insurance risks over time as technology advances. We believe that being great at ILS will help protect and build the long-term insurance operations of Markel.

ILS lowers the cost of insurance for insurance buyers by connecting insurance risks to capital providers who seek stability and non-correlation in their returns along with acceptable rates of return.

Life is full of trade-offs, and this is one of them. When we commit capital in our insurance operations, we seek a high absolute rate of return for assuming insurance risk. For example, even in today's world of very low interest rates, we still strive to earn double digit rates of return when we commit your capital.

By contrast, the funders of capital in ILS, which are mainly pension funds and endowments, are willing to trade off some portion of absolute return in exchange for a return that should not correlate to the returns from the stock or bond markets. A mix of insurance-linked securities within their portfolios provides stability and helps pension and endowment funds operate within their guidelines.

What has happened so far? What are the prospects?

Starting in 2015 we made two separate acquisitions to enter the ILS world. First, we bought CATCo in 2015 and then Nephila in 2018.

Each company occupied a different place in the ILS ecosystem. CATCo offered products that sought very high, but potentially quite volatile, returns. Nephila offered products designed to produce non-correlated returns with lower volatility than other ILS providers.

In addition, State National, acquired in 2017, provides administrative services such as access to licensing, rated insurance paper, regulatory compliance, and other services needed to operate an insurance-related business. Though not an ILS operation, State National demonstrates how interconnected ILS is with traditional insurance.

We believed that the array of products and services the group offered would create the leading platform in the ILS industry. It has. While things have not gone exactly to plan, we do indeed operate the leading platform in the ILS industry. The ILS ecosystem we operate already makes Markel a better and more attractive partner throughout the insurance industry. We also believe that our comprehensive approach to handling insurance needs through both traditional and ILS mechanisms makes Markel a better, broader and more attractive insurance partner for all of our clients.

In short, the CATCo acquisition did not work out. CATCo did not produce acceptable returns. We ceased CATCo operations in 2019 and continue the process of winding up the affairs of that business.

By contrast, our acquisition of State National has worked out wonderfully. State National, in its Program Services division, provides a suite of administrative services that any ILS provider requires to operate in the regulated industry of insurance. State National itself does not provide ILS. But ILS providers, and many other capital providers across the spectrum of insurance, need the types of services State National provides in order to operate.

State National operated like a well-oiled machine before our acquisition and it continues to do so. We couldn't be happier with their results and prospects. They produced record results and profitability in 2021. State National continues to exceed our expectations from when we acquired the company.

In the case of Nephila, returns have been below our initial expectations, but we remain confident and excited about their prospects. We deeply respect and trust the management at Nephila. We recognize that the results they produced for their investors suffered from the series of larger than expected natural catastrophe losses in recent years.

2021 was the second largest year for natural catastrophes on record. Nephila continues to increase rates for covering these exposures. They've done so for multiple years. As is the case with all insurance products, we make calculations to determine sufficient rates to cover the risks involved, and we iterate and update those calculations constantly.

It's also important to remember the distinction that business written by Nephila is on the balance sheet of their pension fund and endowment customers. The underwriting risks of their business is generally not borne by Markel.

Our profits from the Nephila operation will occur when their investors earn the results they expect from their investments in the ILS securities they purchased. When that occurs, Nephila earns incentive fees which are a share of the returns achieved by their customers.

Since our acquisition of Nephila, the returns they've produced for their customers remain largely below the thresholds where incentive compensation takes place. We expect that the ongoing pricing and underwriting changes taking place will produce better results.

As to timing, prices did rise in 2021 but not yet enough to cover another elevated year of natural catastrophe losses. Nephila continues to iterate, refine their models, tighten underwriting standards, and increase prices. During the course of 2022, we expect to operate Nephila with modest profitability throughout the year. It will only be at the conclusion of 2022 that bonus profitability can be determined.

As is often the case at Markel, we ask you to trust us.

We seek to earn that trust by clearly communicating to you (and ourselves) when we make mistakes, learning from them, and then taking actions to make things better.

We are a learning organization. We will keep making mistakes. They are part of learning and heaven help us if we ever fear making mistakes so much that we stop taking appropriate risks to continue to learn and grow.

We're confident that the people of Nephila are the best at what they do in the ILS industry. They are capable and trustworthy teammates that embody every aspect of the Markel Style. Over time, they've continued to refine their product offerings and respond to customer needs. They've introduced new products that meet marketplace needs and desires for ESG and climate change products alongside traditional insurance coverages.

We, and they, look forward to showing you some wonderful results in the fullness of time and we ask for your trust and patience until that day.

Over the decades we've always validated the trust you put in us. It defines who we are. We do our best, and that usually works out.

Our partners at Hagerty also went public in 2021. We started our relationship with Hagerty in 2013. In 2019, we purchased 25% of the company for $213 million. In December of 2021, Hagerty raised additional capital by going public. We invested an additional $30 million and now own 23% of the company.

At year end, the total market value of Hagerty, as calculated from the closing stock price on the New York Stock exchange of $14.18, stood at $4.7 billion. That number multiplied by 23% is $1.1 billion. The difference between our carrying value of $257 million and $1.1 billion is $849 million. That $849 million of market value does not appear anywhere in our financial statements. Wait…What? (See accounting discussion for more comments.)

Hagerty accurately describes itself as "For people who love cars." They are the leading specialty insurance company dedicated to automotive

enthusiasts and are dedicated to "Serve drivers and the car culture for the future."

McKeel Hagerty leads a third-generation family business and he and his team have exceeded every hope we've had when we formed our partnership, and we look forward to many more years of being connected to the Hagerty organization. Hagerty, like us, is a purpose driven organization.

Markel is a purpose driven company, and our insurance operations provide a great example*. Life is a high wire act. We're the net that catches people when they fall.*

Markel Ventures Engine

In 2021, we reported record revenues of $3.6 billion compared to $2.8 billion in 2020. More importantly, we earned record EBITDA of $403 million compared to $367 million a year ago.

The people of Markel Ventures continue to embody every aspect of our creed as stated in the Markel Style.

We already referred to the first lines of the Markel Style when we talked about "hard work and a zealous pursuit of excellence." The second paragraph of the Markel Style states, "the Markel way is to seek to be a market leader in each of our pursuits. We seek to know our customers' needs and to provide our customers with quality products and services."

Notice how open ended this was in 1986? While we largely operated in the realm of insurance at that time, our creedal statement of the Markel Style recognized that it's a big world. We anticipated that people who embodied our values could take on new challenges in the fullness of time. Explicitly or implicitly, we left ourselves open to the idea of expanding beyond insurance.

Well, we've run with that idea.

Markel Ventures began in 2005 with the purchase of 80% of AMF Bakery equipment. At the time, AMF produced roughly $60 million in total revenues with EBITDA of approximately $5 million.

AMF Bakery equipment was indeed a *market leader in their industry* and *dedicated to knowing their customers and providing them with quality products and services*.

We've followed that recipe consistently for 16 years now and currently we've expanded the realm in which we operate to include house plants, building products, affordable housing, construction, concierge medical services, fire protection, IT consulting, data services, dorm room furniture, dredges, car trailers, industrial gas trailers, truck trailer flooring, and more.

In 2021, we added to our *more* list through our acquisitions of majority interests in Buckner Heavy Lift Cranes and Metromont. Buckner operates the largest domestic fleet of cranes that can lift up to 2000 tons. They are used for things like erecting wind turbines used to generate electricity at scale, large stadium construction, and renovation and other major construction projects.

Lifting hundreds up to thousands of tons cannot be done over the internet. It cannot be done from a distance. If you're going to lift a wind turbine in North Dakota or at sea you need to be there physically. You also really have to know what you're doing. This stuff is not for messing around. Buckner is a fourth-generation family business led by Doug Williams. Doug and his team exemplify everything we're looking for as we continue to grow.

Metromont is the leading producer of precast concrete in the southeast. Precast concrete is used for data centers, parking garages, office buildings, multifamily residential buildings, and other facilities. Precast concrete is an energy efficient and economically attractive way to build those types of structures. It's also heavy. As such, Metromont is unlikely to be subject to disruption by the internet or distant competitors. Metromont is a third-generation family business led by Rick Pennell. Rick and his team fit the mold of everything we're looking for in long-term minded people.

We welcome Buckner and Metromont to the family and we look forward to many years with Doug, Rick, and the teams at both companies.

At this time last year, we would not have expected to be able to find additional companies to add to Markel Ventures in 2021 given the extreme levels of pricing we observed in the private equity marketplace.

Fortunately, we found great leaders at Buckner and Metromont who cared about the long-term future of their businesses, and their people. While finances were important, and we paid and they received fair transaction prices, money wasn't the only factor. The long-term ethos and durable nature of Markel mattered to Doug and Rick and their teams as well.

We seek people like Doug and Rick and fortunately they seek us too. At this point, I don't know if we'll find any mates in 2022 or not but our circle of

relationships keeps expanding and reinforcing itself with each and every day of doing business together and with each and every transaction. It's a flywheel.

What ties all of these businesses together is that they are operated by people who share our values. The diversification and autonomy of these businesses creates a durable and resilient ecosystem that drives Markel forward.

Our secret sauce behind continuing to scale Markel is a commitment to our values.

We can continue to grow by keeping our businesses as autonomous and independent as possible. *Values are scalable, complexity that develops from trying to micro-manage from the top down is not.*

First-rate people want the freedom and trust to feel a sense of ownership and pride in what they do. Our people are craftsmen who take pride in their companies. Our system and approach provide the necessary capital it takes to run a business with a stable long-term focus.

Our leaders can make decisions with a consistent north star of doing what is right over the long-term. We're willing to incur short-term costs and bend over backwards to take care of our customers and our people. We think that this constant, enduring, and consistent focus on empowering our people, and remaining focused on the long-term, produces wonderful and durable economic results over time.

In 2005, Markel Ventures reported $11 million in revenues and $2 million of EBITDA (we only owned 80% of AMF and we only owned it for a portion of the year). In 2021, Markel Ventures produced $3.6 billion in revenues and $403 million in EBITDA. Cumulatively we've invested approximately $3.4 billion to acquire and fund these businesses. Cumulatively these businesses have built up cash balances and returned $1.5 billion to Markel. In economic terms, we've got a net investment of $1.9 billion on the line and in 2021 alone they produced EBITDA of $403 million. The reality is even better than those numbers would suggest since we laid out the cash for Buckner and Metromont near year end and show the full amount of capital committed and only partial-year EBITDA against that outlay.

We think those are very good financial returns on a standalone basis. We also think the resiliency from the diversification makes Markel a more durable, adaptable, and strong company. We also believe that the products and services provided by the Markel Ventures companies magnify the Win-Win-Win architecture by serving our customers, our employees, and our shareholders.

The people of Markel Ventures, many of whom are front-line workers, coped with every wild pitch thrown at them in the topsy-turvy world of 2021. We are grateful and amazed for their skills and dedication and what they continue to do.

The Markel playbook works.

Investment Engine

In 2021, we earned returns of 29.6% on our equity portfolio and (0.7)% on our fixed income holdings for a taxable equivalent total investment return of 8.8%. For the last five-year period we earned annual returns of 18.6% on our equity portfolio and 3.2% on fixed income for a taxable equivalent total investment return of 8.3%. For the last 10 years we've earned annual returns of 17.3% on our equity portfolio and 3.1% on our fixed income portfolio for a taxable equivalent total investment return of 6.8%. We believe longer periods tell you more about the amount and durability of our investment returns.

Given our longstanding and continuous discipline in investments, this section of the report will be the shortest. We'll briefly repeat our investment philosophy but there is nothing new to add.

Of our three engines, investments will tend to be the most volatile from year to year given the normal volatility (read manic depressive nature) of investment markets. Volatility diminishes over longer time frames and that's why we report the ten-year numbers. We also think it helps us remain steadfast and consistent as we manage our investments.

As we have stated for many years, the first investment decision we make is to invest in either equity securities or fixed income holdings. We make that first decision by allocating enough funds to the highest quality fixed income holdings we can find to make sure that we have enough fixed income holdings, with a margin of safety, to more than cover the entire amount of what we expect to pay out to policyholders in the form of insurance claims over time.

After we make that allocation to fixed income, we have discretion over what remains. To the fullest extent possible (keeping the margin of safety concept in mind) we look for equity investments that meet our four-part test. Those four parts are one, to invest in businesses with good returns on capital that don't use too much debt, two, with management teams that possess equal measures of talent and

integrity, three, that can reinvest their earnings at good rates of return or redistribute it, and four, at fair prices.

We hope you'll recognize the consistency of that four-part test through decades. In addition to our public security investments, equity investment decisions also include owning majority interests in privately held business (i.e., Markel Ventures).

As of December 31, 2021, our publicly traded portfolio stood at $9 billion. Our cost for that portfolio stands at $2.9 billion and the resulting unrealized gain totals $6.1 billion.

As to the value of the Markel Ventures portfolio……*

We'll include that in the * discussion on accounting matters.

Capital, Accounting, and Asterisks

In his book, *The Lincoln Highway*, Amor Towles wrote a section where one of the characters named Woolly explains his sense of the difference between a dictionary and a thesaurus. Towles writes, "How he had loved this dictionary-because its purpose was to tell you exactly what a word meant. Pick a word, turn to the appropriate page, and there was the word's meaning." A few paragraphs later Towles writes, "and as much as Woolly had loved the dictionary, he had loathed the thesaurus. Just the thought of it gave him the heebie-jeebies. Because the whole purpose of it seemed to be the opposite of the dictionary's. Instead of telling you exactly what a word meant, it took a word and gave you ten other words that could be used in its place."

I empathize with Woolly.

We would like to think we can be dictionary precise when using words like "capital" and "accounting" but we live in a thesaurus world.

Here are some thoughts about what these words mean in the context of Markel. Capital and accounting are intertwined and each of them create feedback loops upon the other. Some are tangible and some are intangible yet just as powerful and real.

For many words in the dictionary, there are multiple definitions. Capital is one of them. Capital has more than one definition and it means different things in different aspects of Markel.

In its most basic form, you can think of capital as the money we have. For the purposes of this discussion let's call that *blue capital*. It is the net value of our cash and investments. It is what we can allocate/invest in the normal course of running our business.

To put some numbers on it, at year end 2021 we have shareholders equity capital of $15 billion. That's an accounting entry on the right hand side of our balance sheet and it matches up against cash, fixed income holdings and equity securities on the left hand side of the balance sheet.

As we've stated before, what we do with that *blue capital* is to allocate it in a four-step process that we've consistently followed for years. First, we invest in organic growth opportunities in our existing array of businesses. People in our organization who've proven themselves by running profitable businesses are first in line when they need capital to grow or expand their businesses. Secondly, we allocate capital to new opportunities in the form of acquisitions in insurance or Markel Ventures type businesses. Third, we look for publicly traded securities that meet our four-part test. Fourth, if we've funded all three of those initiatives and still have excess capital, and if we believe Markel shares to be undervalued, we repurchase our own stock.

All four of those things can be going on at the same time. All were during 2021. We funded every internal initiative that passed muster, we acquired Buckner and Metromont in our Markel Ventures operations, we made $88 million of net investments in publicly traded equity securities, and we repurchased $199 million of Markel stock.

While doing all of that with the *blue capital* that any of us would recognize and describe as money or financial assets, we needed to do so while keeping our eye on another form of "capital."

The second definition of "capital" is an amount that regulators and rating agencies calculate to make judgments about the financial strength and soundness of our insurance operations. Those entities review our business and determine the amounts of *blue capital* they think we should have to safely and soundly conduct our business. For the purposes of this discussion let's call that *orange capital.*

Orange capital is a calculated amount. It is a target or threshold figure that we must be above. We need to have more *blue capital* than *orange capital* to satisfy regulators and rating agencies. And the more we exceed the necessary *orange capital* amount with our *blue capital*, the more we have excess capital and higher financial strength ratings.

Also, our *blue capital* contains sub shades of blue. If we carry capital in the form of cash, US Treasury securities, sovereign securities, and other high-quality fixed income securities you can call that *navy blue capital.* We get close to 100% credit dollar for dollar on that kind of *blue capital* to satisfy the *orange capital* requirements.

When we invest some of that *blue capital* into publicly traded equity securities, the shade of blue changes. Let's call that *baby blue capital* since we only get approximately 50% credit on the value of our *baby blue capital* in counting towards our *orange capital* requirements. Part of our calculation when we allocate funds to equity securities is to keep in mind some sense of what our margin of safety is over the regulatory *orange capital* hurdle levels to have the time and flexibility to allow our equity securities to increase enough in value to handle market volatility.

As we stated earlier, our publicly traded equity portfolio stood at $9 billion at year end compared to a cost basis of $2.9 billion. We've made good *baby blue capital* allocation decisions over the years, but we must always do so while keeping a weather eye on the interaction between *orange* and *blue capital*.

More severely, when we invest in a Markel Ventures opportunity, that starts out providing zero *orange capital* credit. In the eyes of certain regulators and rating agencies, we've burned the *blue capital* that we used to purchase Markel Ventures companies. It becomes *invisible capital*. As the Markel Ventures companies make money and distribute those earnings up to the Markel Corporation holding company, that capital titrates from invisible back to blue. Then we get to start the flywheel all over again by seeing where we stand on our *orange capital* settings to see if we have enough flexibility to turn our *blue capital* into higher earning *baby blue* or *invisible capital*.

Orange capital requirements are also influenced by how *fast* our insurance operations are growing and what kind of insurance risks they are writing. Any growth creates higher *orange capital* requirements, and high volatility natural catastrophe property coverages require more *orange capital* than lower volatility lines.

Our financial results in any given period also affect the levels of *orange capital* that regulators and rating agencies require.

Orange capital requirements are also influenced by accounting rules and pronouncements which change over time.

For example, take asterisk #1 from the first page of this letter on comprehensive income and how it is calculated differently over time. In 1986 when we went public, comprehensive income meant the amount of net income we earned according to GAAP accounting principles of the time and the tax-effected unrealized gain on our equity securities portfolio for the year.

By 2021, GAAP accounting changed its definitions and moved the place where gains and losses from our equity investment portfolio are included from other comprehensive income into net income. The sum remains the same, but the presentation is different. More importantly, Markel is a different company than it was in 1986. In 2021, we own and operate a wonderful set of businesses that comprise Markel Ventures. While the net income from Markel Ventures in 2021 of $174 million gets included in our comprehensive income, the change in the overall value of the businesses does not show up anywhere in our financial statements.

In 2020, Markel Ventures reported revenues of $2.8 billion and EBITDA of $367 million. In 2021 Markel Ventures reported revenues of $3.6 billion and EBITDA of $403 million. I would suggest that Markel Ventures is worth more today than a year ago as evidenced by these financial results. That increase in value does not show up in our financial statements nor is it included in the definitions of comprehensive income.

Consequently, it does not strike me as an apples-to-apples comparison. GAAP accounting uses the same term, but it means different things in different parts of our business. Comprehensive income did a good job of describing Markel in 1986 because it captured just about all of the changes that drive the value of your company. In 2021, Markel is a different company. Our economic performance is more than what comprehensive income reports, because comprehensive income fails to incorporate the value we create through our Markel Ventures engine.

Beyond the comparability challenge borne from the value being created at Markel Ventures, developments at Hagerty this year add to the "Through the Looking Glass" qualities of financial reporting.

Before going public, the value of our investment in Hagerty was the invisible type of capital I described earlier. Hagerty has and continues to produce wonderful results and creates *blue capital* from its earnings, but I think any reasonable person would think that the total value of the company far

exceeded the tangible book value created by yearly earnings.

Now that Hagerty is publicly traded, we at least have a daily mark to market indication of what Hagerty is worth in total and at year end, that amount was $1.1 billion.

That number of $1.1 billion compares to our carrying value of $257 million. The difference of $849 million does not appear anywhere on our financial statements. The accounting authorities opine that Markel is in a position to "significantly influence" the outcomes at Hagerty beyond what would normally be the case with our holdings of publicly traded securities and as such we will only include our annual percentage of earnings at Hagerty in our financial statements. As a result, we will not include the value of our Hagerty investment in the same way as we include the value of our publicly traded securities.

As the NYSE mark to market changes on a daily basis we will not include those changes in our comprehensive income calculations in the way that we do for publicly traded securities in our portfolio.

Accounting and economic reality seem detached to me.

Also, required levels of *orange capital* can be changed by fiat and whim of rating agencies and regulators and they can be moody.

All of this interplay creates a "Rubik's cube" where all of these items need to be balanced. We need to manage the real and potential feedback loops to keep all sides of the cube in alignment.

We are doing so and we're in fine shape.

Forever

As we continue to chart the radical idea of Markel being a forever company, we recognize that each and every one of us is mortal and our individual time horizons are not forever. We are constrained. But our ideas are not. The values that describe this company will endure and last beyond any of us. Richie and I are doing our best to build and maintain a culture that will last long after us. We're doing so by trying to set an example. We're doing so by trying to attract people to Markel who embrace our culture. We're doing so by trying to teach and inculcate values that will be practiced all around Markel, in all of our businesses, at all places, Forever……and right now.

That is our task and I'm delighted to report to you that 2021 stands as a milestone of what things look like when the constant efforts from years and years of diligent work collide with a reasonable external environment. All three of our engines of Insurance, Investments, and Markel Ventures ran well and we are optimistic about the durability of this unique design.

The singer/songwriter (philosopher) Paul Simon in his song "Something so Right" wrote:

When something goes wrong
I'm the first to admit it
I'm the first to admit it
But the last one to know
When something goes right
Well it's likely to lose me
It's apt to confuse me
It's such an unusual sight
I can't get used to something so right
Something so right

Some people never say the words
"I love you"
It's not their style
To be so bold
Some people never say those words
"I love you"
But like a child they're longing to be told

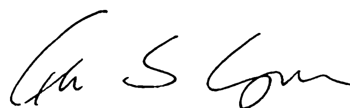
Markel, in its own singular way, is, "Something so Right."

It works.

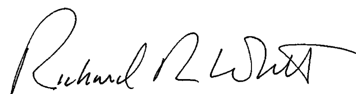
Every word of Simon's lyrics rings true for us and we will boldly tell you that we love you.

Thank you for your commitment to all that Markel means. We look forward to new challenges and new achievements that 2022 will bring, and to all that lies ahead.

Thank you.



Thomas S. Gayner, *Co-Chief Executive Officer*



Richard R. Whitt, III, *Co-Chief Executive Officer*

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

Annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2021

Commission File Number 001-15811

MARKEL CORPORATION

(Exact name of registrant as specified in its charter)

A Virginia Corporation
IRS Employer Identification No. 54-1959284

4521 Highwoods Parkway, Glen Allen, Virginia 23060-6148
(Address of principal executive offices) (Zip code)

Registrant's telephone number, including area code: (804) 747-0136

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of exchange on which registered
Common Stock, no par value	MKL	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐	Non-accelerated filer	☐
Smaller reporting company	☐	Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the shares of the registrant's Common Stock held by non-affiliates as of June 30, 2021 was approximately $15,976,000,000.

The number of shares of the registrant's Common Stock outstanding at February 2, 2022: 13,607,288.

Documents Incorporated By Reference: The portions of the registrant's Proxy Statement for the Annual Meeting of Shareholders scheduled to be held on May 11, 2022, referred to in Part III.

Markel Corporation
Form 10-K
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PART I

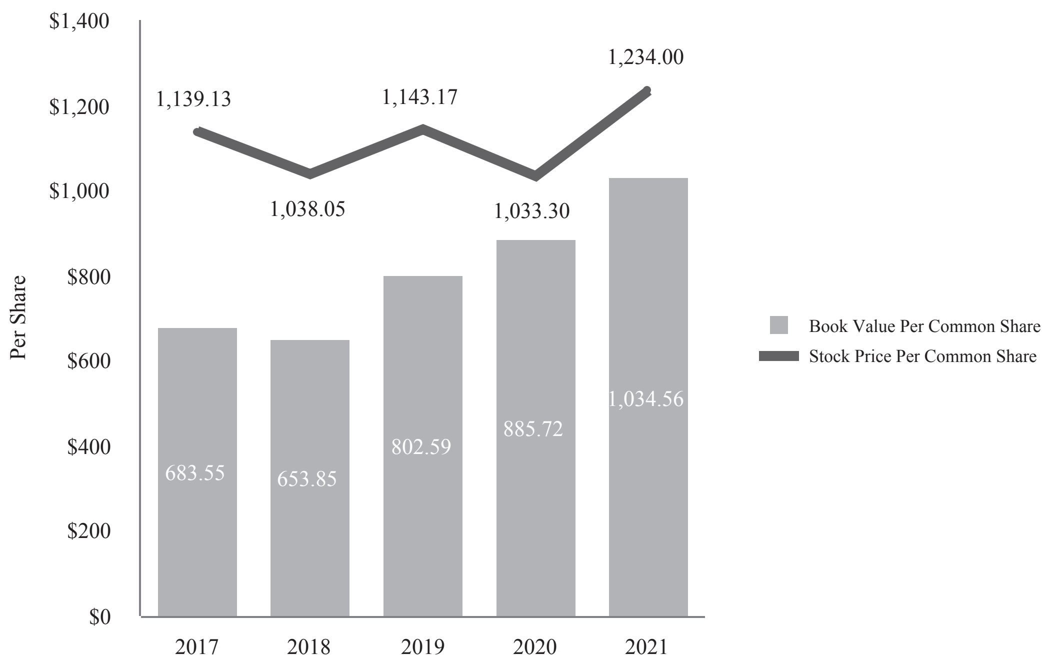
Item 1. BUSINESS

Markel Corporation is a diverse financial holding company serving a variety of niche markets. We aspire to build one of the world's great companies and deploy three financial engines in pursuit of this goal.

> *Insurance* - Our principal business markets and underwrites specialty insurance products using multiple platforms that enable us to best match risk and capital.
>
> *Investments* - Our investing activities are primarily related to our underwriting operations. The majority of our investable assets come from premiums paid by policyholders and the remainder is comprised of shareholder funds.
>
> *Markel Ventures* - Through our Markel Ventures operations, we own controlling interests in a diverse portfolio of businesses that operate outside of the specialty insurance marketplace.

Our financial goals are to earn consistent underwriting and operating profits and superior investment returns to build shareholder value. We measure financial success by our ability to grow book value per common share and the market price per common share of our stock, or total shareholder return, at high rates of return over a long period of time. To mitigate effects of short-term volatility and align with the longer-term perspective we apply to operating our businesses, we generally use five-year time periods to measure our performance. Growth in book value per common share is an important measure of our success because it includes all underwriting, operating and investing results. Over the past five years, the compound annual growth in book value per common share outstanding was 11%. Growth in total shareholder value is also an important measure of our success, as a significant portion of our operations are not recorded at fair value or otherwise captured in book value. Over the past five years, our common share price increased at a compound annual rate of 6%.

The following graph presents book value per common share and stock price per common share for the past five years as of December 31.



The following table presents summary financial data over the last five years, including book value per common share, market price per common share and other important financial measures and metrics.

(dollars in millions, except per share data)	**2021**	2020	2019	2018	2017	**5-Year CAGR [1]**
Results of Operations						
Earned premiums	**$ 6,503**	$ 5,612	$ 5,050	$ 4,712	$ 4,248	**11 %**
Net investment gains (losses) [2]	**1,979**	618	1,602	(438)	(5)	
Markel Ventures operating revenues	**3,644**	2,795	2,055	1,915	1,337	**25 %**
Total operating revenues [2]	**12,846**	9,735	9,526	6,841	6,062	**18 %**
Net income (loss) to common shareholders [2]	**2,389**	798	1,790	(128)	395	
Comprehensive income (loss) to shareholders	**2,078**	1,192	2,094	(376)	1,175	
Diluted net income (loss) per common share	**$176.51**	$ 55.63	$129.07	$ (9.55)	$ 25.81	
Financial Position						
Total investments, cash and cash equivalents and restricted cash and cash equivalents (invested assets)	**$28,292**	$24,927	$22,258	$19,238	$20,570	**8 %**
Total assets	**48,449**	41,710	37,474	33,306	32,805	**13 %**
Unpaid losses and loss adjustment expenses	**18,179**	16,222	14,729	14,276	13,584	**12 %**
Shareholders' equity	**$14,695**	$12,800	$11,071	$ 9,081	$ 9,504	**12 %**
Common shares outstanding (at year end, in thousands)	**13,632**	13,783	13,794	13,888	13,904	
Consolidated Performance Measures [3]						
Book value per common share outstanding	**$1,034.56**	$885.72	$802.59	$653.85	$683.55	**11 %**
5-Year CAGR in book value per common share [1]	**11 %**	10 %	8 %	7 %	11 %	
Closing stock price	**$1,234.00**	$1,033.30	$1,143.17	$1,038.05	$1,139.13	**6 %**
5-Year CAGR in closing stock price [1]	**6 %**	3 %	11 %	12 %	21 %	
U.S. GAAP combined ratio	**90 %**	98 %	94 %	98 %	105 %	
Investment yield [4]	**2 %**	2 %	3 %	3 %	3 %	
Taxable equivalent total investment return [4]	**9 %**	9 %	15 %	(1)%	10 %	

(1) CAGR—compound annual growth rate.

(2) In accordance with the provisions of Accounting Standards Update No. 2016-01, beginning January 1, 2018, all changes in the fair value of equity securities are recognized in net income.

(3) These measures provide a basis for management to evaluate performance. The method we use to compute these measures may differ from the methods used by other companies. See further discussion on the calculation of these measures and management's evaluation of these measures in Item 7 Management's Discussion & Analysis of Financial Condition and Results of Operations.

(4) See "Investing Results" under Item 7 Management's Discussion & Analysis of Financial Condition and Results of Operations for a reconciliation of investment yield to taxable equivalent total investment return, which is a non-GAAP financial measure.

Insurance

Our insurance engine is comprised of the following types of operations:

- Underwriting - Our underwriting operations are comprised of our risk-bearing insurance and reinsurance operations.
- Insurance-linked securities - Our insurance-linked securities (ILS) operations include investment fund managers that offer a variety of investment products, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives, as well as managing general agents that place risks with the funds managed or with third parties.
- Program services - Our program services business serves as a fronting platform that provides other insurance entities access to the United States (U.S.) property and casualty insurance market.

Through our underwriting, ILS and program services operations, we have a suite of capabilities through which we can access capital to support our customers' risks, which includes our own capital through our underwriting operations, as well as third party capital through our ILS and program services operations. Within each of these platforms, we believe that our specialty product focus and niche market strategy enable us to develop expertise and specialized market knowledge. We seek to differentiate ourselves from competitors by our expertise, service, continuity and other value-based considerations, including the multiple platforms through which we can manage risk and deploy capital. For example, we may leverage the strength of our underwriting platform to write certain risks on behalf of our ILS operations in accordance with their desired return objectives. We may also cede certain risks written through our underwriting operations to our ILS operations to the extent those risks are more aligned with the risk profile of our ILS investors than our own capital risk tolerance. Our ability to access multiple insurance platforms allows us to achieve income streams from our insurance operations beyond the traditional underwriting model.

Underwriting

Specialty Insurance and Reinsurance

Within our underwriting operations, we underwrite specialty insurance products on a risk-bearing basis. The specialty insurance market differs significantly from the standard market. In the standard market, insurance rates and forms are highly regulated, products and coverages are largely uniform with relatively predictable exposures and companies tend to compete for customers on the basis of price. In contrast, the specialty market provides coverage for hard-to-place risks that generally do not fit the underwriting criteria of standard carriers.

Competition in the specialty insurance market tends to focus less on price than in the standard insurance market and more on other value-based considerations, such as availability, service and expertise. While specialty market exposures may have higher perceived insurance risks than their standard market counterparts, we seek to manage these risks and achieve higher financial returns. To reach our financial and operational goals, we must have extensive knowledge and expertise in our chosen markets. Many of our larger accounts are considered on an individual basis where customized forms and tailored solutions are employed.

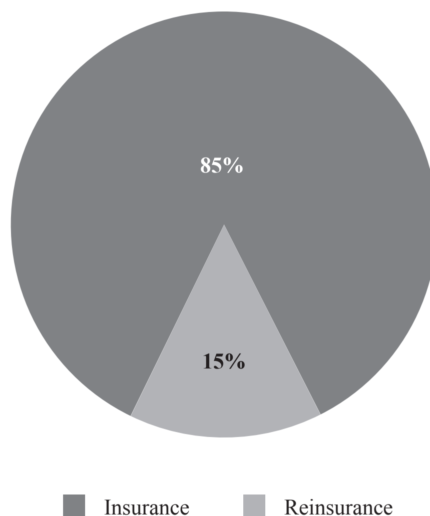
By focusing on the distinctive risk characteristics of our insureds, we have been able to identify a variety of niche markets where we can add value with our specialty product offerings and alternative platforms through which we can access capital to support our customers' risks. Examples of niche insurance markets that we have targeted include liability coverage for highly specialized professionals, wind and earthquake-exposed commercial properties, equine-related risks, transaction-related risks, classic cars, credit and surety-related risks, collateral protection risks and marine, energy and environmental-related activities. Our market strategy in each of these areas of specialization is tailored to the unique nature of the loss exposure, coverage and services required by insureds. In each of our niche markets, we assign teams of experienced underwriters and claims specialists who provide a full range of insurance services.

We also participate in the reinsurance market in certain classes of reinsurance product offerings. In the reinsurance market, our clients are other insurance companies, or cedents. We typically write our reinsurance products in the form of treaty reinsurance contracts, which are contractual arrangements that provide for automatic reinsuring of a type or category of risk underwritten by cedents. Generally, we participate on reinsurance treaties with a number of other reinsurers, each with an allocated portion of the treaty, with the terms and conditions of the treaty being substantially the same for each participating reinsurer. With treaty reinsurance contracts, we do not separately evaluate each of the individual risks assumed under the contracts and are largely dependent on the individual underwriting decisions made by the cedent. Accordingly, we review and analyze the cedent's risk management and underwriting practices in deciding whether to provide treaty reinsurance and in pricing of treaty reinsurance contracts.

Our reinsurance products are written globally on both a quota share and excess of loss basis. Quota share contracts require us to share the losses and expenses in an agreed proportion with the cedent. Excess of loss contracts require us to indemnify the cedent against all or a specified portion of losses and expenses in excess of a specified dollar or percentage amount. Our reinsurance products may include features such as contractual provisions that require our cedent to share in a portion of losses resulting from ceded risks, may require payment of additional premium amounts or provide experience refunds if the losses we incur differ from those projected at the time of the execution of the contract or may require a reinstatement premium to restore coverage after there has been a loss occurrence.

We distinguish ourselves in the reinsurance market by the expertise of our underwriting teams, our access to global reinsurance markets, our ability to offer large capacity lines and our ability to customize reinsurance solutions to fit our cedents' needs. Additionally, as with our insurance underwriting operations, our ability to access third party capital through our ILS and program services platforms provides additional capital alternatives to support certain risks, to the extent those risks do not align with our underwriting risk tolerance. For example, effective January 2021, we discontinued writing property reinsurance business, including catastrophe-exposed property business, on a risk-bearing basis and instead, will only write such business on behalf of our ILS operations, to the extent it matches the risk profile of our third-party ILS investors, who will ultimately assume the risk. Our reinsurance product offerings include coverage for general liability, professional liability, workers' compensation and credit and surety risks, and through 2021, catastrophe-exposed property risks.

The following chart presents the composition of our underwriting operations between insurance and reinsurance based on 2021 gross premium volume of $8.5 billion, which also aligns with our two reportable underwriting segments.



The Insurance segment includes all of our direct business and facultative placements and is written through our Markel Specialty, Markel International and State National divisions, with the exception of our State National division's program services business, which is not included in a reportable segment. The Reinsurance segment includes all treaty reinsurance and is primarily written through our Global Reinsurance division. Additional detail regarding our underwriting divisions and products is included in "Underwriting Segments."

The following table summarizes our U.S. insurance and reinsurance subsidiaries.

U.S. Legal Entity	Abbreviation	State of Domicile
Evanston Insurance Company	EIC	Illinois
Essentia Insurance Company	Essentia	Missouri
FirstComp Insurance Company	FCIC	Nebraska
Markel American Insurance Company	MAIC	Virginia
Markel Global Reinsurance Company	MGRC	Delaware
Markel Insurance Company	MIC	Illinois
National Specialty Insurance Company	NSIC	Texas
State National Insurance Company, Inc.	SNIC	Texas
Suretec Insurance Company	SIC	Texas

All U.S. subsidiaries, with the exception of FCIC, are licensed, authorized, or accredited to write business in all 50 states and the District of Columbia. EIC is also authorized in Guam, Puerto Rico and the U.S. Virgin Islands. MAIC is also licensed in Puerto Rico and MIC is also licensed in Guam. FCIC is licensed in 29 states.

The following table summarizes our international insurance and reinsurance subsidiaries.

International Legal Entity	Abbreviation	Country
Markel Bermuda Limited	MBL	Bermuda
Markel Insurance SE	MISE	Germany
Markel International Insurance Company Limited	MIICL	United Kingdom
Markel Syndicate 3000	Syndicate 3000	United Kingdom

Markets

In the U.S., we write business in the excess and surplus lines (E&S) and admitted insurance and reinsurance markets. The E&S, or non-admitted, market focuses on hard-to-place risks and loss exposures that generally cannot be written in the standard market. U.S. insurance regulations generally require an E&S account to be declined by admitted carriers before an E&S company may write the business. E&S eligibility allows our insurance subsidiaries to underwrite unique loss exposures with more flexible policy forms and unregulated premium rates. This typically results in coverages that are more restrictive and more expensive than coverages in the standard market. In 2020, the E&S market represented $66 billion, or 9%, of the $729 billion U.S. property and casualty industry.[1] In 2020, we were the third largest E&S writer in the U.S. as measured by direct premium writings.[1] Our E&S insurance operations are conducted through EIC. Our business written in the admitted market focuses on risks that, although unique and hard-to-place in the standard market, must remain with an admitted insurance company for marketing and regulatory reasons. Hard-to-place risks written in the admitted market cover insureds engaged in similar, but highly specialized, activities that require a total insurance program not otherwise available from standard insurers or insurance products that are overlooked by large admitted carriers. The admitted market is subject to more state regulation than the E&S market, particularly with regard to rate and form filing requirements, restrictions on the ability to exit lines of business, premium tax payments and membership in various state associations, such as state guaranty funds and assigned risk plans. The majority of our admitted insurance operations are conducted through MIC, MAIC, FCIC and Essentia. Our admitted operations also include SIC, SNIC, and NSIC. Our U.S. reinsurance operations are conducted through MGRC.

We also participate in the London insurance and reinsurance market, which is known for its ability to provide innovative, tailored coverage and capacity for unique and hard-to-place risks. Hard-to-place risks in the London market are generally distinguishable from standard risks due to the complexity or significant size of the risk. It is primarily a broker market, which means that insurance brokers bring most of the business to the market. Risks written in this market are written on either a

[1] *Market Segment Report - U.S. Surplus Lines*, A.M. Best *(September 16, 2021)*

direct basis or a subscription basis, the latter of which means that loss exposures brought into the market are typically insured by more than one insurance company or Lloyd's of London (Lloyd's) syndicate, often due to the high limits of insurance coverage required. When we write business in the subscription market, we prefer to participate as lead underwriter in order to control underwriting terms, policy conditions and claims handling. We participate in the London insurance and reinsurance market primarily through Markel Capital Limited (Markel Capital) and MIICL. Markel Capital is the corporate capital provider for Syndicate 3000, through which our Lloyd's operations are conducted. Syndicate 3000 is managed by Markel Syndicate Management Limited. In addition to their headquarters in London, Markel Capital and MIICL have offices across the United Kingdom (U.K.), Europe, Canada, Asia and the Middle East through which we are able to offer insurance and reinsurance. The London insurance market produced approximately $86 billion of gross written premium in 2020, of which $48 billion was produced by Lloyd's syndicates.[2,3] In 2020, our share of the London market was approximately 2% as measured by gross written premiums.

In Bermuda, which is known for its significant concentration of insurance and reinsurance businesses, we participate in the worldwide insurance and reinsurance markets. The Bermuda property and casualty market is a significant source of capital for the U.S. market and the leading location for cessions by U.S. insurers.[4] The Bermuda market produced $77 billion of gross written premium in 2019.[5] In 2019, our share of the Bermuda market was approximately 1% as measured by gross written premiums in our underwriting operations. We conduct our Bermuda underwriting operations through MBL, which is registered as a Class 4 insurer and Class C long-term insurer under the insurance laws of Bermuda.

We also write business through MISE, a regulated insurance carrier located in Munich, Germany. In anticipation of the U.K.'s exit from the European Union (E.U.), which occurred on January 31, 2020, we established MISE in 2018. From its offices in Germany, MISE transacts business in E.U. member states and throughout the European Economic Area (EEA). MISE has established branches in Ireland, the Netherlands, Spain, Switzerland, France and the U.K. In order to maintain access to E.U. business for Lloyd's syndicates, including Syndicate 3000, the Society of Lloyd's has organized an insurance company in Brussels, Belgium, which supplements, or serves as an alternative to, MISE for access to E.U. markets. For further discussion regarding the exit of the U.K. from the E.U., and its potential impacts to us, see the risk factor titled "The exit of the United Kingdom from the European Union could have a material adverse effect on us" under Item 1A Risk Factors.

While we operate in various other markets, substantially all of our gross written premiums in 2021 were written from our platforms in the United States, United Kingdom, Bermuda and Germany. In 2021, 80% of gross premium writings from our global underwriting operations were attributed to risks or cedents located in the United States. We were the 39th largest reinsurer in 2020, as measured by worldwide gross reinsurance premium writings.[6]

Most of our business is placed through insurance and reinsurance brokers, retail insurance agents and intermediaries, including managing general agents. Brokers and retail agents have limited quoting and binding authority. Managing general agents have broader underwriting authority. These agents are carefully selected, and agency business is controlled through regular audits and pre-approvals. Certain products and programs are marketed directly to consumers or distributed through wholesale brokers. We seek to develop and capitalize on relationships with insurance and reinsurance brokers, insurance and reinsurance companies, large global corporations and financial intermediaries to develop and underwrite business. A significant volume of premium for the property and casualty insurance and reinsurance industry is produced through a small number of large insurance and reinsurance brokers. In 2021, the top three independent brokers accounted for 28% of gross premiums written in our underwriting segments. Additionally, a significant portion of the reinsurance contracts securitized through our ILS operations, for the benefit of third party investors, are placed through these three independent brokers.

Ceded Reinsurance

In a reinsurance transaction, an insurance company transfers, or cedes, all or part of its exposure in return for a premium. In a retrocessional reinsurance transaction, a reinsured exposure is further ceded to another reinsurer. Within our underwriting operations, we purchase reinsurance and retrocessional reinsurance to manage our net retention on individual risks and overall exposure to losses, while providing us with the ability to offer policies with sufficient limits to meet policyholder needs. Our reinsurance and retrocessional reinsurance strategy includes purchasing sufficient coverage for our catastrophe-exposed policies to ensure that our net retained catastrophe risk is within our corporate tolerances. Additionally, with multiple

[2] *London Company Market Statistics Report*, International Underwriting Association *(September 2021)*
[3] *Lloyd's Annual Report 2020*
[4] *Offshore Reinsurance in the U.S. Market*, Reinsurance Association of America *(2019)*
[5] *Bermuda Monetary Authority 2020 Annual Report*
[6] *Market Segment Report - Global Reinsurance*, A.M. Best *(August 31, 2021)*

platforms through which we are able to connect risk and capital, we may leverage our underwriting expertise to support third party capital in our ILS and program services platforms in order to most efficiently match our customer's risk with the appropriate source of capital. In those instances where we are ceding risks within our underwriting operations to one of our other insurance platforms, we earn fees and commissions in exchange for our services.

Effective January 2021, we discontinued writing property reinsurance business, including catastrophe-exposed property business, on a risk-bearing basis within our Global Reinsurance division. Instead, we will only write such business on behalf of our Nephila ILS operations, to be ceded and placed with third-party capital, to the extent it fits the ILS investors' risk profile. On other product lines for which we purchase reinsurance or retrocessional reinsurance, we have shifted from buying proportional reinsurance coverages towards excess of loss coverages in both our Insurance and Reinsurance segments and have also shifted from purchasing coverages related to specific lines of business towards enterprise-wide coverages. All of these changes allow us to retain more of our profitable business while continuing to manage volatility within our underwriting results. Net retention of gross premium volume in our underwriting segments was 84% in 2021.

Reinsurance and retrocessional treaties are generally purchased on an annual basis and are subject to renegotiation at renewal. In most circumstances, the reinsurer remains responsible for all business produced before termination. Treaties typically contain provisions concerning ceding commissions, required reports to reinsurers, responsibility for taxes, arbitration in the event of a dispute and provisions that allow us to demand that a reinsurer post letters of credit or assets as security if a reinsurer becomes an unauthorized reinsurer under applicable regulations or if its rating falls below an acceptable level.

Our ceded reinsurance and retrocessional contracts do not legally discharge us from our primary liability for the full amount of the policies, and we will be required to pay the loss and bear collection risk if the reinsurer fails to meet its obligations under the reinsurance agreement. We attempt to minimize credit exposure to reinsurers through adherence to internal ceded reinsurance guidelines. We manage our exposures so that no unsecured exposure to any one reinsurer is material to our ongoing business.

When appropriate, we pursue reinsurance commutations that involve the termination of ceded reinsurance and retrocessional reinsurance contracts. Our commutation strategy related to ceded reinsurance and retrocessional contracts is to reduce credit exposure and eliminate administrative expenses associated with the run-off of ceded reinsurance placed with certain reinsurers.

See note 10 of the notes to consolidated financial statements included under Item 8 and Item 7A Quantitative and Qualitative Disclosures About Market Risk for additional information about our ceded reinsurance programs and exposures.

Competition and Underwriting Philosophy

We compete with numerous domestic and international insurance companies and reinsurers, Lloyd's syndicates, risk retention groups, insurance buying groups, risk securitization programs, alternative capital sources, such as that provided through ILS, and alternative self-insurance mechanisms. We also compete with new companies that continue to be formed to enter the insurance and reinsurance markets, particularly companies with new or "disruptive" technologies or business models. Competition may take the form of lower prices, broader coverages, greater product flexibility, enhanced digital capabilities for distribution of insurance products, higher coverage limits, higher quality services or higher ratings by independent rating agencies. In all of our markets, we compete on the basis of overall financial strength, ratings assigned by independent rating agencies, development of specialty products to satisfy well-defined market needs and by maintaining relationships with agents, brokers and insureds who rely on our expertise. This expertise is our principal means of competing. We offer a diverse portfolio of products, each with its own distinct competitive environment, which requires us to be responsive to changes in market conditions for individual product lines. With each of our products, we seek to write business that produces consistent underwriting profits by competing with innovative ideas, appropriate pricing, expense control and quality service to policyholders, agents and brokers. More recently, we have also leveraged our underwriting capacity and expertise through relationships with start-ups and digital distribution partners through which we can develop ideas that leverage emerging technologies and modern customer acquisition strategies to create the service and experience that consumers have grown to expect and demand.

Few barriers exist to prevent insurers and reinsurers from entering our markets within the property and casualty industry. Market conditions, risk tolerance and capital capacity influence the degree of competition at any point in time. During periods of excess underwriting capacity, as defined by availability of capital, competition can result in lower pricing and less favorable policy terms and conditions for insurers. During periods of reduced underwriting capacity, pricing and policy terms and conditions are generally more favorable for insurers. Historically, the performance of the property and casualty insurance and reinsurance industries has tended to fluctuate in cyclical periods of price competition and excess underwriting capacity, followed by periods of high premium rates and shortages of underwriting capacity. At any given time, our portfolio of insurance products could be experiencing varying combinations of these characteristics. This cyclical market pattern can be more pronounced in the specialty insurance and reinsurance markets in which we compete than the standard insurance market.

Following several years of price decreases and the high level of natural catastrophes that occurred in 2017, we began seeing more favorable rates in 2018, particularly on our catastrophe-exposed and loss-affected business. Since 2018, we have continued to see favorable rates across most product lines, which further strengthened in 2020 and 2021 following the continued high level of natural catastrophes and significant losses attributed to the COVID-19 pandemic. In 2020 and 2021, the favorable rate environment was most prominent within our professional liability and general liability product lines, based on general market conditions, the impacts of social inflation, including increased litigation, as well as an increase in the severity of losses in these product lines. Additionally, recent increases in economic inflation, and an expectation that this trend will continue, have created more uncertainty around the ultimate losses that will be incurred to settle claims on these longer-tail product lines. These factors, as well as the current and expected impacts of the sustained low interest rate environment on net investment income, have resulted in higher rates. The primary exception to the favorable rate environment is workers' compensation, where we continue to see low single digit rate decreases given generally favorable loss experience in recent years.

By focusing on market niches where we have underwriting expertise, and leveraging capabilities offered through our multiple insurance platforms, we seek to earn consistent underwriting profits, which are a key component of our strategy. The property and casualty insurance industry commonly defines underwriting profit or loss as earned premiums net of losses and loss adjustment expenses and underwriting, acquisition and insurance expenses. We believe that the ability to achieve consistent underwriting profits demonstrates knowledge and expertise, commitment to superior customer service and the ability to manage insurance risk. We use underwriting profit or loss as a basis for evaluating our underwriting performance. The combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums. A combined ratio less than 100% indicates an underwriting profit, while a combined ratio greater than 100% reflects an underwriting loss. In 2021, our combined ratio was 90%. See Item 7 Management's Discussion & Analysis of Financial Condition and Results of Operations for a discussion of our underwriting results.

We routinely review the pricing of our major product lines. When we believe the prevailing market price will not support our underwriting profit targets, the business is not written. As a result of our underwriting discipline, gross premium volume may vary when we alter our product offerings to maintain or improve underwriting profitability.

Over the past few years, we have increased our focus on growing our most profitable lines of business and have discontinued certain lines or programs that have not performed consistent with our expectations. This is particularly true within our Reinsurance segment, where we discontinued writing property reinsurance business, including catastrophe-exposed property business, on a risk-bearing basis in 2021, and instead, any such business written is now ceded to our ILS operations to be placed with third party capital. In more limited instances, we have taken similar actions within our Insurance segment, and we have also made changes in our ceded reinsurance programs, as previously discussed. With these changes, along with the more favorable rates we are seeing in the market, we expect less volatility in our underwriting results going forward.

Underwriting Segments

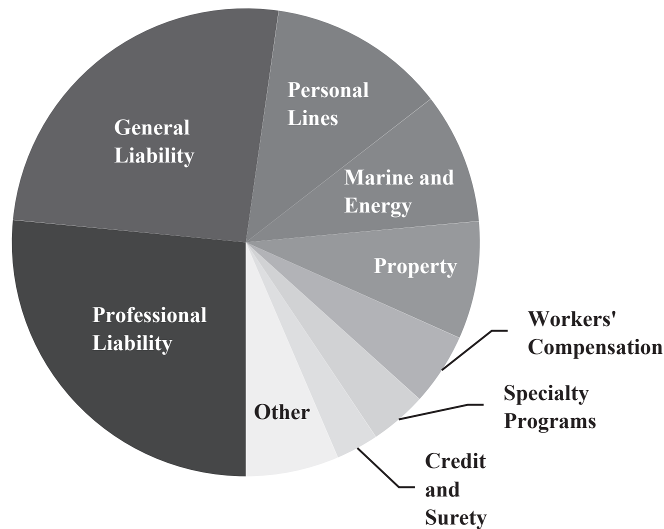
We monitor and assesses the performance of our ongoing underwriting operations on a global basis in the following two segments: Insurance and Reinsurance. See note 2 of the notes to consolidated financial statements included under Item 8 for additional segment reporting disclosures.

Insurance Segment

Our Insurance segment reported gross premium volume of $7.2 billion, earned premiums of $5.5 billion and an underwriting profit of $696.4 million in 2021. The following chart presents the composition of our Insurance segment by division based on 2021 gross premium volume.

The Markel Specialty division writes business on an admitted and non-admitted basis for individuals and small businesses to Fortune 1000 companies through agents and brokers in the U.S., Bermuda, the U.K. and Ireland as well as program insurance and other specialty coverages for well-defined niche markets. The Markel Specialty division is a unified platform that provides easy access to our diverse portfolio of products and capabilities. The Markel International division writes business worldwide from our London and Munich-based platforms, which include branch offices around the world. The State National division writes collateral protection insurance, which insures personal automobiles and other vehicles held as collateral for loans made by credit unions, banks and specialty finance companies through its lender services product line on both an admitted and non-admitted basis.

The following chart displays the types of products written in our Insurance segment based on 2021 gross premium volume.



Professional liability coverages include unique solutions for highly specialized professions, including architects and engineers, lawyers, accountants, agents and brokers, service technicians and consultants. We offer claims-made healthcare liability coverage for doctors and dentists; claims-made professional liability coverage for individual healthcare providers such as therapists, pharmacists, physician assistants and nurse anesthetists; and coverages for medical facilities and other allied healthcare risks such as clinics, laboratories, pharmacies and senior living facilities. Other professional liability coverages include errors and omissions, union liability, professional indemnity, intellectual property, executive liability for financial institutions and Fortune 1000 companies, including transaction liability for mergers and acquisitions, and management liability. Additionally, we offer cyber liability products, which provide coverage for, among other things, data breach and privacy liability, data breach loss to insureds and electronic media coverage.

General liability product offerings include a variety of primary and excess liability coverages targeting apartments and office buildings, retail stores, contractors, consultants, construction professionals, financial service professionals, professional practices, social welfare organizations and medical products, as well as businesses in the life sciences, energy, medical, healthcare, pharmaceutical, recreational, transportation, heavy industrial and hospitality industries. Specific products include excess and umbrella products, products liability products, environmental liability products and casualty facultative reinsurance written for individual casualty risks.

Personal lines products provide first and third party coverages for classic cars, motorcycles and a variety of personal watercraft, including vintage boats, high performance boats and yachts and recreational vehicles, such as motorcycles, snowmobiles and ATVs. Based on the seasonal nature of much of our personal lines business, we generally will experience higher claims activity during the second and third quarters of the year. Additionally, property coverages are offered for mobile homes, dwellings and homeowners that do not qualify for standard homeowner's coverage, as well as personal umbrella coverage.

Marine and energy products include a portfolio of coverages for cargo, energy, hull, liability, war and terrorism risks. The cargo product line is an international transit-based book providing coverage for many types of cargo. Energy coverage includes all aspects of oil, gas and renewable energy activities. Hull coverages consist of coverage for physical damage to ocean-going tonnage, yachts and mortgagees' interests. Liability coverage provides for a broad range of energy liabilities, as well as traditional marine exposures including charterers, terminal operators and ship repairers. War coverage includes protections for the hulls of ships and aircraft, and other related interests, against war and associated perils. Terrorism coverage provides for property damage and business interruption related to political and civil violence including war and civil war.

Property coverages consist principally of fire, allied lines (including windstorm, hail and water damage) and other specialized property coverages, including catastrophe-exposed property risks such as earthquake and wind on both a primary and excess basis. Catastrophe-exposed property risks are typically lower frequency and higher severity in nature than more standard property risks. Our property coverages are exposed to windstorm losses that, based on the seasonal nature of those events, are more likely to occur in the third and fourth quarters of the year. Our property risks range from small, single-location accounts to large, multi-state, multi-location, multi-national accounts on a worldwide basis. Other types of property products include inland marine products, railroad-related products and specie coverage for fine art on exhibition and in private collections.

Workers' compensation products provide wage replacement and medical benefits to employees injured in the course of employment and target main-street, service and artisan contractor businesses, retail stores and restaurants.

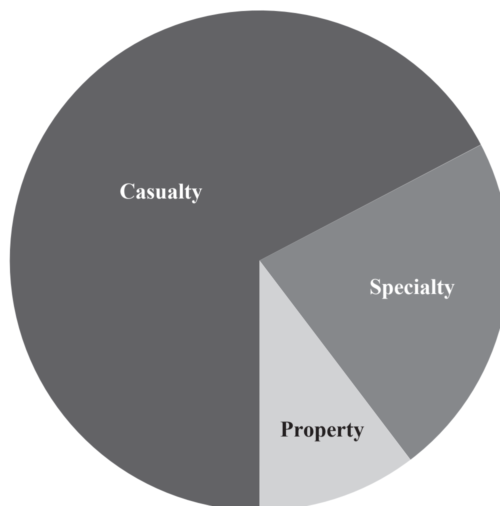
Specialty programs business included in this segment is offered on a standalone or package basis and generally targets specialized commercial markets and various customer groups, such as amateur sports and fitness clubs. Other specialty programs business written in this segment includes general agent programs that use managing general agents to offer single source admitted and non-admitted programs for a specific industry, class or line of business, including first and third party coverages such as packaged policies for providers of leisure and recreational activities.

Credit and surety products consist primarily of trade credit and prepayment coverage and a range of bonds and guarantees that support contractual obligations, as well as other coverages for specific credit risks, markets and contingencies. Key risks covered include those of counterparty insolvency and defaults by government-owned entities. The key coverages under surety products include contractual performance and payment risks, commercial license and permit obligations and obligations related to judicial proceedings such as court and fiduciary bonds.

Other product lines within the Insurance segment include auto and collateral protection insurance.

Reinsurance Segment

Our Reinsurance segment product offerings are underwritten primarily by our Global Reinsurance division, which operates from platforms in the U.S., Bermuda and the U.K. Our Reinsurance segment reported gross premium volume of $1.2 billion, earned premiums of $1.0 billion and an underwriting loss of $55.2 million in 2021. The following chart displays the types of products written in our Reinsurance segment based on 2021 gross premium volume.



Our casualty treaty reinsurance programs are written on a quota share and excess of loss basis and include general liability, professional liability, transaction liability, healthcare liability and environmental impairment liability. General liability reinsurance includes umbrella and excess casualty products that are written worldwide. Our professional liability reinsurance programs are offered worldwide and consist of directors and officers liability, including publicly traded, private, and non-profit companies in both commercial and financial institution arenas; lawyers errors and omissions for small, medium and large-sized law firms; accountants errors and omissions for small and medium-sized firms; technology errors and omissions and cyber liability focusing on network security and privacy exposures. Transaction liability provides representation, warranty and indemnity coverage for mergers and acquisitions, including coverage for tax, contingent liability and specific litigation claims. Healthcare liability reinsurance products are offered in the United States and include coverage for physician, surgeon, hospital and long-term care medical malpractice writers. Environmental treaty reinsurance provides coverage for pollution legal liability, contractors pollution and professional liability exposures on both a nationwide and regional basis within the U.S.

Specialty treaty reinsurance products offered in the Reinsurance segment include structured and whole turnover credit, political risk, mortgage and contract and commercial surety reinsurance programs covering worldwide exposures, public entity reinsurance products, workers' compensation excess of loss and quota share treaties, whole account, marine and agriculture reinsurance products. Our mortgage products offer coverage for private mortgage insurers in the U.S., Australia and Europe. Our public entity reinsurance products offer customized programs for government risk pools, including counties, municipalities, schools, public housing authorities and special districts (e.g., water, sewer, parks) located in the U.S. Types of coverage for public entities include general liability, environmental impairment liability, cyber and errors and omissions. Our workers' compensation business includes standard and catastrophe-exposed workers' compensation business. Marine reinsurance products include offshore and onshore marine and energy risks on a worldwide basis, including hull, cargo and liability. Agriculture reinsurance covers multi-peril crop insurance, hail and related exposures, for risks located in the U.S. and Canada.

Property reinsurance products offered in the Reinsurance segment in 2021 were primarily comprised of our retrocessional reinsurance business, a portion of which was ceded to Lodgepine Reinsurance Limited (Lodgepine Re) effective July 1, 2021. These products provide coverage for all types of underlying exposures, including catastrophe exposures, and worldwide geographic zones. Effective January 1, 2022, we discontinued writing property retrocessional reinsurance business. Prior to 2021, we also offered property reinsurance treaty products on an excess of loss and quota share basis for catastrophe exposures worldwide. Effective January 2021, we discontinued writing property reinsurance business, including catastrophe-exposed property business, on a risk-bearing basis within our Global Reinsurance division. Instead, we will only write such business on behalf of our Nephila ILS operations, to the extent it matches the risk profile of our third-party ILS investors, who will

ultimately assume the risk. This business is included with our other fronting operations, which are not included in a reportable segment. Some of our property reinsurance contracts written prior to 2021 had multi-year terms, however, effective January 1, 2022, we are off-risk for substantially all property loss exposures, including catastrophe exposures, previously written within our Reinsurance segment. On the contracts that are ceded to our Nephila ILS operations, we will continue to bear underwriting risk for aggregate agreement year losses on these exposures in excess of a limit that we believe is highly unlikely to be exceeded. Historically, our catastrophe exposures were generally written on an excess of loss basis and targeted both personal and commercial lines of business providing coverage for losses from natural disasters, including hurricanes, windstorms and earthquakes. Based on the seasonal nature of hurricanes and windstorms, certain catastrophic losses are more likely to occur in the third and fourth quarters of the year.

Insurance-Linked Securities

Our insurance-linked securities operations are primarily comprised of our Nephila operations and are not included in a reportable segment. Through our insurance-linked securities operations, we offer alternative capital to the reinsurance market while providing investors with investment strategies that typically are uncorrelated with traditional asset classes. We receive management fees for investment and insurance management services provided through these operations based on the net asset value of the accounts managed, and for certain funds, incentive fees based on the annual performance of the funds managed. We also provide managing general agent services and receive commissions based on the direct written premiums of the insurance contracts placed. Total revenues from our insurance-linked securities operations for the year ended December 31, 2021 were $209.2 million, which are included in services and other revenues in our consolidated statement of income and comprehensive income.

Investment performance in the broader insurance-linked securities market has been adversely impacted by consecutive years of elevated catastrophe losses, as well as by COVID-19 in 2020. These events, as well as recent volatility in the capital markets, also have impacted investor decisions around allocation of capital to ILS, which in turn has impacted our capital raises and redemptions within the funds we manage.

Nephila

In November 2018, we completed the acquisition of all of the outstanding shares of Nephila Holdings Ltd. (together with its subsidiaries, Nephila). Headquartered in Bermuda, Nephila serves as an insurance and investment fund manager and managing general agent that offers a broad range of investment products to investors in an asset class that is uncorrelated to both traditional and alternative investments. Nephila structures bespoke risk transfer products for insurance and reinsurance companies, government entities, banks and institutional investors, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives.

Nephila serves as the investment manager to several Bermuda, Ireland and U.S. based private funds (the Nephila Funds). To provide access for the Nephila Funds to the insurance, reinsurance and weather markets, Nephila acts as an insurance manager to certain Bermuda Class 3 and 3A reinsurance companies and Lloyd's Syndicate 2357 (Syndicate 2357) (collectively, the Nephila Reinsurers). Nephila also serves as a managing general agent that underwrites and administers property insurance policies and provides delegated underwriting services to providers of insurance capital, including Nephila Reinsurers. The results of the Nephila Reinsurers are attributed to the Nephila Funds primarily through derivative transactions between these entities. Neither the Nephila Funds nor the Nephila Reinsurers are subsidiaries of Markel Corporation, and as such, these entities are not included in our consolidated financial statements. As of December 31, 2021, Nephila's net assets under management were $8.8 billion.

The Nephila Reinsurers subscribe to various reinsurance contracts based on their investors' risk profiles, including property reinsurance business previously written through our Reinsurance segment. Leveraging the strength of our underwriting platform, beginning in 2021, we now write this business on behalf of our Nephila ILS operations to the extent it fits Nephila investors' risk profile and cede substantially all of the risk to Nephila Reinsurers.

See note 16 of the notes to consolidated financial statements included under Item 8 for further details regarding transactions with entities managed through our Nephila operations.

Lodgepine and Markel CATCo

Our insurance-linked securities operations also include our run-off Lodgepine and Markel CATCo operations, the results of which are reported separately from our ongoing insurance-linked securities operations.

Our Lodgepine operations are conducted through Lodgepine Capital Management Limited (LCM), which serves as the insurance manager for Lodgepine Re, a Bermuda Class 3 reinsurance company, and as the investment manager for Lodgepine Fund Limited, a Bermuda exempted mutual fund company comprised of multiple segregated accounts (Lodgepine Fund). Lodgepine Fund issued multiple classes of preference shares to investors and Lodgepine Fund is invested in preference shares of Lodgepine Re. Lodgepine Fund launched July 1, 2021 with initial investor capital of $98.9 million, which includes our initial investment of $18.9 million. Lodgepine Fund, through its preference shares held in Lodgepine Re, subscribes to a portfolio of retrocessional reinsurance property contracts written through our Reinsurance segment that were ceded to Lodgepine Re. In November 2021, these operations were placed into run-off.

Our Markel CATCo operations are conducted through Markel CATCo Investment Management Ltd. (MCIM), an ILS investment fund manager headquartered in Bermuda. MCIM serves as the insurance manager for Markel CATCo Re Ltd., a Bermuda Class 3 reinsurance company, and as the investment manager for Markel CATCo Reinsurance Fund Ltd., a Bermuda exempted mutual fund company comprised of multiple segregated accounts. In July 2019, these operations were placed into run-off. In September and October 2021, and in February 2022, terms were announced of a proposed transaction that would allow the acceleration of the return of capital to investors. For further details regarding our Markel CATCo operations and the proposed transaction, see note 19 of the notes to consolidated financial statements included under Item 8.

Program Services

Our program services business generates fee income in the form of ceding fees in exchange for fronting insurance business to other insurance carriers (capacity providers). In general, fronting refers to business in which we write insurance on behalf of a general agent or capacity provider and then cede all, or substantially all, of the risk under these policies to the capacity provider in exchange for ceding fees. The results of our program services operations are not included in a reportable segment.

Our program services business, which is provided through our State National division, offers issuing carrier capacity to both specialty managing general agents and other producers who sell, control and administer books of insurance business that are supported by third parties that assume reinsurance risk, including Syndicate 2357 and other Nephila Reinsurers. These reinsurers are domestic and foreign insurers and institutional risk investors that want to access specific lines of U.S. property and casualty insurance business but may not have the required licenses and filings to do so.

Through our program services business, we write a wide variety of insurance products, principally including general liability, commercial liability, commercial multi-peril, property insurance and workers' compensation. Program services business written through our State National division is separately managed from our underwriting divisions, which write similar products, in order to protect our program services customers.

The following table summarizes the primary subsidiaries through which our program services business is primarily written.

Legal Entity	Abbreviation	State of Domicile
City National Insurance Company	CNIC	Texas
Independent Specialty Insurance Company	ISIC	Delaware
National Specialty Insurance Company	NSIC	Texas
State National Insurance Company, Inc.	SNIC	Texas
Superior Specialty Insurance Company	SSIC	Delaware
United Specialty Insurance Company	USIC	Delaware

All of these subsidiaries are authorized or licensed to write property and casualty insurance in all 50 states and the District of Columbia. USIC is also eligible to write business in the U.S. Virgin Islands. Many of our programs are arranged with the assistance of brokers that are seeking to provide customized insurance solutions for specialty insurance business that requires a carrier rated "A" by A.M. Best Company (Best). Our specialized business model relies on third party producers or capacity providers to provide the infrastructure associated with providing policy administration, claims handling, cash handling, underwriting, or other traditional insurance company services. We compete primarily on the basis of price, customer service, geographic coverage, financial strength ratings, licenses, reputation, business model and experience.

Total revenues attributed to our program services business for the year ended December 31, 2021 were $119.8 million. Our program services business generated $2.7 billion of gross written premium volume for the year ended December 31, 2021.

In our program services business, we generally enter into a 100% quota share reinsurance agreement whereby we cede to the capacity provider substantially all of our gross liability under all policies issued by and on behalf of us by the producer. The capacity provider is generally entitled to 100% of the net premiums received on policies reinsured, less the ceding fee to us, the commission paid to the producer and premium taxes on the policies. In connection with writing this business, we also enter into agency agreements with both the producer and the capacity provider whereby the producer and capacity provider are generally required to deal directly with each other to develop business structures and terms to implement and maintain the ongoing contractual relationship. In a number of cases, the producer and capacity provider for a program are part of the same organization or are otherwise affiliated. As a result of our contract design, substantially all of the underwriting risk and operational risk inherent in the arrangement is borne by the capacity provider. The capacity provider assumes and is liable for substantially all losses incurred in connection with the risks under the reinsurance agreement, including judgments and settlements. Our contracts with capacity providers do not legally discharge us from our primary liability for the full amount of the policies, and we will be required to pay the loss and bear collection risk if the capacity provider fails to meet its obligations under the reinsurance agreement. As a result, we remain exposed to the credit risk of capacity providers, or the risk that one of our capacity providers becomes insolvent or otherwise unable or unwilling to pay policyholder claims. We mitigate this credit risk generally by either selecting well capitalized, highly rated authorized capacity providers or requiring that the capacity provider post substantial collateral to secure the reinsured risks, which, in some instances, exceeds the related reinsurance recoverable.

In certain instances, we also leverage the strength of our underwriting platform to front business to our ILS operations to support their business plans and assist in meeting their desired return objectives. This business is conducted separately from our program services business and primarily consists of the catastrophe-exposed property reinsurance business previously written through our Reinsurance segment. Effective January 1, 2021, any such business written is ceded to our Nephila ILS operations to be placed with third party capital in exchange for ceding fees.

Although we reinsure substantially all of the risks inherent in our program services business and ILS fronting arrangements, we have certain programs that contain limits on our reinsurers' obligations to us that expose us to underwriting risk, including loss ratio caps, aggregate reinsurance limits or exclusion of the credit risk of producers. Under certain programs, including programs and contracts with Nephila Reinsurers, we also bear underwriting risk for annual aggregate agreement year losses in excess of a limit that we believe is unlikely to be exceeded. See note 16 of the notes to consolidated financial statements included under Item 8 for further details regarding our programs with Nephila Reinsurers.

Ratings

Financial stability and strength are important purchase considerations of policyholders, cedents and insurance agents and brokers. Because an insurance premium paid today purchases coverage for losses that might not be paid for many years, the financial viability of the insurer is of critical concern. Various independent rating agencies provide information and assign ratings to assist buyers in their search for financially sound insurers. Rating agencies periodically re-evaluate assigned ratings based upon changes in the insurer's operating results, financial condition or other significant factors influencing the insurer's business. Changes in assigned ratings could have an adverse impact on an insurer's ability to write new business.

Rating agencies assign financial strength ratings (FSRs) to property and casualty insurance companies based on quantitative criteria such as profitability, leverage and liquidity, as well as qualitative assessments such as the spread of risk, the adequacy and soundness of ceded reinsurance, the quality and estimated market value of assets, the adequacy of loss reserves and surplus and the competence, experience and integrity of management.

Seventeen of our eighteen insurance subsidiaries are rated by Best. All seventeen of our insurance subsidiaries rated by Best have been assigned an FSR of "A" (excellent). Our Lloyd's syndicate is part of a group rating for the Lloyd's overall market, which has been assigned an FSR of "A" (excellent) by Best.

Nine of our eighteen insurance subsidiaries are rated by Standard & Poor's (S&P). All nine of our insurance subsidiaries rated by S&P have been assigned an FSR of "A" (strong). Our Lloyd's syndicate is part of a group rating for the Lloyd's overall market, which has been assigned an FSR of "A+" (strong) by S&P.

Five of our eighteen insurance subsidiaries are rated by Moody's Corporation (Moody's). All five insurance subsidiaries rated by Moody's have been assigned an FSR of "A2" (good).

Investments

Our business strategy recognizes the importance of both consistent underwriting and operating profits and superior investment returns to build shareholder value. We rely on sound underwriting practices to produce investable funds. The majority of our investable assets come from premiums paid by policyholders. Policyholder funds are invested predominantly in high-quality government, municipal and corporate bonds that generally match the duration and currency of our loss reserves. The balance, comprised of shareholder funds, is available to be invested in equity securities, which over the long run, have produced higher returns relative to fixed maturity investments. When purchasing equity securities, we seek to invest in profitable companies, with honest and talented management, that exhibit reinvestment opportunities and capital discipline, at reasonable prices. We intend to hold these investments over the long-term. Substantially all of our investment portfolio is managed by company employees.

We evaluate our investment performance by analyzing net investment income, net investment gains and the change in net unrealized investment gains on available-for-sale investments, as well as our taxable equivalent total investment return, which is a non-GAAP financial measure. In 2021, net investment income was $374.6 million, net investment gains were $2.0 billion, and the decrease in net unrealized investment gains on available-for-sale investments was $450.1 million. We focus on long-term total investment return, understanding that the level of investment gains or losses and unrealized gains or losses may vary from one period to the next. Through December 31, 2021, the five-year annual return for our investment portfolio was 8.3%. See "Investing Results" under Item 7 Management's Discussion & Analysis of Financial Condition and Results of Operations for more information about our investing results, including taxable equivalent total investment return, and Item 7A Quantitative and Qualitative Disclosures About Market Risk for more information about our investments.

Markel Ventures

Through our wholly owned subsidiary Markel Ventures, Inc. (Markel Ventures), we own controlling interests in various high-quality businesses that operate outside of the specialty insurance marketplace but have the shared goal of positively contributing to the long-term financial performance of Markel Corporation. Management views these businesses as separate and distinct from our insurance operations. Management teams for each business operate autonomously and are responsible for developing strategic initiatives, managing day-to-day operations and making investment and capital allocation decisions for their respective companies.

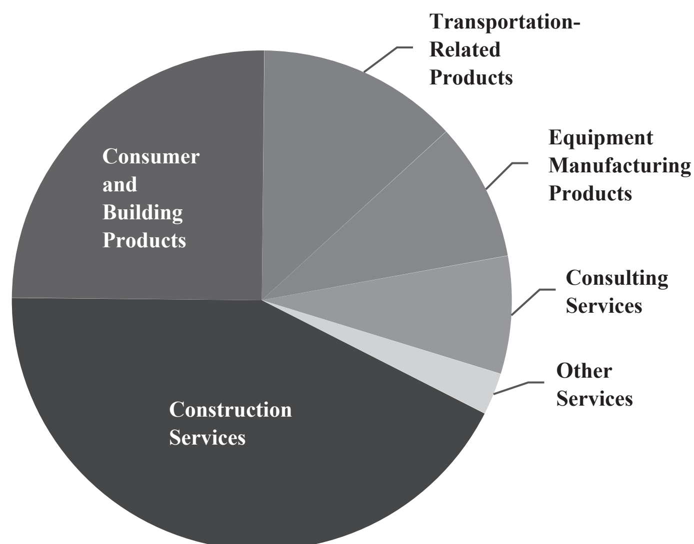
Our senior management team is responsible for decisions regarding allocation of capital for acquisitions and new investments. Our strategy in making these investments is similar to our strategy for purchasing equity securities. We seek to invest in profitable companies, with honest and talented management, that exhibit reinvestment opportunities and capital discipline, at reasonable prices. We intend to own the businesses acquired for a long period of time.

Our chief operating decision maker allocates resources to and assesses the performance of these various businesses in the aggregate as the Markel Ventures segment. This segment includes a diverse portfolio of specialized businesses from different industries that offer various types of products and services to businesses and consumers across many markets. All of our businesses in this segment are headquartered in the U.S., with subsidiaries of certain businesses located outside of the U.S. This segment encounters a variety of competitors that vary by product line, end market and geographic area. Each business within the segment has several main competitors and numerous smaller ones in most of their end markets and geographic areas. See note 2 of the notes to consolidated financial statements included under Item 8 for additional segment reporting disclosures.

During the last three years, our Markel Ventures operations have continued to expand through acquisitions of majority interests in various businesses, including Metromont LLC and Buckner HeavyLift Cranes in 2021, Lansing Building Products, LLC in 2020, and VSC Fire & Security, Inc. in 2019. See note 3 of the notes to consolidated financial statements included under Item 8 for additional details related to these acquisitions.

In 2021, our Markel Ventures operations reported revenues of $3.6 billion, operating income of $272.6 million, net income to shareholders of $174.4 million and earnings before interest, income taxes, depreciation and amortization (EBITDA) of $402.7 million. We use Markel Ventures EBITDA, which is a non-GAAP financial measure, as an operating performance measure in conjunction with revenues, operating income and net income. See "Markel Ventures" under Item 7 Management's Discussion & Analysis of Financial Condition and Results of Operations for more information on our Markel Ventures results, including EBITDA.

The following chart displays the types of businesses within our Markel Ventures segment based on 2021 operating revenues.



Products and services offered through these types of businesses are as follows:

- Construction Services - Our construction services businesses include companies that provide distribution services for exterior building products, crane rental services and fire protection and life safety services to other businesses in the U.S. construction market. These businesses may experience revenue fluctuations over time due to the cyclical nature of supply and demand in the construction industry, which they support.
- Consumer and Building Products - Our consumer and building products businesses include companies that produce or build ornamental plants, residential homes, luxury handbags and architectural products, which are primarily sold to consumers in the U.S. retail and housing markets. Certain of these businesses experience variations in revenues throughout the year due to seasonal demand for their products.
- Transportation-Related Products - Our transportation-related products businesses include companies that manufacture and sell over-the-road car haulers, laminated oak and composite wood flooring and tube and tank trailers primarily used in the U.S. trucking industry.
- Equipment Manufacturing Products - Our equipment manufacturing products businesses include companies that manufacture and sell equipment used in commercial baking systems and food processing, as well as dredges, in both the U.S. and international markets.
- Consulting Services - Our consulting services businesses include companies that provide management and technology consulting and retail intelligence services to other businesses primarily in the U.S. market.
- Other Services - Our other services businesses include companies that provide healthcare, leasing and investment services.

Our senior management team does not manage the Markel Ventures portfolio of businesses at this level of aggregation due to the distinct characteristics of each business and the autonomy with which local management operates each business.

Regulatory Environment

We are subject to extensive state, federal and international regulation and supervision in the jurisdictions in which we do business. Regulations vary from jurisdiction to jurisdiction. Additionally, as a company with publicly-traded securities, we are also subject to certain legal and regulatory requirements applicable generally to public companies, including the rules and regulations of the U.S. Securities and Exchange Commission (SEC) and the New York Stock Exchange relating to reporting and disclosure, accounting and financial reporting, corporate governance and other matters.

The following is a summary of significant regulations that apply to our businesses, but it is not intended to be a comprehensive review of every regulation to which we are subject. For information regarding certain risks associated with regulations applicable to us, see Item 1A Risk Factors.

U.S. Insurance Regulation

State Regulation

Overview. Our U.S. insurance company subsidiaries are subject to varying degrees of regulation and supervision by the states and other jurisdictions in which they do business. In the U.S., authority for the regulation, supervision and administration of the business of insurance in each state is generally delegated to a state insurance commissioner who oversees a regulatory body responsible for the supervision of the business of insurance. Through this authority, state regulatory authorities have broad regulatory, supervisory and administrative powers relating to: solvency standards; corporate conduct; market conduct activities; regulating unfair trade and claims practices; licensing of insurers; licensing and appointment of agents; approval of forms and policies used; the nature of, and limitations on, insurers' investments; the form and content of annual statements and other reports on the financial condition of insurers; and establishment of loss reserves. States also regulate various aspects of the contractual relationships between insurers and independent agents. In addition, the National Association of Insurance Commissioners (NAIC), comprised of the insurance commissioners of each U.S. jurisdiction, develops or amends model statutes and regulations that, in turn, most states adopt.

Group Supervision - Global Supervisory College; Global Common Framework. Regulators within and outside the U.S. are increasingly coordinating the regulation of multinational insurers by conducting a supervisory college. A supervisory college is a forum of the regulators having jurisdictional authority over an insurance holding company's worldwide insurance subsidiaries. The supervisory college meets with executive management to evaluate the insurance group on both a group-wide and legal-entity basis, particularly with respect to its financial data, business strategies, enterprise risk management and corporate governance. The Illinois Department of Insurance is our lead insurance regulator for purposes of conducting our supervisory college.

In 2020, the International Association of Insurance Supervisors adopted its Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame). ComFrame establishes a comprehensive framework for supervisors to address group-wide activities and risks of internationally active insurance groups (IAIGs) and lays the groundwork for better supervisory cooperation and coordination. ComFrame requires the designation of a group-wide supervisor (regulator) for each IAIG and imposes a group capital requirement that will be applied to an IAIG in addition to the current legal entity capital requirements imposed by state and international insurance regulators. In response to ComFrame, the NAIC revised the model Insurance Holding Company System Regulatory Act to allow state insurance regulators in the U.S. to be designated as group-wide supervisors for U.S. based IAIGs.

Holding Company Statutes. In addition to regulatory supervision of our U.S. insurance subsidiaries, we are subject to state statutes governing insurance holding company systems. Typically, those statutes require that we periodically file information with the appropriate state insurance commissioner, including information concerning our capital structure, ownership, financial condition, dividend payments and other material transactions with affiliates, and general business operations. These statutes also require approval of changes in control of an insurer or an insurance holding company. Generally, "control" for these purposes is defined as ownership or voting power of 10% or more of a company's voting shares. Additional requirements include group-level reporting, submission of an annual enterprise risk report by a regulated insurance company's ultimate controlling person and providing information regarding an insurer's non-insurer affiliates.

Risk Based Capital Requirements. The NAIC uses a risk based capital (RBC) formula that is designed to measure the capital of an insurer taking into account the company's investments and products. RBC requirements provide a formula which, for property and casualty insurance companies, establishes capital thresholds for four categories of risk: asset risk, insurance risk, interest rate risk and business risk.

Financial Exams. State insurance regulators also prescribe the form and content of statutory financial statements, perform periodic financial examinations of insurers, set minimum reserve and loss ratio requirements, establish standards for permissible types and amounts of investments and require minimum capital and surplus levels. These statutory capital and surplus requirements include RBC rules promulgated by the NAIC.

Statutory Accounting Principles. Each of our U.S. insurance company subsidiaries is required to file detailed quarterly and annual reports, including financial statements, in accordance with prescribed statutory accounting rules, with regulatory officials in the jurisdictions in which they conduct business. The quarterly and annual financial reports filed with the states utilize statutory accounting principles (SAP) that are different from U.S. GAAP. In developing SAP, insurance regulators were primarily concerned with monitoring the solvency of insurance companies to assure an insurer's ability to pay all its current and future obligations to policyholders.

Own Risk and Solvency Assessment and Enterprise Risk Management. We must submit an Own Risk and Solvency Assessment Summary Report (ORSA) annually to our lead insurance regulator. The ORSA is a confidential internal assessment of the material and relevant risks associated with an insurer's current business plan and the sufficiency of capital resources to support those risks. In addition, we must file an annual enterprise risk report with our lead insurance regulator. The report must identify the material risks within the insurance holding company system that could pose enterprise risk to the U.S. insurance subsidiaries.

Rates and Form Filings. The policy forms and various premium rates of our U.S. admitted insurance subsidiaries are subject to regulation in every state in which they conduct business. In many states, rates and policy forms must be filed with the applicable insurance regulator prior to their use, and in some states, rates and forms must be affirmatively approved by the applicable insurance regulator prior to use.

Dividends. The laws of the domicile states of our U.S. insurance subsidiaries govern the amount of dividends that may be paid to our holding company, Markel Corporation. Generally, statutes in the domicile states of our insurance subsidiaries require prior approval for payment of extraordinary, as opposed to ordinary, dividends. See note 20 of the notes to consolidated financial statements included under Item 8.

Market Conduct. State insurance laws and regulations include numerous provisions governing trade practices and the marketplace activities of insurers, including provisions governing marketing and sales practices, data security, compliance of underwriting services to policyholders, confirmation of licensing and appointment of producers, claims management, anti-fraud controls and complaint handling. State regulatory authorities generally enforce these provisions through periodic market conduct examinations.

Investment Regulation. Investments by our U.S. insurance companies must comply with applicable laws and regulations that prescribe the kind, quality and concentration of investments. In general, these laws and regulations permit investments in federal, state and municipal obligations, corporate bonds, preferred and common equity securities, mortgage loans, real estate and certain other investments, subject to specified limits and certain other qualifications.

Federal Regulation

The U.S. federal government and its regulatory agencies generally do not directly regulate the business of insurance. However, two federal government bodies, the Federal Insurance Office (FIO) and the Financial Stability Oversight Council (FSOC), each created under The Dodd Frank Wall Street Reform and Consumer Protection Act, may impact the regulation of insurance. Although the FIO is prohibited from directly regulating the business of insurance, it has authority to represent the U.S. in international insurance matters and has limited powers to preempt certain types of state insurance laws. The FIO also can recommend to the FSOC that it designate an insurer as an entity posing risks to the U.S. financial stability in the event of the insurer's material financial distress or failure. We have not been so designated. The U.S. federal laws that most affect our day-to-day insurance operations are: the Gramm-Leach-Bliley Act; the Fair Credit Reporting Act; the Health Insurance Portability and Accountability Act of 1996, as amended; the Terrorism Risk Insurance Act of 2002, as amended; anti-money laundering laws and regulations; the Nonadmitted and Reinsurance Reform Act of 2010, as amended; the Foreign Corrupt Practices Act, and the rules and regulations of the Office of Foreign Assets Control.

International Insurance Regulation

Overview. Our international insurance operations are subject to regulation and supervision in various jurisdictions. These regulations, which vary depending on the jurisdiction, include, among others, solvency and market conduct regulations; anti-corruption, anti-money laundering, and anti-terrorist financing guidelines, laws and regulations; various privacy, insurance, tax, tariff, trade and sanctions laws and regulations; and corporate, competition, employment, intellectual property and investment laws and regulations. Outside of the U.S., we have insurance operations domiciled in the U.K., Europe and Bermuda, which are subject to regulation in those jurisdictions. In addition, we conduct business in Canada, Asia and the Middle East, where our businesses also are supervised by local regulatory authorities.

U.K. and European Regulation. We are subject to regulation by the Prudential Regulatory Authority and Financial Conduct Authority in respect of our U.K. insurance businesses. We are also subject to regulation by the Federal Financial Supervisory Authority, better known by its abbreviation BaFin, in respect of our German insurance carrier.

Our U.K. and German insurance businesses are subject to both the E.U.'s General Data Protection Regulation (GDPR) and Solvency II. GDPR came into effect in May 2018, and requires businesses operating in the E.U. to comply with conditions for processing personal data. Solvency II came into effect in January 2016 and requires our U.K. and German businesses to maintain certain capital standards and publish risk-related information in the form of a Solvency and Financial Condition Report. Following the U.K.'s exit from the E.U., the U.K.'s European Union (Withdrawal) Act 2018 transposes GDPR and Solvency II into U.K. law as E.U. retained law. Furthermore, the E.U. has granted adequacy status to the U.K.'s data protection laws, valid until June 2025 with the possibility of renewal, meaning that they are deemed essentially equivalent to E.U. data protection laws.

Bermuda Regulation. The insurance industry in Bermuda is regulated by the Bermuda Monetary Authority (BMA). Under the Bermuda Insurance Act 1978, and related regulations and standards of the BMA, each Bermuda insurance company is subject to, among other things: licensing, capital, surplus and liquidity requirements; solvency standards; restrictions on dividends and distributions; and periodic examinations of the company and its financial condition. In addition, each insurance company must obtain prior approval of ownership and transfer of shares and maintain a principal office and appoint and maintain a principal representative in Bermuda. The BMA also requires that each insurance company contract for local services, such as corporate secretary, insurance manager and registered representative services, at market rates.

ILS Regulation

Our insurance-linked securities operations are subject to regulation and supervision by various regulatory authorities, both in the U.S. and internationally. Certain of our ILS subsidiaries are organized and regulated as follows:

- registered with the SEC as an investment adviser under the Investment Advisers Act of 1940, as amended,
- registered with the U.S. Commodity Futures Trading Commission as a commodity pool operator or a commodity trading advisor under the Commodity Exchange Act, as amended,
- registered with the BMA as an insurance manager under the Bermuda Insurance Act 1978, and/or
- registered with the BMA as an investment manager under the Bermuda Investments Business Act 2003.

Certain other ILS subsidiaries serve as the investment manager to one or more private funds that are registered with the BMA under the Investment Funds Act 2006, as amended, or the Segregated Accounts Companies Act 2000, as amended. In addition, these operations include business relationships with certain U.S., U.K. and Bermuda insurance companies that are subject to U.S. and international insurance regulation as previously described in this "Regulatory Environment" section.

As a result, subsidiaries involved in our ILS operations are subject to regulations that may impose substantive and material restrictions and requirements on their operations, including, among other things: a broader fiduciary duty to act in the best interests of their clients; disclosure of information about our businesses and conflicts of interests to clients; maintenance of written policies and procedures; maintenance of extensive books and records; restrictions on the types of fees we may charge, including performance fees; restrictions on solicitation arrangements; requirements regarding engaging in transactions with clients; maintenance of an effective compliance program; and other restrictions and requirements applicable to custody of client assets, client privacy, advertising, pay-to-play prohibitions and cybersecurity; as well as possible sanctions, disciplinary actions or other penalties for non-compliance.

Markel Ventures Regulation

Our Markel Ventures businesses are subject to a wide variety of U.S. federal, state, and local laws and regulations, as well as international laws and regulations applicable to their international operations. Specifically, the most significant of these laws and regulations cover the following areas: safety, health, employment, the environment, transportation, U.S. and international trade, anti-corruption, data privacy and security and government contracts.

Human Capital

Our culture is our greatest asset and is defined by the Markel Style. Written in 1986, in preparation for our initial public offering, the Markel Style memorialized how we seek to operate our businesses and treat one another. It continues to provide our guiding principles across our diverse group of businesses. Key within the Markel Style is the encouragement to look for a better way to do things, to challenge management. We also seek spontaneity and flexibility and a respect for authority, but disdain for bureaucracy. Our diverse financial holding company is managed in a way to accomplish these principles. Each of our businesses operates with a high degree of autonomy so long as they operate within the principles of the Markel Style. This allows our managers to make decisions that are best for their employees and customers, as well as our shareholders. We believe this high degree of empowerment leads to the satisfaction that comes from being trusted in the responsibilities one has been given.

Further outlined in the Markel Style is our creed of honesty and fairness in all our dealings; holding the individual's right to self-determination in the highest light; putting aside individual concerns in the spirit of teamwork; and providing an atmosphere in which people can reach their full potential. We greatly value our employees, encourage their career development and reward their pursuit of excellence, while also celebrating a diverse workforce.

At December 31, 2021, we had approximately 20,300 employees, of whom approximately 4,700 were employed within our insurance operations and approximately 15,600 were employed within our Markel Ventures operations.

Insurance

Our principal business markets and underwrites specialty insurance products and within that business exists a well-developed process to ensure effective performance management, including an embedded annual and mid-year review process that enables goal setting, development planning and performance assessment. Within our insurance operations, we also have undertaken significant work over recent years to establish global leadership development programs for different levels of leadership at Markel, including partnering with various renowned business schools to create leading-edge curriculum in this area.

With the Markel Style as our foundation, we have identified five pillars of focus that relate to today's challenges and opportunities—diversity and inclusion, community, innovation, well-being, and recognition. This program is both company and employee led—collectively, we want to bring the values of the Markel Style to life with our actions, not just our words. Our intent is to create an environment where employees are able to authentically bring their true selves to work, a place where all ideas are heard and diverse perspectives are valued, a culture that prioritizes innovation, the ability to make a difference for our local communities and the wider world, and a foundation for holding ourselves accountable for our own well-being and of those around us.

Employee health and overall well-being is a key priority, and we provide a range of employee and eligible partner plans and programs, including health and voluntary benefits. These offerings include a variety of financial protection programs to help our employees meet their unique investment and savings needs including life insurance, retirement savings with company contributions in most situations and an employee stock purchase plan. Comprehensive employee assistance programs are available in all of our major markets along with other well-being and fitness resources.

We rely on our employees' ideas and input to help make Markel a great place to work. For example, we conduct regular pulse surveys of employees across our insurance operations regarding their well-being and their ideas on how we can improve employee engagement. In addition, every two years we conduct a major, global employee engagement survey across our insurance operations, which most recently garnered 88% participation, and which enables us to identify, focus on and track progress against key engagement drivers and external norms for high performing companies. This survey has generated additional ideas for employee engagement; and we have made substantial changes and improvements in our human capital practices based on this feedback.

We are committed to embracing all aspects of diversity, including diversity of perspective, which we believe is crucial to sustainable success. Markel accordingly supports and encourages focused efforts to continue to build the diversity of our employee population and the inclusiveness of our culture. Our diversity and inclusion efforts seek to cultivate an inclusive environment in which every employee feels valued, respected and accepted. We believe this environment helps us increase creativity and innovation, foster business connections, serve our customers and maintain our market leadership.

Within our insurance business, our global Diversity and Inclusion (D&I) Steering Committee comprises more than 20 senior managers from around the globe who are charged with advising on D&I strategy and providing leadership support and advocacy for our D&I efforts. We have a dedicated leader responsible for talent, diversity and inclusion, to further shape the D&I strategy for our global workforce, and to ensure the integration of our D&I efforts with our global talent acquisition and development processes. We recently introduced a regional scholarship program that is focused on underrepresented groups in the insurance industry and are in the process of a two-year diversity and inclusion training program, including micro learning on priority topics.

Our insurance operations support a range of employee-led D&I networks and resource groups that provide employee support and development, while also engaging in community outreach, including our Markel Women's Network, BEAM (Black Engagement at Markel), PRISM (LGBTQ+), Jitneys (Young Professionals), Markel Asian Professionals Network, Markel Veterans Network, sponsorship of Dive-In (the insurance industry's annual diversity and inclusion festival), and across our international operations, an Inclusion Network with connections to a number of the London market partner networks. All of these networks and organizations have put in place goals and programming that are focused on education and development, community engagement, talent acquisition and networking/support.

Markel Ventures

Our Markel Ventures operations are comprised of a diverse portfolio of businesses from different industries through which we own controlling interests. The Markel Ventures operations are viewed by management as separate and distinct from our insurance operations with local management teams that direct the strategy and day-to-day operations of their respective companies, including human capital matters. When making these acquisitions, we seek, among other things, businesses whose leadership teams demonstrate equal measures of both integrity and talent. As a result, each Markel Ventures business fosters a culture within their operations, and with their employees, that aligns with the principles of the Markel Style.

Item 1A. RISK FACTORS

A wide range of factors could materially affect our future prospects and performance. The matters addressed in Item 7 Management's Discussion and Analysis of Financial Condition and Results of Operations, including under "Safe Harbor and Cautionary Statement" and "Critical Accounting Estimates", and Item 7A Quantitative and Qualitative Disclosures About Market Risk, as well as other information included or incorporated in this report, describe many of the significant risks that could affect our businesses, results of operations and financial condition. We are also subject to the risks discussed below.

One or more of the risks discussed in this Item 1A. Risk Factors, and others we cannot anticipate, could have material adverse effects on our results of operations and financial condition; and the extent of these effects will depend, at least in part, on the scope, severity, frequency or duration of the specific event or circumstance. In addition, we may take steps to prevent, mitigate or manage potential risks or liabilities, and related developments, and some of those steps may have a material adverse effect on our results of operations and financial condition. Even if an unfavorable outcome does not materialize, these factors, and actions we may take in response, may have a material adverse impact on our reputation or result in substantial expense and disruption.

Headings and sub-headings for the Risk Factors below are for reference purposes only and are not intended to limit or affect in any way the meaning or scope of each Risk Factor.

Risks Primarily Related to Our Insurance Operations

Loss Exposures

We may experience losses or disruptions from catastrophes. As a company with significant property and casualty insurance underwriting operations, we may experience losses from man-made or natural catastrophes. Catastrophes include, but are not limited to, windstorms, hurricanes, earthquakes, tornadoes, derechos, hail, severe winter weather and wildfires and may include pandemics and events related to terrorism, riots and political and civil unrest. While we employ catastrophe modeling tools in our underwriting process, we cannot predict how severe a potential catastrophe will be before it occurs. The extent of losses from catastrophes is a function of the total amount of losses incurred, the number of insureds affected, the frequency and severity of the events, the effectiveness of our catastrophe risk management program and the adequacy of our reinsurance coverage. Most catastrophes occur over a small geographic area; however, some catastrophes may produce significant damage in large, heavily populated areas. In addition, catastrophes may have a material adverse effect on the investment management and incentive fees earned by our insurance-linked securities (ILS) operations and returns on our

investments in ILS funds. Catastrophes also may result in significant disruptions in our insurance and other operations, as well as loss of income and assets. If climate change results in an increase in the frequency and/or severity of weather-related catastrophes, we may experience additional or elevated catastrophe-related losses or disruptions, which may be material.

The failure of any of the methods we employ to manage our loss exposures could have a material adverse effect on us. We seek to manage our loss exposures in a variety of ways, including adhering to maximum limitations on policies written in defined geographical zones, limiting program size for each client, establishing per risk and per occurrence limitations for each event, employing coverage restrictions and following prudent underwriting guidelines for each program written. We also seek to manage our loss exposures through geographic diversification. Underwriting is a matter of judgment, involving assumptions about matters that are inherently unpredictable and beyond our control, and for which historical experience and probability analysis may not provide sufficient guidance. One or more future events could result in claims that substantially exceed our expectations, which could have a material adverse effect on our results of operations and financial condition. In addition, we seek to manage our loss exposures by policy terms, coverage exclusions and choice of legal forum. Disputes relating to coverage and choice of legal forum also arise. As a result, various provisions of our policies, such as choice of forum, or coverage limitations or exclusions, may not be enforceable in the manner we intend and some or all of our methods to manage loss exposures may prove ineffective.

The effects of emerging claim and coverage issues on our business are uncertain. As industry practices and legal, judicial, social and other environmental conditions change, unexpected and unintended issues related to claims and coverage may emerge. These issues may have a material adverse effect on our business either by broadening coverage beyond our underwriting intent or by increasing the frequency and/or severity of claims. In some instances, these changes may not become apparent until after we have issued insurance or reinsurance contracts that are affected by the changes. As a result, the full extent of liability under our insurance or reinsurance contracts may not be known for many years after a contract is issued. For example, many states have extended the statute of limitations for certain victims of sexual abuse, resulting in a higher frequency of claims over a more extended reporting period than originally expected.

We use analytical models to assist our decision making in key areas such as pricing, reserving and capital modeling and actual results may differ materially from the model outputs and related analyses. We use various modeling techniques and data analytics (e.g., scenarios, predictive and stochastic modeling, and forecasting) to analyze and estimate exposures, loss trends and other risks associated with our insurance and ILS businesses. This includes both proprietary and third-party modeled outputs and related analyses to assist us in, among other things, decision-making related to underwriting, pricing, capital allocation, reserving, investing, reinsurance and catastrophe risk. We incorporate numerous assumptions and forecasts about the future level and variability of policyholder behavior, loss frequency and severity, interest rates, equity markets, inflation, capital requirements, and currency exchange rates, among others. The modeled outputs and related analyses from both proprietary models and third party models are subject to various assumptions, uncertainties, model design errors, complexities and the inherent limitations of any statistical analysis, including those arising from the use of historical internal and industry data and assumptions.

In addition, the modeled outputs and related analyses may from time to time contain inaccuracies, perhaps in material respects, including as a result of inaccurate inputs or applications thereof (whether due to data error, human error or otherwise). Consequently, actual results may differ materially from our modeled results. Our profitability and financial condition substantially depend on the extent to which our actual experience is consistent with assumptions we use in our models and ultimate model outputs. If, based upon these models or other factors, we misprice our products or fail to appropriately estimate the risks we are exposed to, our business, results of operations and financial condition may be materially adversely affected.

Loss Reserves

Our results may be affected because actual insured or reinsured losses differ from our loss reserves. Significant periods of time often elapse between the occurrence of an insured or reinsured loss, the reporting of the loss to us and our payment of that loss. To recognize liabilities for unpaid losses, we establish reserves as balance sheet liabilities representing estimates of amounts needed to pay reported and unreported losses and the related loss adjustment expenses. The process of estimating loss reserves is a difficult and complex exercise involving many variables and subjective judgments. This process may also become more difficult if we experience a period of rising inflation, as has been the case since early 2021.

As part of the reserving process, we review historical data and consider the impact of such factors as:

- trends in claim frequency and severity,
- changes in operations,
- emerging economic and social trends,
- trends in insurance rates,
- inflation or deflation, and
- changes in the regulatory and litigation environments.

This process assumes that past experience, adjusted for the effects of current developments and anticipated trends, is an appropriate basis for predicting future events. There is no precise method, however, for evaluating the impact of any specific factor on the adequacy of reserves, and actual results will differ from original estimates. As part of the reserving process, we regularly review our loss reserves and make adjustments as necessary. Future increases in loss reserves for our underwriting operations will, and for our programs services operations may, result in additional charges to earnings, which may be material.

There is generally greater variability in estimating reserves for long-tail coverages, such as general liability, professional liability and workers' compensation, as they require a longer period of time for claims to be reported and settled. The impact of changes in inflation and medical costs are also more pronounced for long-tail coverages due to the longer settlement period. In addition, reinsurance reserves are subject to greater uncertainty than insurance reserves primarily because a reinsurer relies on (i) the original underwriting decisions and claims decisions made by ceding companies and (ii) information and data from ceding companies. As a result, we are subject to the risk that our ceding companies may not have adequately evaluated the risks reinsured by us and the premiums ceded may not adequately compensate us for the risks we assume. In addition, reinsurance reserves may be less reliable than insurance reserves because there is generally a longer lapse of time from the occurrence of the event to the reporting of the loss or benefit to the reinsurer and ultimate resolution or settlement of the loss.

Changes in the assumptions and estimates used in establishing reserves for our life and annuity reinsurance book could result in material increases in our estimated loss reserves for such business. Our run-off life and annuity reinsurance book exposes us to mortality risk, which is the risk that the level of death claims may differ from that which we assumed in establishing the reserves for our life and annuity reinsurance contracts. Some of our life and annuity reinsurance contracts expose us to longevity risk, which is the risk that an insured person will live longer than expected when the reserves were established, or morbidity risk, which is the risk that an insured person will become critically ill or disabled. Our reserving process for the life and annuity reinsurance book is designed with the objective of establishing appropriate reserves for the risks we assumed. Among other things, this process relies heavily on analysis of mortality, longevity and morbidity trends, lapse rates, interest rates and expenses. As of December 31, 2021, our reserves for life and annuity benefits totaled $903.0 million.

We expect mortality, morbidity, longevity, and lapse experience to fluctuate somewhat from period to period, but believe they should remain reasonably predictable over a period of many years. Mortality, longevity, morbidity or lapse experience that is less favorable than the mortality, longevity, morbidity or lapse rates that we used in establishing the reserves for a reinsurance agreement will negatively affect our net income because the reserves we originally set for the risks we assumed may not be sufficient to cover the future claims and expense payments. Furthermore, even if the total benefits paid over the life of the contract do not exceed the expected amount, unexpected increases in the incidence of deaths or illness can result in changes to our assumptions in a given reporting period, adversely affecting our net income in any particular reporting period. If there are changes to any of the above factors to the point where a reserve deficiency exists, a charge to earnings will be recorded, which may have a material adverse effect on our results of operations and financial condition.

Ceded Reinsurance

We may be unable to purchase reinsurance protection on terms acceptable to us, or we may be unable to collect on reinsurance we purchase. Our underwriting operations purchase reinsurance and retrocessional reinsurance to manage our net retention on individual risks and mitigate the volatility of losses on our results of operations and financial condition, while providing us with the ability to offer policies with sufficient limits to meet policyholder needs. In addition, we reinsure substantially all of the risks inherent in our program services business, however, we have certain programs that contain limits on our reinsurers' obligations to us that expose us to underwriting risk, including loss ratio caps, aggregate reinsurance limits or exclusion of the credit risk of producers. See note 10 of the notes to consolidated financial statements included under Item 8 for information about ceded reinsurance for our program services businesses.

The ceding of insurance does not legally discharge us from our primary liability for the full amount of the policies. Reliance on reinsurance recoveries may create credit risk as a result of the reinsurer's inability or unwillingness to pay reinsurance claims when due. We generally select well capitalized and highly rated reinsurers and in certain instances we require reinsurers to post substantial collateral to secure the reinsured risks. Deterioration in the credit quality of existing reinsurers or disputes over the terms of reinsurance could result in charges to earnings, which may have a material adverse effect on our results of operations and financial condition. In addition, collateral may not be sufficient to cover the reinsurer's obligation to us, and we may not be able to cause the reinsurer to deliver additional collateral.

As of December 31, 2021, we were the beneficiary of letters of credit, trust accounts and funds withheld in the aggregate amount of $3.7 billion, collateralizing $7.3 billion in reinsurance recoverables. The remaining unsecured reinsurance recoverables are ceded to highly-rated, well capitalized reinsurers. Our reinsurance recoverables are based on estimates, and our actual liabilities may exceed the amount we are able to recover from our reinsurers or any collateral securing the reinsurance recoverables. The failure of a reinsurer to meet its obligations to us, whether due to insolvency, dispute or other unwillingness or inability to pay, or due to our inability to access sufficient collateral to cover our liabilities, could have a material adverse effect on our results of operations and financial condition.

The availability and cost of reinsurance are determined by market conditions beyond our control. There is no guarantee that our desired amounts of reinsurance or retrocessional reinsurance will be available in the marketplace in the future. In addition, available capacity may not be on terms we deem appropriate or acceptable or with companies with whom we want to do business. This could have a material adverse effect on our results of operations and financial condition.

Market Competition

Competition in the insurance and reinsurance markets could reduce profits from our insurance operations. Insurance and reinsurance markets are highly competitive. We compete on an international and regional basis with major United States (U.S.), Bermuda, United Kingdom (U.K.), European, and other international insurers and reinsurers and with underwriting syndicates, some of which have greater financial, marketing, and management resources than we do, have greater access to "big data," and may be able to offer a wider range of, or more sophisticated, commercial and personal lines products. Recent industry consolidation, including business combinations among insurance and other financial services companies, has resulted in larger competitors with even greater financial resources. In addition, capital market participants have created alternative products that are intended to compete with reinsurance products.

Similar to other industries, the insurance industry is undergoing rapid and significant technological and other changes. There is increasing focus by traditional insurance industry participants, technology companies, "InsurTech" start-up companies and others on using technology and innovation to simplify and improve the customer experience, increase efficiencies, redesign products, alter business models and effect other potentially disruptive changes in the insurance industry. If we do not anticipate, keep pace with and adapt to technological and other changes impacting the insurance industry, it will harm our ability to compete, decrease the value of our products to customers, and materially and adversely affect our business. Furthermore, innovation, technological change and changing customer preferences in the markets in which we operate also pose other risks to our businesses. For example, they could result in increasing our service, administrative, policy acquisition or general expenses as we seek to distinguish our products and services from those of our competitors or otherwise keep up with such innovation and changes.

Increased competition could result in fewer submissions, lower premium rates, and less favorable policy terms and conditions, which could reduce our underwriting profits, or within our program services operations, our operating profits, and have a material adverse effect on our results of operations and financial condition.

The historical cyclicality in the property and casualty insurance industry could have a material adverse effect on our ability to improve or maintain underwriting profits or to grow or maintain premium volume. The insurance and reinsurance markets have historically been cyclical, characterized by extended periods of intense price competition due to excessive underwriting capacity, and more recently alternative sources of capital, as well as brief periods when shortages of capacity permitted more favorable rate levels. Among our competitive strengths have been our specialty product focus and our niche market strategy. These strengths also make us vulnerable in periods of intense competition to actions by other insurance companies who seek to write additional premiums without appropriate regard for underwriting profitability. At times it could be very difficult for us to grow or maintain premium volume levels without sacrificing underwriting profits. If we are not successful in maintaining rates or achieving rate increases, it may be difficult for us to improve or maintain underwriting profits or to grow or maintain premium volume levels.

Insurance Operations

Our efforts to develop new products, expand in targeted markets or improve business processes and workflows may not be successful and may increase or create new risks. From time to time, to protect and grow market share or improve our efficiency, we invest in strategic initiatives to:

- develop products that insure risks we have not previously insured, include new coverages or change coverage terms;
- change commission terms;
- change our underwriting processes;
- improve business processes and workflow to increase efficiencies and productivity and to enhance the experience of our customers and producers;
- expand distribution channels; and
- enter geographic markets where we previously have had relatively little or no market share.

We may not be successful in these efforts, and even if we are successful, they may increase or create the following risks, among others:

- demand for new products or expansion into new markets may not meet our expectations;
- new products and expansion into new markets may increase or change our risk exposures, and the data and models we use to manage those exposures may not be as effective as those we use in existing markets or with existing products;
- models underlying automated underwriting and pricing decisions may not be effective;
- efforts to develop new products or markets or to change commission terms may create or increase distribution channel conflicts;
- in connection with the conversion of existing policyholders to a new product, some policyholders' pricing may increase while the pricing for other policyholders may decrease, the net impact of which could negatively impact retention and profit margins; and
- changes to our business processes or workflow, including the use of new technologies, may give rise to execution risk.

These efforts may require us to make substantial expenditures, which may negatively impact results in the near term, and if not successful, could materially and adversely affect our results of operations.

We depend on a few brokers for a large portion of our revenues and the loss of business provided by any one of them could have a material adverse effect on us. We market our insurance and reinsurance worldwide through insurance and reinsurance brokers. For the year ended December 31, 2021, our top three independent brokers represented 28% of the gross premiums written by our underwriting operations. Loss of all or a substantial portion of the business provided by one or more of these brokers could have a material adverse effect on our business.

Our insurance companies and senior debt are rated by various rating agencies, and a downgrade or potential downgrade in one or more of these ratings could have a material adverse effect on us. Financial strength ratings are an important factor in establishing the competitive position of insurance and reinsurance companies. Our senior debt ratings also affect the availability and cost of capital. Certain of our insurance and reinsurance company subsidiaries and our senior debt securities are rated by various rating agencies. Our financial strength and debt ratings are subject to periodic review, and are subject to revision or withdrawal at any time. The financial strength ratings of our insurance subsidiaries are significantly influenced by their statutory surplus amounts and leverage and capital adequacy ratios and other financial metrics. Rating agencies may implement changes to their ratings methodologies or internal models that have the effect of increasing or decreasing the amount of capital our insurance subsidiaries must hold or restrict how the company may deploy its capital in order to maintain its current ratings. For example, for certain of our insurance subsidiaries, rating agencies may take into account in their calculations the collateral provided to us by reinsurers. A change in this practice could adversely impact our ratings. We cannot be sure that we will be able to retain our current, or any future, ratings. If our ratings are reduced from their current levels by one or more rating agencies, our competitive position in our target markets within the insurance industry could suffer and it would be more difficult for us to market our products. A ratings downgrade could result in a substantial loss of business as policyholders and ceding company clients move to other companies with higher claims-paying and financial strength ratings. In addition, a downgrade could trigger contract provisions that allow cedents to terminate their reinsurance contracts on terms disadvantageous to us or require us to collateralize our obligations through trusts or letters of credit. A ratings downgrade could also have a material adverse effect on our liquidity, including the availability of our letter of credit

facilities, and limit our access to capital markets, increase our cost of borrowing or issuing debt and require us to post collateral.

The amount of capital that our insurance subsidiaries have and must hold to maintain their financial strength and credit ratings and meet other requirements can vary significantly from time to time and is sensitive to a number of factors, some of which are outside of our control. Capital requirements for our insurance subsidiaries are prescribed by the applicable insurance regulators, while rating agencies establish requirements that inform ratings for our insurance subsidiaries and senior debt securities. Projecting surplus and the related capital requirements is complex and requires making assumptions regarding how our business will perform within the broader macroeconomic environment. Insurance regulators and rating agencies evaluate company capital through financial models that calculate minimum capitalization requirements based on risk-based capital formulas for property and casualty insurance groups and their subsidiaries. In any particular year, capital levels and risk-based capital requirements may increase or decrease depending on a variety of factors including the mix of business written by our insurance subsidiaries and correlation or diversification in the business profile, the amount of additional capital our insurance subsidiaries must hold to support business growth, the value of securities in our investment portfolio, changes in interest rates and foreign currency exchange rates, as well as changes to the regulatory and rating agency models used to determine our required capital.

Insurance Regulation

Our insurance subsidiaries are subject to supervision and regulation that may have a material adverse effect on our operations and financial condition. Our insurance subsidiaries are subject to supervision and regulation by the regulatory authorities in the various jurisdictions in which they conduct business, including foreign and U.S. state insurance regulators. Regulatory authorities have broad regulatory, supervisory and administrative powers relating to, among other things, data protection and data privacy, solvency standards, licensing, coverage requirements, product terms and conditions, policy rates and forms, business and claims practices, disclosures to consumers, and the form and content of financial reports. In some instances, we follow practices based on our interpretations of regulations or practices that we believe may be generally followed by the industry. These practices may turn out to be different from the interpretations of regulatory authorities. Insurance regulatory authorities have broad authority to initiate investigations or other proceedings, and, in connection with a failure to comply with applicable laws and regulations, could impose adverse consequences, including fines, penalties, injunctions, denial or revocation of an operating license or approval, increased scrutiny or oversight, limitations on engaging in a particular business, or redress to clients. These actions also could result in negative publicity, reputational damage or harm to client, employee or other relationships. Additionally, regulatory and legislative authorities continue to implement enhanced or new regulatory requirements, in certain instances intended to prevent future financial crises or otherwise assure the stability of financial institutions. Regulatory authorities also may seek to exercise their supervisory or enforcement authority in new or more extensive ways, such as increased capital requirements. These actions, if they occur, could affect the competitive market and the way we conduct our business and manage our capital and could result in lower revenues and higher costs. As a result, such actions could have a material adverse effect on our results of operations and financial condition.

Regulators may challenge our use of fronting arrangements in states in which our capacity providers are not licensed. Our program services business enters into fronting arrangements with general agents and domestic and foreign insurers that want to access specific U.S. property and casualty insurance business in states in which the capacity providers are not licensed or are not authorized to write particular lines of insurance. Some state insurance regulators may object to these fronting arrangements. In certain states, an insurance commissioner has the authority to prohibit an authorized insurer from acting as an issuing carrier for an unauthorized insurer. In addition, insurance departments in states in which there is no such statutory or regulatory prohibition, could deem the assuming insurer to be transacting insurance business without a license and the issuing carrier to be aiding and abetting the unauthorized sale of insurance.

If regulators in any of the states where we conduct our fronting business were to prohibit or limit those arrangements, we would be prevented or limited from conducting that business for which a capacity provider is not authorized in those states, unless and until the capacity provider is able to obtain the necessary licenses. This could have a material adverse effect on our results of operations and financial condition.

<u>Risks Primarily Related to Our Investments and Access to Capital</u>

Changes in Economic Conditions

Our investment results may be impacted by changes in interest rates, U.S. and international monetary and fiscal policies as well as broader economic conditions. We receive premiums from customers for insuring their risks. We invest

these funds until they are needed to pay policyholder claims. Fluctuations in the value of our investment portfolio can occur as a result of changes in interest rates and U.S. and international fiscal, monetary and trade policies as well as broader economic conditions (including, for example, equity market conditions and significant or prolonged inflation or deflation). Although we attempt to take measures to manage the risks of investing in these changing environments, we may not be able to mitigate our sensitivity to them effectively. Despite our mitigation efforts, which include duration and currency targets for asset portfolios, compliance monitoring of these targets and means to reasonably and effectively match asset duration and currency to the duration and currency of the loss reserves, changes in interest rates and U.S. and international fiscal, monetary and trade policies as well as broader economic conditions could have a material adverse effect on our investment results and, consequently, our results of operations and financial condition.

We invest a significant portion of our shareholders' equity in equity securities, which may result in significant variability in our investment results and net income and may have a material adverse effect on shareholders' equity. Additionally, our equity investment portfolio is concentrated, and declines in the value of these significant investments could have a material adverse effect on our financial results and on our ability to carry out our business plans. Equity securities were 61% and 55% of our shareholders' equity at December 31, 2021 and 2020, respectively. Equity securities have historically produced higher returns than fixed maturity securities over long periods of time; however, investing in equity securities may result in significant variability in investment returns from one period to the next. In volatile financial markets, we could experience significant declines in the fair value of our equity investment portfolio, which would result in a material decrease in net income and shareholders' equity. Our equity portfolio is concentrated in particular issuers and industries and, as a result, a decline in the fair value of these concentrated investments also could result in a material decrease in net income and shareholders' equity. A material decrease in shareholders' equity may have a material adverse effect on our ability to carry out our business plans.

Access to Capital

We may require additional capital in the future, which may not be available or may only be available on unfavorable terms. To the extent that cash flows generated by our operations are insufficient to fund future operating requirements, or that our capital position is adversely impacted by a decline in the fair value of our investment portfolio, losses from catastrophe events or otherwise, we may need to raise additional funds through financings or curtail our growth. We also may be required to liquidate fixed maturity securities or equity securities, which may result in realized investment losses. Any further sources of capital, including capacity needed for letters of credit, if available at all, may be on terms that are unfavorable to us. Our access to additional sources of capital will depend on a variety of factors, such as market conditions, the general availability of credit, the availability of credit to the industries in which we operate, our results of operations, financial condition, credit ratings and credit capacity, as well as pending litigation or regulatory investigations. Our ability to borrow under our revolving credit facility and letter of credit facilities is contingent on our compliance with the covenants and other requirements under those facilities. Similarly, our access to capital may be impaired if regulatory authorities or rating agencies take negative actions against us. Our inability to obtain adequate capital when needed could have a negative impact on our ability to invest in, or take advantage of opportunities to expand, our businesses, such as possible acquisitions or the creation of new ventures, and inhibit our ability to refinance our existing indebtedness on terms acceptable to us. Any of these effects could have a material adverse effect on our results of operations and financial condition.

Our failure to comply with covenants and other requirements under our revolving credit facility, senior debt and other indebtedness could have a material adverse effect on us. The agreements and indentures relating to our revolving credit facility, senior debt and other indebtedness, including letter of credit facilities used by certain of our insurance subsidiaries, contain covenants and other requirements. If we fail to comply with those covenants or requirements, the lenders, noteholders or counterparties under those agreements and indentures could declare a default and demand immediate repayment of all amounts owed to them. In addition, where applicable, our lenders may cancel their commitments to lend or issue letters of credit or require us to pledge additional or a different type of collateral. A default under one debt agreement may also put us at risk of a cross-default under other debt agreements or other arrangements. Any of these effects could have a material adverse effect on our results of operations and financial condition.

Our liquidity and our ability to meet our debt and other obligations, and pay dividends on our preferred stock, depend on the receipt of funds from our subsidiaries. We are a holding company, and as a result, our cash flow and our ability to meet our debt and other obligations, and pay dividends on our preferred stock, depend upon the earnings of our subsidiaries and on the distribution of earnings, loans or other payments by our subsidiaries to us. The payment of dividends by our insurance subsidiaries, which account for a significant portion of our operating cash flows, may require prior regulatory notice or approval or may be restricted by capital requirements imposed by regulatory authorities. Similarly, our insurance subsidiaries may require capital contributions from us to satisfy their capital requirements. In addition, our reinsurance

contracts typically allow the cedent, upon a reduction in an insurance company's capital in excess of specified amounts, to terminate its contract on terms disadvantageous to us or to exercise other remedies that may adversely affect us. Those contract provisions may have the effect of limiting distributions by our insurance subsidiaries to us.

Risks Primarily Related to Our ILS Operations

Our ILS operations and our management of third party capital may expose us to risks. Some of our operating subsidiaries may owe certain legal duties and obligations to third party investors. A failure to fulfill any of those duties or obligations could result in significant liabilities, penalties or other losses, and harm our businesses and results of operations. In addition, third party investors may decide not to renew their investments in the funds we manage, which could materially impact the financial condition of those funds, and could, in turn, have a material adverse effect on our results of operations and financial condition. Moreover, we may not be able to maintain or raise additional third party capital for the funds we manage or for potential new funds and therefore we may forego existing or potential fee income and other income generating opportunities. For example, investment performance at Nephila, as well as the broader ILS market, has been adversely impacted by consecutive years of elevated catastrophe losses, as well as by the COVID-19 pandemic in 2020. These events, as well as volatility in the capital markets, also have impacted investor decisions around allocation of capital to ILS, which in turn have impacted, and may continue to impact, our capital raises and redemptions within the funds we manage, as well as new funds, resulting in a decline in assets under management. See "Critical Accounting Estimates - Goodwill and Intangible Assets" under Item 7. Management's Discussion & Analysis of Financial Condition and Results of Operations for discussion and considerations of these impacts on the valuation of goodwill and intangible assets attributed to our Nephila ILS operations.

Developments at our Markel CATCo operations could have a material adverse effect on us. In December 2018, the U.S. Department of Justice (DOJ), U.S. Securities and Exchange Commission (SEC) and Bermuda Monetary Authority (BMA) initiated inquiries into loss reserves recorded in late 2017 and early 2018 at Markel CATCo Re (the Markel CATCo Inquiries). In September 2021, each of the SEC and DOJ notified us that it has concluded its investigation and does not intend to take any action against MCIM. There are currently no pending requests from the BMA, and it has been over a year since the BMA has contacted the Company in relation to the Markel CATCo Inquiries. See Item 3 Legal Proceedings and note 19 of the notes to consolidated financial statements included under Item 8 for more information regarding the Markel CATCo Inquiries and other matters related to Markel CATCo.

Matters related to or arising from our Markel CATCo operations, including matters of which we are currently unaware, could result in additional claims, litigation, investigations, enforcement actions or proceedings. For example, litigation has been, and may be, filed by investors in the Markel CATCo Funds. We also could become subject to increased regulatory scrutiny, investigations or proceedings in any of the jurisdictions where we operate. If any regulatory authority takes action against us or we enter into an agreement to settle a matter, we may incur sanctions or be required to pay substantial fines or implement remedial measures that could prove costly or disruptive to our businesses and operations. An unfavorable outcome in one or more of these matters, and others we cannot anticipate, could have a material adverse effect on our results of operations and financial condition. Even if an unfavorable outcome does not materialize, these matters, and actions we may take in response, could have an adverse impact on our reputation, limit our access to capital markets and result in substantial expense and disruption.

In addition, we may take steps to mitigate potential risks or liabilities related to or arising from our Markel CATCo operations. For example, see note 19 of the notes to consolidated financial statements included under Item 8 for information regarding a proposed transaction that would allow the acceleration of a full return of remaining capital to investors in the Markel CATCo Funds, which are currently in run-off. Other steps we may take to mitigate potential risks or liabilities related to or arising from our Markel CATCo operations could have a material impact on our results of operations or financial condition.

Risks Related to All of Our Operations

Legal and Regulatory Risks

The legal and regulatory requirements applicable to our businesses are extensive. Failure to comply could have a material adverse effect on us. Each of our businesses is highly dependent on the ability to engage on a daily basis in a large number of financial and operational activities, including, among others, insurance underwriting, claim processing, investment activities, the management of third party capital and providing products and services to businesses and consumers, many of which are highly complex. These activities are subject to internal guidelines and policies, as well as legal and regulatory requirements, including, among others, those related to privacy and data security, economic and trade sanctions, anti-corruption, anti-bribery and global finance and investments and insurance matters. Our continued expansion into new

businesses, distribution channels and markets has brought about additional requirements. While we believe that we have adopted adequate and effective risk management and compliance programs, compliance risks remain, particularly as we become subject to additional rules and regulations. Failure to comply with, or to obtain, appropriate authorizations or exemptions under any applicable laws and regulations could result in restrictions on our ability to do business or undertake activities that are regulated in one or more of the jurisdictions in which we conduct business. Any such failure could also subject us to fines, penalties, equitable relief and changes to our business practices. In addition, a failure to comply could result in defaults under our senior unsecured debt agreements or credit facilities or damage our businesses or our reputation.

Compliance with applicable laws and regulations is time consuming and personnel- and systems-intensive. Shareholder activism, the current political environment, and the current high level of government intervention and regulatory reform may lead to substantial new regulations and compliance obligations. Any changes in, or the enactment of new, applicable laws and regulations may increase the complexity of the regulatory environment in which we operate, which could materially increase our direct and indirect compliance costs and other expenses of doing business, and have a material adverse effect on our results of operations and financial condition.

Losses from legal and regulatory actions may have a material adverse effect on us. From time to time we may be involved in various legal actions, including at times multi-party or class action litigation, some of which involve claims for substantial or indeterminate amounts. A significant unfavorable outcome in one or more of these actions could have a material adverse effect on our results of operations and financial condition. We are also involved from time to time in various regulatory actions, investigations and inquiries, including market conduct exams by insurance regulatory authorities. If a regulatory authority takes action against us or we enter into a consent order or agreement to settle a matter, a regulatory authority has the option to require us to pay substantial fines or implement remedial measures that could prove costly or disruptive to our businesses and operations. Even if an unfavorable outcome does not materialize, these matters could have an adverse impact on our reputation and result in substantial expense and disruption. See note 19 of the notes to consolidated financial statements included under Item 8 and Item 3 Legal Proceedings.

We are subject to laws and regulations relating to economic and trade sanctions and bribery and corruption, the violation of which could have a material adverse effect on us. We are required to comply with the economic and trade sanctions and embargo programs administered by the U.S. Department of the Treasury's Office of Foreign Assets Control and similar multi-national bodies and governmental agencies worldwide, as well as applicable anti-corruption laws and anti-bribery and regulations of the U.S. and other jurisdictions where we operate. A violation of a sanction, embargo program, or anti-corruption law, could subject us, and individual employees, to a regulatory enforcement action as well as significant civil and criminal penalties. In addition, a violation could result in defaults under our outstanding indebtedness or credit facilities or damage our businesses or our reputation. Those penalties or defaults, or damage to our businesses or reputation, could have a material adverse effect on our results of operations and financial condition. In some cases the requirements and limitations applicable to the global operations of U.S. companies and their affiliates are more restrictive than, and may even conflict with, those applicable to non-U.S. companies and their affiliates, which also could have a material adverse effect on our results of operations and financial condition.

Employee error and misconduct may be difficult to detect and prevent and may result in significant losses. There have been a number of cases involving misconduct by employees in a broad range of industries in recent years, and we run the risk of misconduct by our employees. Instances of fraud, illegal acts, errors, failure to document transactions properly or to obtain proper internal authorization, or failure to comply with regulatory requirements or our internal policies may result in losses. It is not always possible to deter or prevent employee errors or misconduct, and the controls that we have in place to prevent and detect this activity may not be effective in all cases.

Global Operations

We manage our global operations through a network of business entities, which could result in inconsistent management, governance and oversight practices. We manage our global operations through a network of business entities throughout the U.S., Bermuda, the U.K., Europe, Canada, Asia and the Middle East. These business entities are managed by executives, and supported by shared and centralized services, primarily at the holding company level; however, for certain of our businesses, subsidiary-level management is responsible for day-to-day operations, profitability, personnel decisions, the growth of the business, and legal and regulatory compliance, including adherence to applicable local laws. Operating through subsidiary-level management can make it difficult for us to implement strategic decisions and coordinated procedures throughout our global operations. In addition, some of our business entities operate with management, sales, and support personnel that may be insufficient to support growth in their respective locations and industries, without significant central oversight and coordination. We continue to enhance our operating, governance and oversight procedures to effectively

support, and improve transparency throughout, our global operations and network of business entities; however, our operating strategy nonetheless could result in inconsistent management, governance, and oversight practices, which may have a material adverse effect on our results of operations and financial condition.

We have substantial international operations and investments, which expose us to increased political, civil, operational and economic risks. A substantial portion of our revenues and income is derived from our operations and investments outside the U.S., including from the U.K., Bermuda, Europe, Canada, Asia and the Middle East. Our international operations and investments expose us to increased political, civil, operational and economic risks. Deterioration or volatility in foreign and international financial markets or general economic and political and civil conditions could adversely affect our operating results, financial condition and liquidity. Concerns about the economic conditions, capital markets, political, civil and economic stability and solvency of certain countries may contribute to global market volatility. Political and civil changes in the jurisdictions where we operate and elsewhere, some of which may be disruptive, can also interfere with our customers and our activities in a particular location. Our international operations also may be subject to a number of additional risks, particularly in emerging economies, including restrictions such as price controls, capital controls, currency exchange limits, ownership limits and other restrictive or anti-competitive governmental actions or requirements, which could have a material adverse effect on our businesses.

General economic, market or industry conditions could lead to investment losses, adverse effects on our businesses and limit our access to the capital markets. General economic and market conditions and industry specific conditions, including extended economic recessions or expansions; prolonged periods of slow economic growth; inflation or deflation; fluctuations and volatility in foreign currency exchange rates, commodity and energy prices and interest rates; volatility in the credit and capital markets; the imposition of tariffs and other changes in international trade regulation and other factors, could lead to: substantial realized and unrealized investment losses in future periods; declines in demand for, or increased frequency and severity of claims made under, our insurance products; disruptions in global supply chains and increased costs of inputs for our products and services; reduced demand for our services and the products we sell and distribute; and limited or no access to the capital markets. Any of these impacts could have a material adverse effect on our results of operations, financial condition, debt and financial strength ratings or our insurance subsidiaries' capital. Results for many of our Markel Ventures businesses have been, and may continue to be, adversely affected by increased costs of labor and materials, including, with respect to increased materials costs, due to shortages in the availability of certain products, higher shipping costs and inflation. Our efforts to mitigate the impact of these cost increases may not be successful and, even when they are successful, there may be a time lag before the impacts of these efforts are reflected in our results.

The exit of the United Kingdom from the European Union could have a material adverse effect on us. The U.K. left the European Union (E.U.), (Brexit) on January 31, 2020. The U.K. and the E.U. now exist as separate markets, with distinct legal and regulatory regimes. While certain aspects of the relationship between the U.K. and the E.U. have been agreed, including under the Trade and Cooperation Agreement that took effect January 1, 2021, many issues related to the provision of services between the U.K. and the E.U. have not been addressed, particularly for financial services.

The U.K.'s exit from the E.U. could continue to contribute to instability in global financial markets, including foreign currency markets, and adversely affect European and worldwide economic or market conditions. Significant uncertainties remain related to the ultimate political, monetary and economic impacts of Brexit, including related tax, accounting and financial reporting implications. Brexit could also lead to legal and regulatory uncertainty and, a number, potentially large, of new and divergent national laws and regulations, including new tax rules, as the U.K. and E.U. regulatory environments evolve. These impacts, combined with the legal and regulatory uncertainty, may adversely affect our operations and also may result in increased claims arising from the impact on our policyholders.

Any of these effects of Brexit, and others we cannot anticipate, could have a material adverse effect on our results of operations and financial condition.

Acquisitions, Integration and Retention

The integration of acquired companies may not be as successful as we anticipate. We have completed, and expect to complete, acquisitions in an effort to achieve profitable growth in our underwriting and other insurance operations and to create additional value on a diversified basis in our Markel Ventures operations. Acquisitions present operational, regulatory, strategic and financial risks, as well as risks associated with liabilities arising from the previous operations of the acquired companies. We also must make decisions about the degree to which we integrate acquisitions into our existing businesses, operations and systems, and over what timeframe. Those decisions may adversely affect how successfully the acquired businesses perform, both in the short-term and in the long-term. All of these risks are magnified in the case of a large

acquisition. Integration of the operations and personnel of acquired companies may prove more difficult than anticipated, which may result in failure to achieve financial objectives associated with the acquisition or diversion of management attention. In addition, integration of formerly privately-held companies into the management and internal control and financial reporting systems of a publicly-held company presents additional risks. See note 3 of the notes to consolidated financial statements included under Item 8 for information about our recent acquisitions.

Impairment in the value of our goodwill or other intangible assets could have a material adverse effect on our operating results and financial condition. As of December 31, 2021, goodwill and intangible assets totaled $4.7 billion and represented 32% of shareholders' equity. We record goodwill and intangible assets at fair value upon the acquisition of a business. Goodwill represents the excess of amounts paid to acquire businesses over the fair value of the net assets acquired. Goodwill and indefinite-lived intangible assets are evaluated for impairment annually, or more frequently if events or circumstances indicate that their carrying value may not be recoverable. Declines in operating results, divestitures, sustained market declines and other factors that impact the fair value of a reporting unit could result in an impairment of goodwill or intangible assets and, in turn, a charge to net income. Such a charge could have a material adverse effect on our results of operations or financial condition. Developments that adversely affect the future cash flows or earnings of an acquired business may cause the goodwill or intangible assets recorded for it to be impaired. See "Critical Accounting Estimates - Goodwill and Intangible Assets" included under Item 7 Management's Discussion and Analysis of Financial Condition and Results of Operations and note 6 of the notes to consolidated financial statements included under Item 8 for information about our goodwill and intangible assets.

The loss of one or more key executives or an inability to attract and retain qualified personnel could have a material adverse effect on us. Our success depends on our ability to retain the services of our existing key executives and to attract and retain additional qualified personnel in the future. The temporary or permanent loss of the services of any of our key executives or the inability to hire and retain other highly qualified personnel in the future could have a material adverse effect on our ability to conduct or grow our business.

Information Technology Systems and Third-Party Systems and Service Providers

Information technology systems that we use could fail or suffer a security breach or cyber-attack, which could have a material adverse effect on us or result in the loss of regulated or sensitive information. Our businesses are dependent upon the operational effectiveness and security of our enterprise systems and those maintained by third parties. Among other things, we rely on these systems to interact with producers, insureds, customers, clients, and other third parties, to perform actuarial and other modeling functions, to underwrite business, to prepare policies and process premiums, to process claims and make claims payments, to prepare internal and external financial statements and information, as well as to engage in a wide variety of other business activities. A significant failure of our enterprise systems, or those of third parties upon which we may rely, whether because of a natural disaster, network outage or a cyber-attack on those systems, could compromise our personal, confidential and proprietary information as well as that of our customers and business partners, impede or interrupt our business operations and could result in other negative consequences, including remediation costs, loss of revenue, additional regulatory scrutiny and fines, litigation and monetary and reputational damages. Although we have implemented controls and take protective actions to reduce the risk of an enterprise failure and protect against a security breach or cyber-attack, such measures may be insufficient to prevent, or mitigate the effects of, a natural disaster, network outage or a cyber-attack on our systems that could result in liability to us, cause our data to be corrupted or stolen and cause us to commit resources, management time and money to prevent or correct those failures.

In addition, we are subject to numerous data privacy and security laws and regulations enacted in the jurisdictions in which we do business. A misuse or mishandling of personal, confidential or proprietary information being sent to or received from a client, employee or third party could damage our businesses or our reputation or result in significant monetary damages, regulatory enforcement actions, fines and criminal prosecution in one or more jurisdictions. For example, under the European General Data Protection Regulation there are significant punishments for non-compliance which could result in a penalty of up to 4% of a firm's global annual revenue. In addition, a violation of data privacy laws and regulations could result in defaults under our outstanding indebtedness or credit facilities. Those monetary damages, penalties, regulatory or legal actions or defaults, or the damage to our businesses or reputation, could have a material adverse effect on our results of operations and financial condition. Third parties who we utilize to perform certain functions are also subject to these risks, and their failure to adhere to these laws and regulations also could damage our businesses or reputation or result in regulatory intervention, which could have a material adverse effect on our results of operations and financial condition.

Further, we routinely transmit, receive and store personal, confidential and proprietary information by email and other electronic means. Although we attempt to protect this personal, confidential and proprietary information, we may be unable to

do so in all cases, especially with customers, business partners and other third parties who may not have or use appropriate controls to protect confidential information.

While we maintain cyber risk insurance providing first-party and third-party coverages, that insurance may not cover all costs associated with the consequences of personal, confidential or proprietary information being compromised. A material cyber security breach could have a material adverse effect on our results of operations and financial condition.

Third-party providers may perform poorly, breach their obligations to us or expose us to enhanced risks. Certain of our business functions are performed by third-party providers, and these providers may not perform as anticipated or may fail to adhere to the obligations owed to us. For example, certain of our business units rely on relationships with a number of third-party administrators under contracts pursuant to which these third-party administrators manage and pay claims on our behalf and advise us with respect to case reserves. In these relationships, we rely on controls incorporated in the provisions of the administration agreement, as well as on the administrator's internal controls, to manage the claims process within our prescribed parameters. In addition, certain of our business units use managing general agents, general agents and other producers to write and administer business on our behalf within prescribed underwriting authorities. Although we monitor these administrators, agents, producers and other service providers on an ongoing basis, our monitoring efforts may not be adequate, or our service providers could exceed their authorities or otherwise breach obligations owed to us, which could result in operational disruption, reputational damage and regulatory intervention and otherwise have a material adverse effect on our results of operation and financial condition.

In addition, we utilize third parties to perform certain technology and business process functions and may do so increasingly in the future. If we do not effectively develop and implement our outsourcing strategy, third party providers do not perform as anticipated or we experience technological or other problems with a transition, we may not realize productivity improvements or cost efficiencies and may experience operational difficulties, increased costs and a loss of business. Our use of third parties to perform certain technology and business process functions may expose us to enhanced risk related to privacy and data security, which could result in monetary and reputational damages. In addition, our ability to receive services from third-party providers might be impacted by a wide variety of factors, including cultural differences, political and civil instability, pandemics, unanticipated or additional regulatory requirements or policies. As a result, our ability to conduct our businesses may be adversely affected.

Pandemics

Pandemics, such as COVID-19 and its variants, have had, and could have, material adverse effects on us. The COVID-19 pandemic has had, and its variants or future pandemics could have, material adverse effects on our underwriting, investment, Markel Ventures and other operations, and on our results of operations and financial condition. The effects of a pandemic, and related governmental responses, may be wide-ranging, costly, disruptive and rapidly changing. Factors that give rise, or may give rise, to those effects include, or may include, the following, as well as others that we cannot predict:

- Insured or reinsured losses from pandemic-related claims that are different, or more extensive, than we expect;
- Government actions or judicial decisions related to insurance or reinsurance coverages or rates, including, for example, requiring retroactive coverage of claims or expanding the scope of coverage;
- Disputes, lawsuits and other legal actions challenging the promptness of coverage determinations, or the coverage determinations themselves, under applicable insurance or reinsurance policies, resulting in increased claims, litigation and related expenses;
- Disruptions, delays and increased costs and risks related to having limited or no access to our facilities, workplace re-entry, employee safety concerns and reductions or interruptions of critical or essential services;
- Continually changing business conditions and compliance obligations; and
- Impacts on the cost, availability or timeliness of required raw materials, supplies or services provided by third-parties, including services provided by state, federal or foreign governments or government agencies.

In addition, a pandemic may, as has been the case with COVID-19, have the effect of triggering or intensifying many of the risks described elsewhere under this Item 1A. Risk Factors under Risks Primarily Related to Our Insurance Operations, Risks Primarily Related to Our Investments and Access to Capital, Risks Primarily Related to Our ILS Operations, and Risks Related to All of Our Operations.

Item 3. LEGAL PROCEEDINGS

Markel CATCo Inquiries

We previously reported that in December 2018 the U.S. Department of Justice (DOJ), U.S. Securities and Exchange Commission (SEC) and Bermuda Monetary Authority (BMA) (together, the Governmental Authorities) initiated inquiries into loss reserves recorded in late 2017 and early 2018 at our Markel CATCo operations. Those reserves are held at Markel CATCo Reinsurance Ltd., an unconsolidated subsidiary of Markel CATCo Investment Management Ltd. (MCIM), which has been in runoff since July 2019. The Markel CATCo Inquiries are limited to MCIM and its subsidiaries (together, Markel CATCo) and do not involve other Markel subsidiaries.

We retained outside counsel to conduct an internal review of Markel CATCo's loss reserving in late 2017 and early 2018. The internal review was completed in April 2019 and found no evidence that Markel CATCo personnel acted in bad faith in exercising business judgment in the setting of reserves and making related disclosures during late 2017 and early 2018. Our outside counsel met with the Governmental Authorities and reported the findings from the internal review.

On September 27, 2021, the SEC notified us that it has concluded its investigation and it does not intend to recommend an enforcement action against MCIM. On September 28, 2021, we were advised by the DOJ that it has concluded its investigation and will not take any action against MCIM. Throughout the inquiries, we have proactively kept the BMA informed of the status of the SEC and DOJ investigations, including the recent conclusion of those investigations. There are currently no pending requests from the BMA, and it has been over a year since the BMA has contacted us in relation to the governmental inquiries.

Thomas Yeransian v. Markel Corporation

In October 2010, we completed the acquisition of Aspen Holdings, Inc. (Aspen). As part of the consideration for that acquisition, Aspen shareholders received contingent value rights (CVRs). Prior to the December 31, 2017 CVR maturity date, the CVR holder representative, Thomas Yeransian, disputed our prior estimation of the value of the CVRs. On September 15, 2016, Mr. Yeransian filed a suit, Thomas Yeransian v. Markel Corporation (U.S. District Court for the District of Delaware), alleging, among other things, that we are in default under the CVR agreement. The suit seeks: $47.3 million in damages, which represents the unadjusted value of the CVRs; plus interest ($20.8 million through December 31, 2021) and default interest (up to an additional $18.3 million through December 31, 2021, depending on the date any default occurred); and an unspecified amount of punitive damages, costs, and attorneys' fees.

At the initial hearing held February 21, 2017, the court stayed the proceedings and ordered the parties to discuss resolving the dispute pursuant to the independent CVR valuation procedure under the CVR agreement. The parties met on April 5, 2017, but were unsuccessful in reaching agreement on a process for resolving the dispute. We subsequently filed a motion to stay the litigation and compel arbitration, and, on July 31, 2017, the court issued an order granting that motion.

On November 13, 2018, Mr. Yeransian filed a second suit, Thomas Yeransian v. Markel Corporation (U.S. District Court for the District of Delaware), which also alleges that the Company is in default under the CVR agreement. The second suit seeks the same monetary damages and relief as the original suit. We filed a motion to stay this suit until the arbitration for the original suit has concluded and the CVR holders have received the final amount due under the CVR Agreement. The court granted that motion on August 6, 2019.

On June 5, 2020, Yeransian filed a third suit, Thomas Yeransian v. Markel Corporation (U.S. District Court for the District of Delaware). Similar to the first and second suits, the third suit alleges that the Company is in default under the CVR agreement and, in addition, has interfered with the arbitration for the CVR valuation. The third suit seeks the same monetary damages and relief as the original suit and the second suit, as well as other declaratory and non-monetary judgments and orders. We filed a motion to stay this suit, which the court granted on March 16, 2021.

Under the arbitration terms of the CVR Agreement, independent experts were appointed to determine the final value of the CVRs. On September 20, 2021, the experts delivered their report indicating a final CVR valuation of $22.4 million, excluding interest. We had previously paid $8.0 million to the CVR holders, representing 90% of the undisputed value of the CVRs, plus interest of $1.9 million. On September 20, 2021, we paid $20.1 million, which represents $14.1 million for the unpaid portion of the final CVR amount (excluding fees payable to a third-party), plus $6.0 million in additional interest.

The stay has been lifted on each pending suit, and the three suits have been consolidated. We have asked the court to dismiss, or grant us summary judgment on, all counts.

We believe Mr. Yeransian's suits to be without merit. We further believe that any material loss resulting from the suits to be remote.

Information About Our Executive Officers

Thomas S. Gayner
Co-Chief Executive Officer since January 2016. President and Chief Investment Officer from May 2010 to December 2015. Chief Investment Officer from January 2001 to December 2015. President, Markel-Gayner Asset Management Corporation, a subsidiary, since December 1990. Director from 1998 to 2004. Director since August 2016. Age 60.

Richard R. Whitt, III
Co-Chief Executive Officer since January 2016. President and Co-Chief Operating Officer from May 2010 to December 2015. Senior Vice President and Chief Financial Officer from May 2005 to May 2010. Director since August 2016. Age 58.

Robert C. Cox
President and Chief Operating Officer, Insurance Operations since September 2018. Executive Vice President of Chubb Ltd. (a public company) and Division Chairman of Chubb Ltd.'s North American Financial Lines from January 2016 until retirement in July 2016; Executive Vice President of Chubb & Son and Chief Operating Officer of Chubb Specialty Insurance from June 2013 to January 2016. Age 63.

Michael R. Heaton
President, Markel Ventures since January 2016; President and Chief Operating Officer, Markel Ventures, Inc., a subsidiary, since January 2016 and September 2013, respectively. Age 45.

Bradley J. Kiscaden
President and Chief Administrative Officer, Insurance Operations since September 2018. Executive Vice President and Chief Actuarial Officer from July 2012 to September 2018. Chief Actuarial Officer from March 1999 to September 2018. Age 59.

Jeremy A. Noble
Senior Vice President and Chief Financial Officer since September 2018. Senior Vice President, Finance from June 2018 to September 2018. Finance Director, Markel International from July 2015 to June 2018. Managing Director, Internal Audit from September 2011 to July 2015. Age 46.

Richard R. Grinnan
Senior Vice President, Chief Legal Officer and Secretary since February 2020. General Counsel and Secretary from June 2014 to February 2020. Assistant General Counsel from August 2012 to June 2014. Age 53.

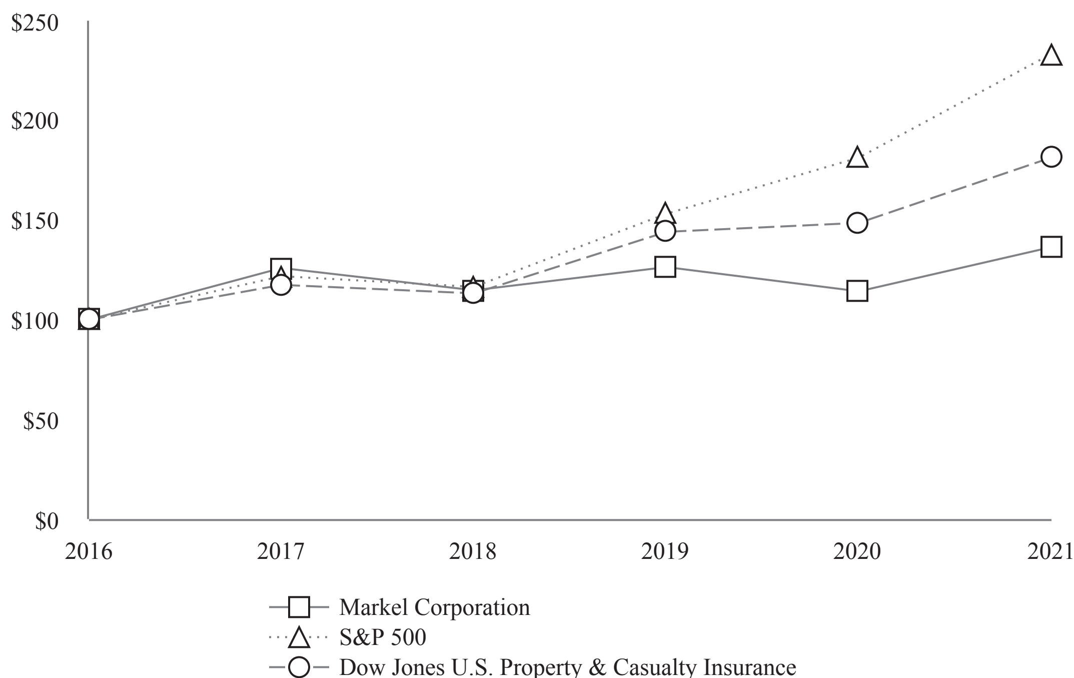
Susan L. Davies
Chief Human Resources Officer, Markel Insurance since September 2018. Managing Executive, Human Resources from January 2018 to August 2020. Senior Director Global Organization Effectiveness and Strategy from October 2016 to January 2018. Associate Vice President Talent Management of CarMax, Inc. (a public company) from September 2015 to October 2016. Age 57.

PART II

Item 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Performance Graph

The following graph compares the cumulative total return (based on share price) on our common stock with the cumulative total return of companies included in the Standard & Poor's (S&P) 500 Index and the Dow Jones U.S. Property & Casualty Insurance Companies Index. This information is not necessarily indicative of future results.



	Years Ended December 31,					
	2016 [1]	2017	2018	2019	2020	2021
Markel Corporation	$ 100	$ 126	$ 115	$ 126	$ 114	$ 136
S&P 500	100	122	116	153	181	233
Dow Jones U.S. Property & Casualty Insurance	100	117	113	144	149	181

(1) $100 invested on December 31, 2016 in our common stock or the listed index. Includes reinvestment of dividends.

Common Stock and Dividend Information

Our common stock trades on the New York Stock Exchange under the symbol MKL. The number of shareholders of record as of February 2, 2022 was approximately 300. The total number of shareholders, including those holding shares in street name or in brokerage accounts, is estimated to be in excess of 190,000. Our current strategy is to retain earnings and, consequently, we have not paid and do not expect to pay a cash dividend on our common stock.

Common Share Repurchases

The following table summarizes our common share repurchases for the quarter ended December 31, 2021.

Issuer Purchases of Equity Securities

	(a)	(b)	(c)	(d)
	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs [(1)]	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (in thousands)
October 1, 2021 through October 31, 2021	19,038	$ 1,260.62	19,038	$ 95,809
November 1, 2021 through November 30, 2021	15,749	$ 1,289.96	15,749	$ 490,012
December 1, 2021 through December 31, 2021	27,746	$ 1,227.35	27,746	$ 455,958
Total	62,533	$ 1,253.24	62,533	$ 455,958

(1) The Board of Directors approved the repurchase of up to $500 million of our common shares pursuant to a share repurchase program publicly announced on November 16, 2021 (the 2021 Program). The 2021 Program terminated and replaced a similar $300 million share repurchase program authorized in August 2019 (the 2019 Program). Under our share repurchase programs, we may repurchase outstanding common shares of our stock from time to time in privately negotiated or open market transactions, including under plans complying with Rule 10b5-1 under the Securities Exchange Act of 1934. In February 2022, we announced that the Board of Directors approved a similar $750 million share repurchase program that terminated and replaced the 2021 Program.

Securities Authorized for Issuance Under Equity Compensation Plans

See Part III for information on securities authorized for issuance under our equity compensation plans.

Available Information

This document represents Markel Corporation's Annual Report on Form 10-K, which is filed with the U.S. Securities and Exchange Commission. We make available free of charge on or through our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the U.S. Securities and Exchange Commission. Our website address is www.markel.com.

Transfer Agent

American Stock Transfer & Trust Co., LLC, Operations Center, 6201 15th Avenue, Brooklyn, NY 11219
(800) 937-5449 help@astfinancial.com

Item 7. MANAGEMENT'S DISCUSSION & ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis includes discussion of changes in our results of operations and financial condition from 2020 to 2021 and should be read in conjunction with the consolidated financial statements and related notes included under Item 8, Item 1 Business, Item 1A Risk Factors and "Safe Harbor and Cautionary Statement" under Item 7. The accompanying consolidated financial statements and related notes have been prepared in accordance with United States (U.S.) generally accepted accounting principles (GAAP) and include the accounts of Markel Corporation and its consolidated subsidiaries, as well as any variable interest entities that meet the requirements for consolidation (the Company). A discussion of changes in our results of operations and financial condition from 2019 to 2020 may be found in Part II Item 7 Management's Discussion and Analysis of Financial Condition and Results of Operations in our 2020 Annual Report on Form 10-K, which was filed with the U.S. Securities and Exchange Commission on February 19, 2021.

Item 7 is divided into the following sections:

- Results of Operations
- Liquidity and Capital Resources
- Critical Accounting Estimates
- Safe Harbor and Cautionary Statement

In March 2020, COVID-19, a novel coronavirus outbreak, was declared a pandemic by the World Health Organization causing unprecedented social and economic disruption, increased volatility of capital markets and intervention by various governments and central banks around the world. Details regarding the impacts of the pandemic on our results of operations, financial condition and liquidity in 2020, and certain actions we took in response, are included in the following discussion and analysis. The most significant impacts included losses incurred in our underwriting operations, decreased demand for certain products and services within our Markel Ventures operations and volatility within our investment portfolio.

For a discussion of our significant accounting policies, as well as recently issued accounting pronouncements that we have not yet adopted and their expected effects on our consolidated financial position, results of operations and cash flows, see note 1 of the notes to consolidated financial statements included under Item 8.

Results of Operations

The following table presents the components of net income to shareholders, net income to common shareholders and comprehensive income to shareholders.

	Years Ended December 31,	
(dollars in thousands)	**2021**	2020
Insurance segment profit	**$ 696,413**	$ 169,001
Reinsurance segment loss	**(55,129)**	(75,470)
Investing segment profit [(1)]	**2,353,124**	989,564
Markel Ventures segment profit [(2)]	**272,552**	254,078
Other operations [(3)]	**(23,459)**	(63,289)
Interest expense	**(183,579)**	(177,582)
Net foreign exchange gains (losses)	**72,271**	(95,853)
Income tax expense	**(684,458)**	(168,682)
Net income attributable to noncontrolling interests	**(22,732)**	(15,737)
Net income to shareholders	**2,425,003**	816,030
Preferred stock dividends	**(36,000)**	(18,400)
Net income to common shareholders	**2,389,003**	797,630
Other comprehensive income (loss) to shareholders	**(346,759)**	375,604
Comprehensive income to shareholders	**$ 2,078,244**	$ 1,191,634

(1) Net investment income and net investment gains, if any, attributable to Markel Ventures are included in segment profit for Markel Ventures. All other net investment income and net investment gains are included in Investing segment profit.

(2) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures.

(3) Other operations include the results attributable to our operations that are not included in a reportable segment, as well as any amortization of intangible assets that is not allocated to a reportable segment. Amortization of intangible assets attributable to our underwriting segments was $41.2 million and $41.9 million for the years ended December 31, 2021 and 2020, respectively; however, we do not allocate amortization of intangible assets between the Insurance and Reinsurance segments.

The increase in comprehensive income to shareholders in 2021 compared to 2020 was primarily due to an increase in pre-tax net investment gains from $618.0 million in 2020 to $2.0 billion in 2021, as well as a meaningful increase in underwriting profits in 2021 compared to 2020, which included $358.3 million of pre-tax net losses and loss adjustment expenses attributed to COVID-19. Partially offsetting these increases to comprehensive income to shareholders, other comprehensive income reflected a decrease in net unrealized gains on our fixed maturity investment portfolio in 2021 compared to an increase in 2020.

The components of net income to shareholders and comprehensive income to shareholders are discussed in further detail under "Underwriting Results," "Investing Results," "Markel Ventures," "Other Operations," "Interest Expense and Income Taxes" and "Comprehensive Income to Shareholders and Book Value per Common Share."

Underwriting Results

Underwriting profits are a key component of our strategy to build shareholder value. We believe that the ability to achieve consistent underwriting profits demonstrates knowledge and expertise, commitment to superior customer service and the ability to manage insurance risk. The property and casualty insurance industry commonly defines underwriting profit or loss as earned premiums net of losses and loss adjustment expenses and underwriting, acquisition and insurance expenses. We use underwriting profit or loss and the combined ratio as a basis for evaluating our underwriting performance. The U.S. GAAP combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums. The combined ratio is the sum of the loss ratio and the expense ratio. The loss ratio represents the relationship of incurred losses and loss adjustment expenses to earned premiums. The expense ratio represents the relationship of underwriting, acquisition and insurance expenses to earned premiums. A combined ratio less than 100% indicates an underwriting profit, while a combined ratio greater than 100% reflects an underwriting loss. Segment profit for our underwriting segments may also include other revenues and expenses that are attributable to our underwriting operations that are not captured in underwriting profit.

In addition to the U.S. GAAP combined ratio, loss ratio and expense ratio, we also evaluate our underwriting performance using measures that exclude the impacts of certain items on these ratios. We believe these adjusted measures, which are non-GAAP measures, provide financial statement users with a better understanding of the significant factors that comprise our underwriting results and how management evaluates underwriting performance.

When analyzing our combined ratio, we exclude current accident year losses and loss adjustment expenses attributed to natural catastrophes. We also exclude losses and loss adjustment expenses attributed to certain significant, infrequent loss events, for example, the COVID-19 pandemic. Due to the unique characteristics of a catastrophe loss, there is inherent variability as to the timing or loss amount, which cannot be predicted in advance. The same is true for the COVID-19 pandemic, as there are no events in recent history with similar characteristics. We believe measures that exclude the effects of catastrophe events and COVID-19 are meaningful to understand the underlying trends and variability in our underwriting results that may be obscured by these items.

When analyzing our loss ratio, we evaluate losses and loss adjustment expenses attributable to the current accident year separate from losses and loss adjustment expenses attributable to prior accident years. Prior accident year reserve development, which can either be favorable or unfavorable, represents changes in our estimates of losses and loss adjustment expenses related to loss events that occurred in prior years. We believe a discussion of current accident year loss ratios, which exclude prior accident year reserve development, is helpful since it provides more insight into estimates of current underwriting performance and excludes changes in estimates related to prior year loss reserves. We also analyze our current accident year loss ratio excluding losses and loss adjustment expenses attributable to catastrophes and, in 2020, the COVID-19 pandemic, for the reasons previously discussed. The current accident year loss ratio excluding the impact of catastrophes and significant, infrequent loss events is also commonly referred to as an attritional loss ratio within the property and casualty insurance industry.

Consolidated

	Years Ended December 31,		
(dollars in thousands)	**2021**	2020	% Change
Gross premium volume [1]	**$ 8,480,494**	$ 7,154,628	19 %
Net written premiums	**$ 7,119,731**	$ 5,932,238	20 %
Earned premiums	**$ 6,503,029**	$ 5,612,205	16 %
Underwriting profit	**$ 628,085**	$ 127,617	392 %
Disposal loss	**$ 109**	$ (41,461)	NM [2]
Underwriting Ratios [3]			Point Change
Loss ratio			
Current accident year loss ratio	**62.4 %**	72.6 %	(10.2)
Prior accident years loss ratio	**(7.4)%**	(10.8)%	3.4
Loss ratio	**55.1 %**	61.8 %	(6.7)
Expense ratio	**35.3 %**	36.0 %	(0.7)
Combined ratio	**90.3 %**	97.7 %	(7.4)
Current accident year loss ratio catastrophe impact [4]	**3.0 %**	3.1 %	(0.1)
Current accident year loss ratio COVID-19 impact [4]	**— %**	6.4 %	(6.4)
Prior accident years loss ratio COVID-19 impact [4]	**0.2 %**	— %	0.2
Current accident year loss ratio, excluding COVID-19 and catastrophes	**59.4 %**	63.1 %	(3.7)
Combined ratio, excluding COVID-19 and current year catastrophes	**87.1 %**	88.3 %	(1.2)

(1) Gross premium volume excludes $3.0 billion and $2.1 billion for the years ended December 31, 2021 and 2020, respectively, of written premiums attributable to our program services business and other fronting arrangements that were ceded.

(2) NM - Ratio is not meaningful

(3) Amounts may not reconcile due to rounding.

(4) The point impact of catastrophes and COVID-19 is calculated as the associated net losses and loss adjustment expenses divided by total earned premiums.

Premiums

The increase in gross premium volume in our underwriting operations in 2021 was driven by new business and more favorable rates within our professional liability and general liability product lines across both of our underwriting segments. Net retention of gross premium volume for our underwriting operations was 84% in 2021 compared to 83% in 2020. Within our underwriting operations, we purchase reinsurance and retrocessional reinsurance to manage our net retention on individual risks and overall exposure to losses and to enable us to write policies with sufficient limits to meet policyholder needs. The increase in earned premiums in our underwriting operations in 2021 was primarily attributable to higher gross premium volume within our professional liability and general liability product lines.

Since 2018, we have seen favorable rates across most product lines, which further strengthened in 2020 and 2021 following continued high levels of natural catastrophes and significant losses attributed to the COVID-19 pandemic. In 2020 and 2021, the favorable rate environment was most prominent within our professional liability and general liability product lines, based on general market conditions, the impacts of social inflation, including increased litigation, as well as an increase in the severity of losses in these product lines. Additionally, recent increases in economic inflation, and an expectation that this trend will continue, have created more uncertainty around the ultimate losses that will be incurred to settle claims on these longer-tail product lines. These factors, as well as the current and expected impacts of the sustained low interest rate environment on net investment income, have resulted in higher rates. The primary exception to the favorable rate environment is workers' compensation, where we continue to see low single digit rate decreases given generally favorable loss experience in recent years. When we believe the prevailing market price will not support our underwriting profit targets, the business is not written. As a result of our underwriting discipline, gross premium volume may vary when we alter our product offerings to maintain or improve underwriting profitability.

Combined Ratio

In 2021, underwriting results included $195.0 million of net losses and loss adjustment expenses attributed to natural catastrophes, including Winter Storm Uri, the floods in Europe and Hurricane Ida (2021 Catastrophes), as well as $15.7 million of net losses and loss adjustment expenses resulting from an increase in our estimate of our ultimate losses and loss adjustment expenses attributed to COVID-19. The net losses and loss adjustment expenses from the 2021 Catastrophes were net of ceded losses of $221.7 million. In 2020, underwriting results included $358.3 million of net losses and loss adjustment expenses attributed to COVID-19 and $172.2 million of net losses and loss adjustment expenses from natural catastrophes, including Hurricanes Laura, Sally and Isaias, as well as the derecho in Iowa and wildfires in the western U.S. (2020 Catastrophes). The net losses and loss adjustment expenses from COVID-19 and the 2020 Catastrophes were net of ceded losses of $106.2 million and $125.7 million, respectively. Excluding losses attributed to catastrophes and COVID-19, the decrease in our consolidated combined ratio in 2021 compared to 2020 was driven by a lower current accident year loss ratio within our Insurance segment, partially offset by the impact of less favorable development on prior accident years loss reserves in 2021 compared to 2020. Higher earned premiums in 2021 compared to 2020 had a favorable impact on our expense ratio and an unfavorable impact on the prior accident years loss ratio.

The gross and net losses and loss adjustment expenses attributed to the 2021 Catastrophes as of December 31, 2021 represent our best estimates based upon information currently available. Our estimates for these losses are based on claims received to date, detailed policy and reinsurance contract level reviews, preliminary industry loss estimates and output from both industry and proprietary models, as well as analysis of our ceded reinsurance contracts. These estimates are based on various assumptions about coverage, liability and reinsurance and are subject to change. While we believe our reserves for the 2021 Catastrophes as of December 31, 2021 are adequate, we continue to closely monitor reported claims and may adjust our estimates of gross and net losses as new information becomes available.

Our losses from COVID-19 were primarily attributed to business written within our international insurance operations and were primarily associated with coverages for event cancellation and business interruption losses on policies where no specific pandemic exclusions existed. Our estimate of ultimate gross and net losses and loss adjustment expenses attributed to COVID-19 is based on assumptions about coverage, liability and ceded reinsurance contract attachment, for which significant uncertainty still exists, and represents our best estimate as of December 31, 2021 based upon information currently available. We continue to closely monitor reported claims, ceded reinsurance contract attachment, government actions, judicial decisions and changes in the levels of worldwide social disruption and economic activity arising from the pandemic and may adjust our estimates of gross and net losses as new information becomes available. Such adjustments to our reserves for COVID-19 losses and loss adjustment expenses may be material to our results of operations, financial condition and cash flows. See note 9 of the notes to consolidated financial statements included under Item 8 for further details on our estimate of ultimate gross and net losses and loss adjustment expenses attributed to COVID-19.

Insurance Segment

(dollars in thousands)	Years Ended December 31, 2021	2020	% Change
Gross premium volume	**$ 7,239,676**	$ 6,029,024	20 %
Net written premiums	**$ 5,998,890**	$ 4,977,662	21 %
Earned premiums	**$ 5,465,284**	$ 4,688,448	17 %
Underwriting profit	**$ 696,413**	$ 169,001	312 %
Underwriting Ratios [1]			Point Change
Loss ratio			
Current accident year loss ratio	**60.6 %**	71.9 %	(11.3)
Prior accident years loss ratio	**(9.3)%**	(11.8)%	2.5
Loss ratio	**51.3 %**	60.1 %	(8.8)
Expense ratio	**35.9 %**	36.3 %	(0.4)
Combined ratio	**87.3 %**	96.4 %	(9.1)
Current accident year loss ratio catastrophe impact [2]	**1.7 %**	2.7 %	(1.0)
Current accident year loss ratio COVID-19 impact [2]	**— %**	6.3 %	(6.3)
Prior accident years loss ratio COVID-19 impact [2]	**(0.1)%**	— %	(0.1)
Current accident year loss ratio, excluding COVID-19 and catastrophes	**58.9 %**	63.0 %	(4.1)
Combined ratio, excluding COVID-19 and current year catastrophes	**85.6 %**	87.4 %	(1.8)

(1) Amounts may not reconcile due to rounding.

(2) The point impact of catastrophes and COVID-19 is calculated as the associated net losses and loss adjustment expenses divided by total earned premiums.

Premiums

The increase in gross premium volume in our Insurance segment in 2021 was driven by growth across all of our product lines, most notably within our professional liability and general liability product lines, which experienced higher new business volume and benefited from more favorable rates and higher retention of renewals. Additionally, our personal lines product lines experienced significant growth in 2021, primarily attributable to the continued expansion of our classic cars business. Net retention of gross premium volume was 83% in both 2021 and 2020. The increase in earned premiums in 2021 was primarily due to the higher gross premium volume.

Combined Ratio

The Insurance segment's current accident year losses and loss adjustment expenses in 2021 included $94.7 million of net losses and loss adjustment expenses from the 2021 Catastrophes. Current accident year losses in 2020 included $296.4 million and $124.4 million of net losses and loss adjustment expenses attributed to COVID-19 and the 2020 Catastrophes, respectively. Excluding losses attributed to catastrophes and COVID-19, the decrease in the current accident year loss ratio in 2021 compared to 2020 was primarily attributable to lower attritional loss ratios within our professional liability, general liability and property product lines, primarily due to the benefit of achieving higher premium rates.

The Insurance segment's 2021 combined ratio included $506.3 million of favorable development on prior accident years loss reserves compared to $554.6 million in 2020. The decrease in favorable development was primarily due to less favorable development on our professional liability product lines in 2021 compared to 2020, partially offset by more favorable development on our property product lines in 2021 compared to 2020. Additionally, higher earned premiums in 2021 compared to 2020 had an unfavorable impact on the prior accident years loss ratio. In 2021 and 2020, favorable development was most significant on our general liability, workers' compensation, marine and energy and professional liability product lines. In 2021, we also had significant favorable development on our property product lines. See note 9 of the notes to consolidated financial statements included under Item 8 for more information on the Insurance segment's prior year loss reserve development.

The modest decrease in the Insurance segment's expense ratio in 2021 was primarily due to the favorable impact of higher earned premiums, partially offset by higher profit sharing expenses in 2021 compared to 2020 as a result of improved profitability.

Reinsurance Segment

	Years Ended December 31,		
(dollars in thousands)	**2021**	2020	% Change
Gross premium volume	**$ 1,246,143**	$ 1,130,923	10 %
Net written premiums	**$ 1,126,167**	$ 960,123	17 %
Earned premiums	**$ 1,042,048**	$ 929,348	12 %
Underwriting loss	**$ (55,238)**	$ (34,009)	(62)%
Disposal loss	**$ 109**	$ (41,461)	NM [1]
Underwriting Ratios [2]			Point Change
Current accident year loss ratio	**72.0 %**	75.3 %	(3.3)
Prior accident years loss ratio	**1.9 %**	(5.6)%	7.5
Loss ratio	**73.9 %**	69.8 %	4.1
Expense ratio	**31.4 %**	33.9 %	(2.5)
Combined ratio	**105.3 %**	103.7 %	1.6
Current accident year loss ratio catastrophe impact [3] [4]	**9.6 %**	5.1 %	4.5
Current accident year loss ratio COVID-19 impact [3]	**— %**	6.7 %	(6.7)
Prior accident years loss ratio COVID-19 impact [3]	**2.1 %**	— %	2.1
Current accident year loss ratio, excluding COVID-19 and catastrophes	**62.3 %**	63.5 %	(1.2)
Combined ratio, excluding COVID-19 and current year catastrophes	**93.6 %**	91.9 %	1.7

(1) NM - Ratio is not meaningful

(2) The point impact of catastrophes and COVID-19 is calculated as the associated net losses and loss adjustment expenses divided by total earned premiums.

(3) Amounts may not reconcile due to rounding.

(4) The point impact of catastrophes does not include the favorable impact of assumed reinstatement premiums associated with the 2021 Catastrophes of $21.7 million for the year ended December 31, 2021. Reinstatement premiums were not significant for the year ended December 31, 2020.

Premiums

The increase in gross premium volume in our Reinsurance segment in 2021 was primarily attributable to new business and increases on renewals within our professional liability and general liability product lines, including favorable premium adjustments within our professional liability product lines, partially offset by lower gross premiums within our property product lines. The increases on renewals and favorable premium adjustments were primarily due to increased exposures arising from growth in underlying portfolios and more favorable rates. Significant variability in gross premium volume can be expected in our Reinsurance segment due to individually significant contracts and multi-year contracts.

Lower gross premiums within our property product lines in 2021 were primarily attributable to non-renewals following our decision to discontinue writing property reinsurance business on a risk-bearing basis effective January 1, 2021. We continued to have property loss exposure throughout 2021, including catastrophe exposure, on property treaties written in prior years with contract terms that extended beyond January 1, 2021 and on our retrocessional reinsurance property business, which we discontinued writing effective January 1, 2022. With few exceptions, effective January 1, 2022, we no longer have exposure to reinsurance and retrocessional reinsurance property risks within our Reinsurance segment.

Net retention of gross premium volume was 90% in 2021 compared to 85% in 2020. The increase in net retention was driven by changes in mix of business. Our growing professional liability and general liability product lines are fully retained while the non-renewed property business had a lower retention rate than the rest of the segment.

The increase in earned premiums in 2021 was primarily attributable to growth in gross premium volume within our general liability and professional liability product lines in recent years, partially offset by the impact of lower gross premiums within our property product lines as a result of our decision to discontinue writing property reinsurance business, as previously discussed.

Combined Ratio

The Reinsurance segment's current accident year losses and loss adjustment expenses in 2021 included $100.3 million of net losses and loss adjustment expenses attributed to the 2021 Catastrophes. Partially offsetting the impact of losses attributed to the 2021 Catastrophes was $21.7 million of favorable reinstatement premiums in 2021 attributed to these events. Current accident year losses in 2020 included $61.9 million and $47.8 million of net losses and loss adjustment expenses attributed to COVID-19 and the 2020 Catastrophes, respectively. Catastrophe losses and reinstatement premiums in 2021 were primarily attributed to our retrocessional reinsurance property business, a portion of which was ceded to Lodgepine Reinsurance Limited effective July 1, 2021, and our property reinsurance product lines, both of which we have discontinued writing on a risk-bearing basis, as previously discussed. Catastrophe losses in 2020, and a portion of our 2020 COVID-19 losses, were also attributed to our property reinsurance product lines. Excluding the impact of catastrophes and COVID-19, the decrease in the current accident year loss ratio was driven by our professional liability and general liability product lines. These product lines benefited from higher premium rates and an increase in the proportion of quota share contract structures within our portfolio, which generally have lower loss ratios than excess of loss contracts. The favorable impact of changes in these product lines on the current accident year loss ratio was partially offset by an unfavorable impact from the change in mix of business within the segment as the non-renewed property business had a lower attritional loss ratio than the rest of the segment.

The Reinsurance segment's 2021 combined ratio included $19.9 million of adverse development on prior accident years loss reserves, which was primarily attributable to our property product lines, as well as additional exposures recognized on prior accident years related to net favorable premium adjustments on our professional liability product lines. Adverse development on our property product lines was primarily attributable to an increase in reserves attributed to COVID-19, reflecting changes in our net estimates resulting from updated and new loss information from cedents. We also had net adverse development within our property product lines on natural catastrophes that occurred in recent years, however, this adverse development was largely offset by favorable development on natural catastrophes within other product lines in the Reinsurance segment. In 2021, the increase in prior years loss reserves on our property and professional liability product lines was also partially offset by favorable development on our general liability and credit and surety product lines. In 2020, the combined ratio included $51.8 million of favorable development on prior accident years loss reserves, which reflected favorable development on our property product lines, partially offset by adverse development on our public entity and professional liability product lines and additional exposures recognized on prior accident years related to net favorable premium adjustments on our professional liability product lines. See note 9 of the notes to consolidated financial statements included under Item 8 for more information on the Reinsurance segment's prior year loss reserve development.

The decrease in the Reinsurance segment's expense ratio in 2021 was primarily attributable to lower compensation and general expenses due to the discontinuation of our property reinsurance business as well as the favorable impact of higher earned premiums in 2021 compared to 2020.

Disposal Loss

Results attributable to our Reinsurance segment for the year ended December 31, 2020 included a disposal loss of $41.5 million related to the planned disposition of our reinsurance operations in Latin America, which was included in services and other expenses and was not included in the segment's underwriting loss. This disposal loss was primarily attributable to foreign currency translation adjustments for these operations, which were previously included in accumulated other comprehensive income. The transaction was completed in 2021.

Investing Results

Our business strategy recognizes the importance of both consistent underwriting and operating profits and superior investment returns to build shareholder value. We rely on sound underwriting practices to produce investable funds. We measure investing results by our net investment income, net investment gains and the change in net unrealized gains on available-for-sale investments, as well as investment yield and taxable equivalent total investment return. Based on the potential for volatility in the financial markets, we believe investment performance is best analyzed over several years.

The following table summarizes our investment performance.

	Years Ended December 31,				
(dollars in thousands)	**2021**	2020	2019	2018	2017
Net investment income	**$ 374,601**	$ 371,830	$ 451,888	$ 434,215	$ 405,709
Net investment gains (losses) [(1)]	**$1,978,534**	$ 617,979	$1,601,722	$ (437,596)	$ (5,303)
Change in net unrealized gains on available-for-sale investments [(2)]	**$ (450,096)**	$ 442,089	$ 381,890	$ (299,446)	$1,125,440
Investment Ratios					
Investment yield [(3)]	**2.0 %**	2.4 %	3.0 %	2.7 %	2.6 %
Taxable equivalent total investment return	**8.8 %**	9.4 %	14.6 %	(1.0)%	10.2 %

(1) Effective January 1, 2018, we adopted Financial Accounting Standards Board Accounting Standards Update No. 2016-01. As a result, equity securities are no longer classified as available-for-sale with unrealized gains and losses recognized in other comprehensive income; rather, all changes in the fair value of equity securities are now recognized in net income. Prior periods have not been restated to conform to the current presentation.

(2) The change in net unrealized gains on available-for-sale investments included an increase related to an adjustment to our life and annuity benefit reserves of $63.0 million for the year ended December 31, 2021 and a decrease related to an adjustment to our life and annuity benefit reserves of $68.2 million and $51.4 million for the years ended December 31, 2020 and 2019, respectively. See note 11 of the notes to consolidated financial statements included under Item 8 for details on our life and annuity benefit reserve adjustments.

(3) Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

The increase in net investment income in 2021 was driven by higher dividend income in 2021 and income on our equity method investments in 2021 compared to losses in 2020. This increase was partially offset by lower interest income on our short-term investments due to lower short-term interest rates in 2021 compared to 2020. Net investment income on our fixed maturity securities in 2021 was consistent with 2020, as the lower yield in 2021 was largely offset by the impact of higher average holdings of fixed maturity securities during 2021 compared to 2020. See note 4(d) of the notes to consolidated financial statements included under Item 8 for further details regarding the components of net investment income.

Net investment gains in both 2021 and 2020 were primarily attributable to an increase in the fair value of our equity securities driven by favorable market value movements. Net investment gains in 2020 reflected significant market volatility experienced during the year. The impact of significant declines in the fair value of our equity securities in the first quarter of 2020, driven by unfavorable market value movements resulting from the onset of the COVID-19 pandemic, were more than offset by increases in the fair value of our equity securities over the subsequent three quarters of 2020. See note 4(e) of the notes to consolidated financial statements included under Item 8 for further details on the components of net investment gains (losses).

The decrease in net unrealized gains on available-for-sale investments in 2021 was attributable to decreases in the fair value of our fixed maturity securities as a result of an increase in interest rates during 2021. The increase in net unrealized gains on available-for-sale investments in 2020 was attributable to increases in the fair value of our fixed maturity securities as a result of a decrease in interest rates during 2020.

Taxable equivalent total investment return is a non-GAAP financial measure. Taxable equivalent total investment return includes items that impact net income, such as coupon interest on fixed maturity securities, changes in fair value of equity securities, dividends on equity securities and realized investment gains or losses on available-for-sale securities, as well as changes in unrealized gains or losses on available-for-sale securities, which do not impact net income. Certain items that are included in net investment income have been excluded from the calculation of taxable equivalent total investment return, such as amortization and accretion of premiums and discounts on our fixed maturity portfolio, to provide a comparable basis for measuring our investment return against industry investment returns. The calculation of taxable equivalent total investment return also includes the current tax benefit associated with income on certain investments that is either taxed at a lower rate than the statutory income tax rate or is not fully included in U.S. taxable income. We believe the taxable equivalent total

investment return is a better reflection of the economics of our decision to invest in certain asset classes. We focus on our long-term investment return, understanding that the level of investment gains or losses may vary from one period to the next.

We believe our investment performance is best analyzed from the review of taxable equivalent total investment return over several years. The following table presents taxable equivalent total investment return before and after the effects of foreign currency movements.

	Years Ended December 31,					Five-Year Annual Return	Ten-Year Annual Return	Twenty-Year Annual Return
	2021	2020	2019	2018	2017			
Equities	**29.6 %**	15.2 %	30.0 %	(3.5)%	25.5 %	**18.6 %**	**17.3 %**	**11.5 %**
Fixed maturity securities, cash and short-term investments [1]	**(0.7)%**	5.7 %	6.5 %	1.3 %	3.4 %	**3.2 %**	**3.1 %**	**4.4 %**
Total portfolio, before foreign currency effect	**9.0 %**	8.6 %	14.4 %	(0.7)%	9.2 %	**8.0 %**	**7.0 %**	**6.3 %**
Total portfolio	**8.8 %**	9.4 %	14.6 %	(1.0)%	10.2 %	**8.3 %**	**6.8 %**	**6.4 %**

(1) Includes cash and cash equivalents and restricted cash and cash equivalents.

The following table reconciles investment yield to taxable equivalent total investment return.

	Years Ended December 31,				
	2021	2020	2019	2018	2017
Investment yield [1]	**2.0 %**	2.4 %	3.0 %	2.7 %	2.6 %
Adjustment of investment yield from amortized cost to fair value	**(0.6)%**	(0.5)%	(0.7)%	(0.6)%	(0.5)%
Net amortization of net premium on fixed maturity securities	**0.4 %**	0.4 %	0.4 %	0.4 %	0.4 %
Net investment gains (losses) and change in net unrealized investment gains on available-for-sale securities [2]	**5.9 %**	5.8 %	10.3 %	(3.8)%	5.9 %
Taxable equivalent effect for interest and dividends [3]	**0.1 %**	0.1 %	0.2 %	0.1 %	0.4 %
Other [4]	**1.0 %**	1.2 %	1.4 %	0.2 %	1.4 %
Taxable equivalent total investment return	**8.8 %**	9.4 %	14.6 %	(1.0)%	10.2 %

(1) Investment yield reflects net investment income as a percentage of monthly average invested assets at amortized cost.

(2) Adjustment includes the impact of changes in foreign currency exchange rates beginning in 2018.

(3) Adjustment to tax-exempt interest and dividend income to reflect a taxable equivalent basis.

(4) Adjustment to reflect the impact of time-weighting the inputs to the calculation of taxable equivalent total investment return and the impact of changes in foreign currency exchange rates prior to 2018.

Markel Ventures

Our Markel Ventures segment includes a diverse portfolio of businesses from different industries that offer various types of products and services to businesses and consumers, predominantly in the United States. We measure Markel Ventures' results by its operating income and net income, as well as earnings before interest, income taxes, depreciation and amortization (EBITDA). We consolidate the results of our Markel Ventures subsidiaries on a one-month lag, with the exception of significant transactions or events that occur during the intervening period.

During 2021 and 2020, our Markel Ventures operations expanded through acquisitions of majority interests in three businesses. In December 2021, we acquired a controlling interest in Metromont LLC (Metromont), a precast concrete manufacturer and concrete building solutions provider for commercial projects. Due to the one month lag in consolidating the results of our Markel Ventures operations, the financial results for Metromont will be included in our consolidated statements of income and comprehensive income beginning in January 2022. In August 2021, we acquired a controlling interest in Buckner HeavyLift Cranes (Buckner), a provider of crane rental services for large commercial contractors. In April 2020, we acquired a controlling interest in Lansing Building Products, LLC, a supplier of exterior building products and materials to professional contractors throughout the U.S., which simultaneously acquired the distribution business of Harvey Building Products to enhance its geographic reach and scale (together, Lansing). See note 3 of the notes to consolidated financial statements included under Item 8 for additional details related to these acquisitions.

The following table summarizes the amounts recognized on the consolidated balance sheets related to Markel Ventures.

(dollars in thousands)	December 31, 2021	December 31, 2020
ASSETS		
Cash and cash equivalents	**$ 321,473**	$ 363,532
Receivables	**501,349**	299,051
Goodwill	**1,196,590**	901,045
Intangible assets	**766,179**	623,120
Other assets:		
Inventory	**529,250**	412,554
Property, plant and equipment, net	**948,971**	492,477
Right-of-use lease assets	**393,551**	368,126
Other	**300,916**	176,155
Total Other assets	**2,172,688**	1,449,312
Total Assets	**$ 4,958,279**	$ 3,636,060
LIABILITIES AND EQUITY		
Accounts payable and accrued liabilities	**$ 320,375**	$ 270,361
Senior long-term debt and other debt [(1)]	**1,140,559**	775,650
Other liabilities:		
Lease liabilities	**445,683**	374,667
Other	**544,718**	380,190
Total Other liabilities	**990,401**	754,857
Total Liabilities	**2,451,335**	1,800,868
Redeemable noncontrolling interests	**461,378**	245,642
Shareholders' equity [(2)]	**2,050,675**	1,599,466
Noncontrolling interests	**(5,109)**	(9,916)
Total Equity	**2,045,566**	1,589,550
Total Liabilities and Equity	**$ 4,958,279**	$ 3,636,060

(1) Debt as of December 31, 2021 and 2020 included $853.0 million and $733.0 million, respectively, of debt due to other subsidiaries of Markel Corporation, which was eliminated in consolidation.

(2) Shareholders' equity as of December 31, 2021 and 2020 included $1.4 billion and $1.2 billion, respectively, of common stock, which represents Markel Corporation's investment in Markel Ventures, which was eliminated in consolidation.

The following table summarizes the amounts recognized on the consolidated statements of income related to Markel Ventures.

(dollars in thousands)	Years ended December 31, 2021	2020	% Change
OPERATING REVENUES			
Products revenues	**$ 1,712,120**	$ 1,439,515	
Services and other revenues	**1,931,696**	1,355,199	
Net investment income	**11**	245	
Total Operating Revenues	**3,643,827**	2,794,959	30 %
OPERATING EXPENSES			
Products expenses	**1,544,506**	1,256,159	
Services and other expenses	**1,769,201**	1,232,150	
Amortization of intangible assets	**57,568**	52,572	
Total Operating Expenses	**3,371,275**	2,540,881	
Operating Income	**272,552**	254,078	7 %
Net foreign exchange gains (losses)	**1,119**	(1,092)	
Interest expense [(1)]	**(35,031)**	(46,664)	
Income Before Income Taxes	**238,640**	206,322	
Income tax expense	**(43,626)**	(45,815)	
Net Income	**195,014**	160,507	
Net income attributable to noncontrolling interests	**(20,607)**	(15,058)	
Net Income to Shareholders	**$ 174,407**	$ 145,449	20 %
EBITDA	**$ 402,700**	$ 366,934	10 %

(1) Interest expense for the years ended December 31, 2021 and 2020 included intercompany interest expense of $25.8 million and $32.0 million, respectively, which was eliminated in consolidation.

The increase in operating revenues in 2021 was driven by an increase of $638.9 million from our construction services businesses, primarily due to an increased contribution from Lansing and the contribution from Buckner in the fourth quarter of 2021, as well as improved pricing and increased demand in 2021 compared to 2020. Additionally, operating revenues in 2021 increased across our transportation-related and equipment manufacturing businesses, due in part to lower sales volumes at most of these businesses in 2020 as a result of the economic and social disruption caused by the COVID-19 pandemic. In 2020, following the onset of the COVID-19 pandemic, these businesses were impacted by decreased demand for their products and also saw orders and contracts postponed. Sales volumes began to recover in late 2020 before fully recovering in 2021. The increase in operating revenues in 2021 also reflected higher revenues in our consumer and building products businesses, given increased demand reflecting increases in consumer spending in 2021. These increases in operating revenues were partially offset by lower operating revenues from our healthcare businesses due to the sale of certain subsidiaries of one of these businesses in January 2021.

The benefit of increases in operating revenues to operating income, EBITDA and net income to shareholders in 2021 was reduced by increased costs of materials and labor across many of our businesses, which are reflective of current economic conditions. The higher cost of materials is due in part to a shortage in the availability of certain products, the higher cost of shipping and inflation. We try to mitigate the impact of these cost increases through a variety of actions, such as increasing the prices of our products and services, pre-purchasing materials, locking in prices in advance or utilizing alternate sources of materials. However, we may not be successful at these efforts and even when we are successful, there may be a time lag before the impacts of these changes are reflected in our margins.

The increase in operating income, EBITDA and net income to shareholders in 2021 was driven by higher revenues at our construction services businesses, as previously discussed. The increase was also attributable to a pre-tax transaction gain of $22.0 million, which was included in services and other expenses and recognized in connection with the sale of certain subsidiaries at one of our healthcare businesses, as previously discussed, as well as other associated changes in this business. These increases were partially offset by the impact of lower revenues and operating margins at one of our consulting services businesses in 2021 as well as a $17.2 million pre-tax increase in our estimate of the contingent consideration obligations related to better than expected financial performance of certain of our recent acquisitions.

Markel Ventures EBITDA is a non-GAAP financial measure. We use Markel Ventures EBITDA as an operating performance measure in conjunction with U.S. GAAP measures, including operating revenues, operating income and net income to shareholders, to monitor and evaluate the performance of our Markel Ventures segment. Because EBITDA excludes interest, income taxes, depreciation and amortization, it provides an indicator of economic performance that is useful to both management and investors in evaluating our Markel Ventures businesses as it is not affected by levels of debt, interest rates, effective tax rates or levels of depreciation or amortization resulting from purchase accounting.

The following table reconciles Markel Ventures operating income to Markel Ventures EBITDA.

	Years ended December 31,	
(dollars in thousands)	**2021**	2020
Markel Ventures operating income	**$ 272,552**	$ 254,078
Depreciation expense	**72,580**	60,284
Amortization of intangible assets	**57,568**	52,572
Markel Ventures EBITDA	**$ 402,700**	$ 366,934

The following table summarizes the cash flows attributable to Markel Ventures.

	Years ended December 31,	
(dollars in thousands)	**2021**	2020
Cash, cash equivalents, restricted cash and restricted cash equivalents, beginning of year	**$ 363,532**	$ 256,758
Net cash provided by operating activities	**187,180**	357,675
Net cash used by investing activities	**(585,971)**	(607,641)
Net cash provided by financing activities [(1)] [(2)]	**356,562**	356,542
Effect of foreign currency rate changes on cash, cash equivalents, restricted cash and restricted cash equivalents	**170**	198
Increase (decrease) in cash, cash equivalents, restricted cash and restricted cash equivalents	**(42,059)**	106,774
Cash, cash equivalents, restricted cash and restricted cash equivalents, end of year	**$ 321,473**	$ 363,532

(1) Net cash provided by financing activities for the years ended December 31, 2021 and December 31, 2020 included a capital contribution from our holding company, Markel Corporation, of $250.0 million and $535.0 million, respectively, which was eliminated in consolidation.

(2) Net cash provided by financing activities for the year ended December 31, 2021 included net additions to intercompany debt of $120.0 million, which were eliminated in consolidation. Net cash provided by financing activities for the year ended December 31, 2020 included net repayments of intercompany debt of $125.9 million, which were eliminated in consolidation.

Other Operations

The following table presents the components of operating revenues and operating expenses that are not included in a reportable segment.

	Years Ended December 31,					
	2021			2020		
(dollars in thousands)	Services and other revenues	Services and other expenses	Amortization of intangible assets	Services and other revenues	Services and other expenses	Amortization of intangible assets
Other operations:						
Insurance-linked securities	**$ 202,019**	**$ 186,510**	**$ 38,448**	$ 200,928	$ 168,118	$ 38,447
Program services and other fronting	**125,716**	**20,132**	**20,938**	104,171	20,427	20,937
Life and annuity	**1,515**	**16,667**	**—**	1,233	17,713	—
Other [(1)]	**17,195**	**30,534**	**2,403**	32,006	81,251	5,453
	346,445	**253,843**	**61,789**	338,338	287,509	64,837
Underwriting operations [(2)]			**41,182**			41,906
Total	**$ 346,445**	**$ 253,843**	**$ 102,971**	$ 338,338	$ 287,509	$ 106,743

(1) Other includes the results of our run-off Lodgepine and Markel CATCo operations for both periods presented. For the year ended December 31, 2020, services and other expenses included a legal settlement at our Markel CATCo operations.

(2) Amortization of intangible assets attributable to our underwriting operations is not allocated between the Insurance and Reinsurance segments.

Insurance-Linked Securities

The increase in operating revenues in our Nephila insurance-linked securities (ILS) operations in 2021 was driven by growth in our managing general agent operations, partially offset by lower investment management fees. The decrease in investment management fees was primarily due to higher management fees in 2020 attributable to releases of capital from side pocket reserves, which were more significant in 2020 than 2021, as well as lower average assets under management during 2021. Nephila's net assets under management were $8.8 billion and $9.6 billion as of December 31, 2021 and 2020, respectively.

Investment performance at Nephila, as well as the broader ILS market, has been adversely impacted by consecutive years of elevated catastrophe losses, as well as by COVID-19 in 2020. These events, as well as volatility in the capital markets, also have impacted investor decisions around allocation of capital to ILS. Such decisions have impacted, and may continue to impact, our capital raises and redemptions within the funds we manage, as well as new funds, resulting in a decline in assets under management. See "Critical Accounting Estimates - Goodwill and Intangible Assets" for discussion and considerations of these impacts on the valuation of goodwill and intangible assets attributed to our Nephila ILS operations.

In February 2022, we completed the sale of our Velocity managing general agent operations, which provide risk origination services for our Nephila fund management operations, as well as for third parties. Velocity has been a source of growth within our ILS operations since we acquired Nephila in 2018. We continue to have a minority interest in Velocity after the sale, and Velocity will continue to be a source for risk origination for our Nephila fund management operations. Estimated consideration for the portion of our interest that was sold was $180 million.

Program Services and Other Fronting

The increase in operating revenues and operating income in our program services and other fronting operations in 2021 were primarily due to higher gross premium volume at our program services operations driven by the expansion of existing programs, as well as growth from new programs. Gross written premiums in our program services operations were $2.7 billion and $2.1 billion for the years ended December 31, 2021 and 2020, respectively.

Interest Expense and Income Taxes

Interest Expense

Interest expense was $183.6 million in 2021 compared to $177.6 million in 2020. The increase in interest expense in 2021 was primarily attributable to interest expense associated with our 3.45% unsecured senior notes issued in May 2021.

Income Taxes

The effective tax rate was 22% in 2021 compared to 17% in 2020. The effective tax rate for 2020 differs from the effective tax rate for 2021, and the statutory rate of 21%, primarily due to a tax benefit that was recognized in 2020 for accumulated losses on certain investments we sold that were not previously deductible. See note 13 of the notes to consolidated financial statements included under Item 8 for further discussion of our income taxes.

Comprehensive Income to Shareholders and Book Value per Common Share

The following table summarizes the components of comprehensive income to shareholders.

	Years Ended December 31,	
(dollars in thousands)	**2021**	2020
Net income to shareholders	**$ 2,425,003**	$ 816,030
Other comprehensive income (loss)		
Change in net unrealized gains on available-for-sale investments, net of taxes	**(354,938)**	352,773
Other, net of taxes	**8,177**	22,849
Other comprehensive (income) loss attributable to noncontrolling interest	**2**	(18)
Other comprehensive income (loss) to shareholders	**(346,759)**	375,604
Comprehensive income to shareholders	**$ 2,078,244**	$ 1,191,634

Book value per common share increased 17% from $885.72 at December 31, 2020 to $1,034.56 as of December 31, 2021, primarily due to net income to shareholders in 2021.

Liquidity and Capital Resources

Holding Company

We seek to maintain prudent levels of liquidity and financial leverage for the protection of our policyholders, creditors and shareholders. Our consolidated debt to capital ratio was 23% at December 31, 2021 and 21% at December 31, 2020. The increase reflects an increase in senior long-term debt and other debt, primarily attributable to senior notes issued in May 2021.

In May 2021, we issued $600 million of 3.45% unsecured senior notes due May 2052 with net proceeds of $591.4 million, before expenses. See note 12 of the notes to consolidated financial statements included under Item 8 for further information regarding our May 2021 senior notes offering.

Our holding company had $5.3 billion and $4.1 billion of investments, cash and cash equivalents and restricted cash and cash equivalents (invested assets) at December 31, 2021 and December 31, 2020, respectively. The increase in holding company invested assets was primarily due to dividends received from our subsidiaries, net proceeds from our May 2021 senior notes offering and an increase in the fair value of equity securities, partially offset by cash used in connection with the acquisition of Metromont and to repurchase outstanding shares of our common stock. The following table presents the composition of our holding company's invested assets.

	December 31,	
	2021	2020
Fixed maturity securities	**4 %**	7 %
Equity securities	**53 %**	45 %
Short-term investments, cash and cash equivalents and restricted cash and cash equivalents	**43 %**	48 %
Total	**100 %**	100 %

After satisfying our interest and principal obligations on our senior long-term debt and notes payable to subsidiaries, as well as any other holding company obligations, excess liquidity at Markel Corporation is available to, among other things, allocate capital to our existing businesses, complete acquisitions, build our portfolio of equity securities or repurchase shares of our common stock.

In February 2022, our Board of Directors approved a new share repurchase program that replaced the previous share repurchase program. The program provides for the repurchase of up to $750 million of common stock and has no expiration date but may be terminated by the Board of Directors at any time.

Our underwriting operations collect premiums and pay claims, reinsurance costs and operating expenses. Premiums collected from our underwriting operations are invested primarily in short-term investments and fixed maturity securities. Short-term investments held by our insurance subsidiaries provide liquidity for projected claims, reinsurance costs and operating expenses. Fixed maturity securities are held by our insurance subsidiaries to support our loss reserves and the eventual payment of claims, and therefore have maturities that generally match the duration of the underlying net loss reserves. As a holding company, Markel Corporation receives cash from its subsidiaries as reimbursement for operating and other administrative expenses it incurs. The reimbursements are made within the guidelines of various management agreements between the holding company and its subsidiaries.

The holding company relies on dividends from its subsidiaries to meet debt service obligations and pay dividends on our preferred stock. Under the insurance laws of the various states in which our domestic insurance subsidiaries are incorporated, an insurer is restricted in the amount of dividends it may pay without prior approval of regulatory authorities. There are also regulatory restrictions on the amount of dividends that certain of our foreign subsidiaries may pay based on applicable laws in their respective jurisdictions. At December 31, 2021, our domestic insurance subsidiaries and Markel Bermuda Limited could pay ordinary dividends of $1.3 billion during the following twelve months under these laws.

We maintain a revolving credit facility, which provides up to $300 million of capacity for future acquisitions, investments and stock repurchases and for other working capital and general corporate purposes. At our discretion, up to $200 million of the total capacity may be used for letters of credit. We may increase the capacity of the facility by up to $200 million subject to obtaining commitments for the increase and satisfying certain other terms and conditions. This facility expires in April 2024. See note 12 of the notes to consolidated financial statements included under Item 8 for further discussion of our revolving credit facility. As of December 31, 2021 and 2020, there were no borrowings outstanding on our revolving credit facility.

We were in compliance with all covenants contained in our revolving credit facility at December 31, 2021. To the extent that we are not in compliance with our covenants, our access to the revolving credit facility could be restricted. While we believe this to be unlikely, the inability to access the revolving credit facility could adversely affect our liquidity.

We have access to various capital sources, including dividends from certain of our subsidiaries, holding company invested assets, undrawn capacity under our revolving credit facility and access to the debt and equity capital markets. We believe we have adequate liquidity to meet our capital and operating needs, including that which may be required to support the operating needs of our subsidiaries. However, the availability of these sources of capital and the availability and terms of future financings will depend on a variety of factors. See the "Access to Capital" risk factors under Item 1A Risk Factors for more discussion regarding our access to capital sources.

Cash Flows and Invested Assets

Net cash provided by operating activities was $2.3 billion in 2021 compared to $1.7 billion in 2020. The increase in net cash flows from operating activities for the year ended December 31, 2021 was primarily due to higher net premium collections, partially offset by higher claims settlement activity, as a result of continued growth in premium volume within our Insurance segment.

Net cash used by investing activities was $2.9 billion in 2021 compared to $511.7 million in 2020. In 2021, net cash used by investing activities included purchases of fixed maturity securities, net of maturities and sales, of $2.5 billion. Net cash used by investing activities in 2021 also included $510.9 million of net cash used for the acquisitions of Buckner and Metromont. In 2020, net cash used by investing activities included $829.5 million of net purchases of short-term investments and $550.8 million of net cash used for the acquisition of Lansing. Net cash used by investing activities in 2020 was net of $1.2 billion of proceeds from sales of equity securities, net of purchases equity securities.

In 2020, given the dislocation in the financial markets and related uncertainty around the global credit markets resulting from the onset of the COVID-19 pandemic, we increased our allocation to cash and short-term investments by retaining cash proceeds from maturities of fixed maturity securities, pausing our purchases of equity securities and, in some instances, selling certain equity securities based on our views of the underlying fundamentals of these positions and where pricing was deemed appropriate. In 2021, as global markets stabilized, we reallocated cash to purchase fixed maturity securities, to support our growing underwriting business, as well as equity securities. Cash flow from investing activities is also affected by various

other factors, such as anticipated payment of claims, financing activity, acquisition opportunities and individual buy and sell decisions made in the normal course of our investment portfolio management.

Invested assets were $28.3 billion at December 31, 2021 compared to $24.9 billion at December 31, 2020, reflecting an increase of 14% in 2021 attributable to cash flows from operations of $2.3 billion and increases in the fair value of our equity securities, driven by favorable market value movements. The following table presents the composition of our invested assets.

	December 31,	
	2021	2020
Fixed maturity securities	**44 %**	43 %
Equity securities	**32 %**	28 %
Short-term investments, cash and cash equivalents and restricted cash and cash equivalents	**24 %**	29 %
Total	**100 %**	100 %

The change in the composition of the investment portfolio from December 31, 2020 to December 31, 2021 was primarily driven by increases in the fair value of our equity portfolio, cash flows from operating activities and net purchases of fixed maturity securities, as previously discussed.

Net cash provided by financing activities was $369.8 million in 2021, which included net proceeds of $591.4 million from our May 2021 senior notes offering, as previously discussed. Net cash provided by financing activities was $434.6 million in 2020, which included net proceeds of $591.9 million from our May 2020 preferred shares offering. We paid dividends of $36.0 million and $18.4 million on our preferred shares during 2021 and 2020, respectively. Cash of $206.5 million and $26.8 million was used to repurchase shares of our common stock during 2021 and 2020, respectively. In March 2020, following the onset of the COVID-19 pandemic, we suspended repurchases of our common shares, but subsequently recommenced our share repurchase program in February 2021.

Cash Obligations and Commitments

As of December 31, 2021, our primary cash obligations were unpaid losses and loss adjustment expenses, senior long-term debt and other debt and related interest expense, life and annuity benefits and lease liabilities. These cash obligations, as presented in the following table, represent our estimate of total future cash payments and may differ from the corresponding liabilities on our consolidated balance sheet due to present value discounts and other adjustments required for presentation in accordance with U.S. GAAP. The following table summarizes our estimated contractual cash obligations at December 31, 2021 and the estimated amount expected to be paid in 2022.

(dollars in thousands)	Total cash obligations as of December 31, 2021	Cash obligations due in less than 1 year
Unpaid losses and loss adjustment expenses [1]	**$ 18,236,370**	**$ 4,125,494**
Senior long-term debt and other debt [2]	**$ 4,407,971**	**$ 499,043**
Interest payments on senior long-term debt and other debt [3]	**$ 3,558,176**	**$ 177,308**
Life and annuity benefits [4]	**$ 1,127,977**	**$ 66,565**
Lease liabilities [5]	**$ 673,653**	**$ 103,358**

(1) The actual cash payments for settled claims will vary, possibly significantly, from these estimates. As of December 31, 2021, the average duration of our reserves for unpaid losses and loss adjustment expenses was 3.8 years. See note 9 of the notes to consolidated financial statements included under Item 8 for further details on our loss reserve estimates.

(2) See note 12 of the notes to consolidated financial statements included under Item 8 for further details on the scheduled maturity of principal payments on our senior long-term debt and other debt.

(3) Interest expense is accrued in the period incurred and therefore, only a portion of the future interest payments presented in this table represent a liability on our consolidated balance sheet as of December 31, 2021.

(4) There is inherent uncertainty in the process of estimating the timing of payments for life and annuity benefits and actual cash payments for settled contracts could vary significantly from these estimates. We expect $818.4 million of our cash obligation for life and annuity benefits to be paid beyond five years. See note 11 of the notes to consolidated financial statements included under Item 8 for further details on our estimates for life and annuity benefit reserves.

(5) See note 7 of the notes to consolidated financial statements included under Item 8 for further details on our lease obligations and the expected timing of future payments.

In September and October 2021, and February 2022, terms were announced of a proposed transaction that would allow the acceleration of a full return of remaining capital to our Markel CATCo investors. Under the terms of the proposed transaction, we would provide cash funding that is not expected to exceed $175 million and estimated tail risk cover of $145 million. We would also make $120 million in estimated cash payments to or for the benefit of investors. See note 19 of the notes to consolidated financial statements included under Item 8 for further details about the proposed transaction.

Restricted Assets and Capital

At December 31, 2021, we had $4.9 billion of invested assets held in trust or on deposit for the benefit of policyholders or ceding companies or to support underwriting activities. Additionally, we have pledged investments and cash and cash equivalents totaling $410.2 million at December 31, 2021 as security for letters of credit that have been issued by various banks on our behalf. These invested assets and the related liabilities are included in our consolidated balance sheet. See note 4(f) of the notes to consolidated financial statements included under Item 8 for further discussion of restrictions over our invested assets.

Our insurance operations require capital to support premium writings, and we remain committed to maintaining adequate capital and surplus at each of our insurance subsidiaries. The National Association of Insurance Commissioners (NAIC) developed a model law and risk-based capital formula designed to help regulators identify domestic property and casualty insurers that may be inadequately capitalized. Under the NAIC's requirements, a domestic insurer must maintain total capital and surplus above a calculated threshold or face varying levels of regulatory action. Capital adequacy of our foreign insurance subsidiaries is regulated by applicable laws of the United Kingdom, Bermuda and other jurisdictions, including Germany. At December 31, 2021, the capital and surplus of each of our insurance subsidiaries significantly exceeded the amount of statutory capital and surplus necessary to satisfy regulatory requirements.

Critical Accounting Estimates

Critical accounting estimates are those estimates that both are important to the portrayal of our financial condition and results of operations and require us to exercise significant judgment. The preparation of financial statements in accordance with U.S. GAAP requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of material contingent assets and liabilities. These estimates, by necessity, are based on assumptions about numerous factors. Actual results may differ materially from the estimates and assumptions used in preparing the consolidated financial statements. Our accounts with accounting policies that involve critical accounting estimates are unpaid losses and loss adjustment expenses and goodwill and intangible assets.

Unpaid Losses and Loss Adjustment Expenses

Our consolidated balance sheets included estimated unpaid losses and loss adjustment expenses of $18.2 billion and reinsurance recoverables on unpaid losses of $6.9 billion at December 31, 2021 compared to $16.2 billion and $5.7 billion, respectively, at December 31, 2020. Included in these balances were unpaid losses and loss adjustment expenses and reinsurance recoverables on unpaid losses attributable to our program services business and other fronting arrangements totaling $4.2 billion for the year ended December 31, 2021 and $3.3 billion for the year ended December 31, 2020. Our consolidated balance sheets do not include reserves for losses and loss adjustment expenses attributed to unconsolidated subsidiaries or affiliates that we manage through our insurance-linked securities operations.

We accrue liabilities for unpaid losses and loss adjustment expenses based upon estimates of the ultimate amounts payable. We maintain reserves for specific claims incurred and reported (case reserves) and reserves for claims incurred but not reported (IBNR reserves).

Reported claims are in various stages of the settlement process, and the corresponding reserves for reported claims are based upon all information available to us. Case reserves consider our estimate of the ultimate cost to settle the claims, including investigation and defense of lawsuits resulting from the claims, and may be subject to adjustment for differences between costs originally estimated and costs subsequently re-estimated or incurred. Claims are settled based upon their merits, and some claims may take years to settle, especially if legal action is involved. As of any balance sheet date, all claims have not yet been reported, and some claims may not be reported for many years. As a result, the liability for unpaid losses and loss adjustment expenses includes significant estimates for incurred but not reported claims.

There is normally a time lag between when a loss event occurs and when it is actually reported to us. The actuarial methods that we use to estimate losses have been designed to address the lag in loss reporting as well as the delay in obtaining

information that would allow us to more accurately estimate future payments. There is also often a time lag between cedents establishing case reserves and re-estimating their reserves, and notifying us of the new or revised case reserves. As a result, the reporting lag is more pronounced in our reinsurance contracts than in our insurance contracts due to the reliance on ceding companies to report their claims and, in some instances, loss estimates to us. On reinsurance transactions, the reporting lag will generally be 60 to 90 days after the end of a reporting period, but can be longer in some cases. Based on the experience of our actuaries and management, we select loss development factors and trending techniques to mitigate the difficulties caused by reporting lags. At least annually, we evaluate and update our loss development and trending factor selections using cedent specific and industry data.

U.S. GAAP requires that IBNR reserves be based on the estimated ultimate cost of settling claims, including the effects of inflation and other social and economic factors, using past experience adjusted for current trends and any other factors that would modify past experience. IBNR reserves are generally calculated by subtracting paid losses and loss adjustment expenses and case reserves from estimated ultimate losses and loss adjustment expenses. IBNR reserves were 67% of total unpaid losses and loss adjustment expenses at December 31, 2021 compared to 66% at December 31, 2020.

The following table summarizes case reserves and IBNR reserves. The amounts in the following table exclude the unamortized portion of any fair value adjustments for unpaid losses and loss adjustment expenses assumed in conjunction with an acquisition and any adjustments to discount reserves.

(dollars in thousands)	Insurance	Reinsurance	Other underwriting	Program Services and other fronting	Consolidated
December 31, 2021					
Case reserves	**$ 3,093,576**	**$ 1,334,444**	**$ 53,317**	**$ 1,485,857**	**$ 5,967,194**
IBNR reserves	**6,951,347**	**2,369,313**	**218,039**	**2,730,477**	**12,269,176**
Total	**$ 10,044,923**	**$ 3,703,757**	**$ 271,356**	**$ 4,216,334** (1)	**$ 18,236,370**
December 31, 2020					
Case reserves	$ 2,917,179	$ 1,386,976	$ 51,591	$ 1,155,540	$ 5,511,286
IBNR reserves	6,311,344	2,101,169	224,499	2,130,821	10,767,833
Total	$ 9,228,523	$ 3,488,145	$ 276,090	$ 3,286,361 (1)	$ 16,279,119

(1) Substantially all of the premium written in our program services and other fronting business is ceded, resulting in reinsurance recoverables on unpaid losses of $4.2 billion and $3.3 billion as of December 31, 2021 and 2020, respectively.

Each quarter, our actuaries prepare estimates of the ultimate liability for unpaid losses and loss adjustment expenses based on established actuarial methods. Management reviews these estimates, supplements the actuarial analyses with information provided by claims, underwriting and other operational personnel and determines its best estimate of loss reserves, which is recorded in our consolidated financial statements. Our procedures for determining the adequacy of loss reserves at the end of the year are substantially similar to the procedures applied at the end of each interim period.

Any adjustments to reserves resulting from our interim or year-end reviews, including changes in estimates, are recorded as a component of losses and loss adjustment expenses in the period of the change. Reserve changes that increase previous estimates of ultimate claims cost are referred to as unfavorable or adverse development, or reserve strengthening. Reserve changes that decrease previous estimates of ultimate claims cost are referred to as favorable development.

Program Services

For our program services business, case reserves are generally established based on reports received from the general agents or reinsurers with whom we do business. Our actuaries review the case loss reserve data received for sufficiency, consistency with historical data and for consistency with other programs we write that have similar characteristics. IBNR reserves are calculated using either our program experience or, where the program data is not credible, industry experience for similar products or lines of business. Substantially all of the premium written in our program services business is ceded, and net reserves for unpaid losses and loss adjustment expenses as of December 31, 2021 and December 31, 2020 were $11.6 million and $8.3 million, respectively.

Underwriting

For our insurance operations, we are generally notified of insured losses by our insureds or their brokers. Based on this information, we establish case reserves by estimating the expected ultimate losses from the claim (including any administrative costs associated with settling the claim). Our claims personnel use their knowledge of the specific claim along with internal and external experts, including underwriters, actuaries and legal counsel, to estimate the expected ultimate losses.

For our reinsurance operations, case reserves are generally established based on reports received from ceding companies or their brokers. For excess of loss contracts, we are typically notified of insurance losses on specific contracts and record a case reserve for the estimated expected ultimate losses from the claim. For quota share contracts, we typically receive aggregated claims information and record a case reserve based on that information. As with insurance business, we evaluate this information and estimate the expected ultimate losses.

Our liabilities for unpaid losses and loss adjustment expenses can generally be categorized into two distinct groups, short-tail business and long-tail business. Short-tail business refers to lines of business, such as property, accident and health, automobile, watercraft and marine hull exposures, for which losses are usually known and paid shortly after the loss actually occurs. Long-tail business describes lines of business for which specific losses may not be known and reported for some time and losses take much longer to emerge. Given the time frame over which long-tail exposures are ultimately settled, there is greater uncertainty and volatility in these lines than in short-tail lines of business. Our long-tail coverages consist of most casualty lines, including professional liability, directors' and officers' liability, products liability, general and excess liability and excess and umbrella exposures, as well as workers' compensation insurance. Some factors that contribute to the uncertainty and volatility of long-tail casualty programs, and thus require a significant degree of judgment in the reserving process, include the inherent uncertainty as to the length of reporting and payment development patterns, the possibility of judicial interpretations or legislative changes, including changes in workers' compensation benefit laws, that might impact future loss experience relative to prior loss experience and the potential lack of comparability of the underlying data used in performing loss reserve analyses.

Our ultimate liability may be greater or less than current reserves. Changes in our estimated ultimate liability for loss reserves generally occur as a result of the emergence of unanticipated loss activity, the completion of specific actuarial or claims studies or changes in internal or external factors. We closely monitor new information on reported claims and use statistical analyses prepared by our actuaries to evaluate the adequacy of our recorded reserves. We are required to exercise considerable judgment when assessing the relative credibility of loss development trends. Our philosophy is to establish loss reserves that are more likely redundant than deficient. This means that we seek to establish loss reserves that will ultimately prove to be adequate. As a result, if new information or trends indicate an increase in frequency or severity of claims in excess of what we initially anticipated, we generally respond quickly and increase loss reserves. If, however, frequency or severity trends are more favorable than initially anticipated, we often wait to reduce our loss reserves until we can evaluate experience in additional periods to confirm the credibility of the trend. In addition, for long-tail lines of business, trends develop over longer periods of time, and as a result, we give credibility to these trends more slowly than for short-tail or less volatile lines of business.

In establishing our liabilities for unpaid losses and loss adjustment expenses, our actuaries estimate an ultimate loss ratio, by accident year or policy year, for each of our product lines with input from our underwriting and claims personnel. For product lines in which loss reserves are established on a policy year basis, we have developed a methodology to convert from policy year to accident year for financial reporting purposes. In estimating an ultimate loss ratio for a particular line of business, our actuaries may use one or more actuarial reserving methods and select from these a single point estimate. To varying degrees, these methods include detailed statistical analysis of past claim reporting, settlement activity, claim frequency and severity, policyholder loss experience, industry loss experience and changes in market and economic conditions, policy forms and exposures. The actuarial methods we use include:

Initial Expected Loss Ratio Method – This method multiplies earned premiums by an expected loss ratio. The expected loss ratio is selected utilizing industry data, our historical data, frequency-severity and rate level forecasts and professional judgment.

Paid Loss Development – This method uses historical loss payment patterns to estimate future loss payment patterns. Our actuaries use the historical loss patterns to develop factors that are applied to current paid loss amounts to calculate expected ultimate losses.

Incurred Loss Development – This method uses historical loss reporting patterns to estimate future loss reporting patterns. Our actuaries use the historical loss patterns to develop factors that are applied to current reported losses to calculate expected ultimate losses.

Bornhuetter-Ferguson Paid Loss Development – This method divides the projection of ultimate losses into the portion that has already been paid and the portion that has yet to be paid. The portion that has yet to be paid is estimated as the product of three amounts: the premium earned for the exposure period, the expected loss ratio and the percentage of ultimate losses that are still unpaid. The expected loss ratio is selected by considering historical loss ratios, adjusted for any known changes in pricing, loss trends, adequacy of case reserves, changes in administrative practices and other relevant factors.

Bornhuetter-Ferguson Incurred Loss Development – This method is identical to the Bornhuetter-Ferguson paid loss development method, except that it uses the percentage of ultimate losses that are still unreported, instead of the percentage of ultimate losses that are still unpaid.

Frequency/Severity – Under this method, expected ultimate losses are equal to the product of the expected ultimate number of claims and the expected ultimate average cost per claim. Our actuaries use historical reporting patterns and severity patterns to develop factors that are applied to the current reported amounts to calculate expected ultimate losses.

Other Methods – We cannot estimate losses from widespread catastrophic events, such as hurricanes and earthquakes, as well as pandemics, using the traditional actuarial methods previously described. In the initial months after a catastrophic event occurs, our actuaries estimate losses and loss adjustment expenses based on claims received to date, detailed policy and reinsurance contract level reviews, industry loss estimates and output from both industry and proprietary models, as well as analysis of our ceded reinsurance contracts. The availability of data from these procedures varies depending on the timing of the event relative to the point at which we develop our estimate. We also consider loss experience on historical events that may have similar characteristics to the underlying event. Due to the inherent uncertainty in estimating such losses, these estimates are subject to variability, which increases with the severity and complexity of the underlying event. As additional claims are reported and paid, and industry loss estimates are revised, we incorporate this new information into our analysis and adjust our estimate of ultimate losses and loss adjustment expenses as appropriate.

Each actuarial method has its own set of assumptions and its own strengths and limitations, with no one method being better than the others in all situations. Our actuaries select the reserving methods that they believe will produce the most reliable estimates for the class of business being evaluated. Greater judgment may be required when we introduce new product lines or when there have been changes in claims handling practices, as the statistical data available may be insufficient. In these instances, we may rely upon assumptions applied to similar lines of business, rely more heavily on industry experience, take into account changes in underwriting guidelines and risk selection or review the impact of changes in claims reserving practices with claims personnel. While we use our best judgment in establishing our estimate for loss reserves, applying different assumptions and variables could lead to significantly different loss reserve estimates.

A key assumption in most actuarial analyses is that past development patterns will repeat themselves in the future, absent a significant change in internal or external factors that influence the ultimate cost of our unpaid losses and loss adjustment expenses. Our estimates reflect implicit and explicit assumptions regarding the potential effects of external factors, including economic and social inflation, judicial decisions, changes in law, general economic conditions and recent trends in these factors. Our actuarial analyses are based on statistical analysis but also consist of reviewing internal factors that are difficult to analyze statistically, including underwriting and claims handling changes. In some of our markets, and where we act as a reinsurer, the timing and amount of information reported about underlying claims are in the control of third parties. This can also affect estimates and require re-estimation as new information becomes available.

Loss reserves are established at management's best estimate, which is developed using the actuarially calculated point estimate as the starting point. The actuarial point estimate represents our actuaries' estimate of the most likely amount that will ultimately be paid to settle the losses that have occurred at a particular point in time; however, there is inherent uncertainty in the point estimate as it is the expected value in a range of possible reserve estimates. In some cases, actuarial analyses, which are based on statistical analysis, cannot fully incorporate all of the subjective factors that affect development of losses. In other cases, management's perspective of these more subjective factors may differ from the actuarial perspective. Subjective factors influencing the development of management's best estimate include: the credibility and timeliness of claims and loss information received from cedents and other third parties, economic and social inflation, judicial decisions, changes in law, changes in underwriting or claims handling practices, general economic conditions, the risk of moral hazard and other current and developing trends within the insurance and reinsurance markets, including the effects of competition.

In developing its best estimate of loss reserves, management's philosophy is to establish loss reserves that are more likely to be redundant rather than deficient, and therefore, will ultimately prove to be adequate. Management's approach to establishing loss reserves typically results in loss reserves that exceed the calculated actuarial point estimate. Management also considers the range, or variability, of reasonably possible losses determined by our actuaries when establishing its best estimate for loss reserves. The actuarial ranges represent our actuaries' estimate of a likely lowest amount and likely highest amount that will ultimately be paid to settle the losses that have occurred at particular point in time. The range determinations are based on estimates and actuarial judgements and are intended to encompass reasonably likely changes in one or more of the factors that were used to determine the point estimates. Using statistical models, our actuaries establish high and low ends of a range of reasonable reserve estimates for each of our underwriting segments. Additionally, following an acquisition of insurance operations, acquired reserves initially are recorded at fair value, and therefore our recorded loss reserves may be closer to the actuarial point estimate until we build total loss reserves that are consistent with our historic level of confidence. Management's best estimate of net reserves for unpaid losses and loss adjustment expenses exceeded the actuarially calculated point estimate by $638.3 million, or 6.0%, at December 31, 2021, compared to $587.4 million, or 5.9%, at December 31, 2020.

The difference between management's best estimate and the actuarially calculated point estimate in both 2021 and 2020 is primarily associated with our long-tail business due to the subjective factors previously described that affect the development of losses. Certain subjective factors, particularly the credibility and timeliness of claims information, are more pronounced within our reinsurance operations, as previously discussed, and therefore, the percentage difference between management's best estimate and the actuarially calculated point estimate is more significant in our Reinsurance segment than our Insurance segment. Management has attributed less credibility than our actuaries to favorable trends experienced on our long-tail business and has not incorporated these favorable trends into its best estimate of ultimate losses to the same extent as the actuaries.

Loss frequency and loss severity are two key measures of loss activity that often result in adjustments to actuarial assumptions relative to ultimate loss reserve estimates. Loss frequency measures the number of claims per unit of insured exposure. When the number of newly reported claims is higher than anticipated, generally speaking, loss reserves are increased. Conversely, loss reserves are generally decreased when fewer claims are reported than expected. Loss severity measures the average size of a claim. When the average severity of reported claims is higher than originally estimated, loss reserves are typically increased. When the average claim size is lower than anticipated, loss reserves are typically decreased.

Our underwriting results in 2021 included $479.8 million of favorable development on prior years loss reserves compared to $606.4 million in 2020. In connection with our quarterly reviews of loss reserves, the actuarial methods we used have exhibited a favorable trend on prior accident years during 2021. This trend was observed using statistical analysis of actual loss experience for prior years, particularly with regard to most of our long-tail books of business within the Insurance segment. Additionally, as loss reserves are recorded at management's best estimate, which is generally higher than the corresponding actuarially calculated point estimate, the initial reserves established by management are more likely to be redundant than deficient. As actual losses continue to be lower than anticipated, it has become more likely that the underwriting results will prove to be better than originally estimated. Additionally, as most actuarial methods rely upon historical reporting patterns, the favorable trends experienced on earlier accident years have resulted in a re-estimation of our ultimate incurred losses on more recent accident years. When we experience loss frequency or loss severity trends that are more favorable than we initially anticipated, we often evaluate the loss experience over a period of several years in order to assess the relative credibility of loss development trends. In both 2021 and 2020, based upon our evaluations of claims development patterns in our long-tail, and often volatile, lines of business, our actuaries reduced their estimates of ultimate losses. Management also gave greater credibility to the favorable trends experienced on earlier accident years and upon incorporating these favorable trends into its best estimate, we reduced prior years loss reserves on more recent accident years accordingly. While we believe it is likely that there will be additional favorable development on prior years loss reserves in 2022, we caution readers not to place undue reliance on this favorable trend.

Changes in prior years loss reserves, including the trends and factors that impacted loss reserve development in 2021 and 2020, as well as further details regarding the historical development of reserves for losses and loss adjustment expenses and changes in methodologies and assumptions used to calculate reserves for unpaid losses and loss adjustment expense are discussed in further detail in note 9 of the notes to consolidated financial statements included under Item 8.

The following table summarizes our reserves for net unpaid losses and loss adjustment expenses and the actuarially established high and low ends of a range of reasonable reserve estimates at December 31, 2021. As described in note 9 of the notes to consolidated financial statements included under Item 8, unpaid losses and loss adjustment expenses attributable to acquisitions are recorded at fair value as of the acquisition date, which generally consists of the present value of the expected net loss and loss adjustment expense payments plus a risk premium. The net loss reserves presented in this table represent our

estimated future payments for losses and loss adjustment expenses, whereas the reserves for unpaid losses and loss adjustment expenses included on the consolidated balance sheet include the unamortized portion of fair value adjustments recorded in conjunction with an acquisition.

(dollars in millions)	Net Loss Reserves Held	Low End of Actuarial Range[(1)]	High End of Actuarial Range[(1)]
Insurance	**$ 7,858.0**	**$ 6,763.1**	**$ 8,573.6**
Reinsurance	**3,283.1**	**2,600.1**	**3,733.9**
Other underwriting	**148.6**	**121.7**	**208.6**

(1) Due to the actuarial methods used to determine the separate ranges for each component of our business, it is not appropriate to aggregate the high or low ends of the separate ranges to determine the high and low ends of the actuarial range on a consolidated basis.

Undue reliance should not be placed on these ranges of estimates as they are only one of many points of reference used by management to determine its best estimate of ultimate losses. Further, actuarial ranges may not be a true reflection of the potential variability between loss reserves estimated at the balance sheet date and the ultimate cost of settling claims. Similar to the development of our estimate of ultimate losses, actuarial ranges are developed based on known events as of the valuation date, while ultimate paid losses are subject to events and circumstances that are unknown as of the valuation date.

During the years ended December 31, 2021 and 2020, we experienced favorable development on prior years loss reserves of 5% and 6%, respectively, of beginning of year net loss reserves. It is difficult for management to predict the duration and magnitude of an existing trend and, on a relative basis, it is even more difficult to predict the emergence of factors or trends that are unknown today but may have a material impact on loss reserve development. Within our general liability and professional liability product lines, the level of favorable development on prior years loss reserves in 2021 was impacted by broader conditions impacting these product lines, including the effects of social inflation, including increased litigation, as well as an increase in the severity of losses in certain of these product lines in 2021. While overall loss severity continues to be lower than our previous estimates, management has given less credibility to the favorable trend based on this recent experience. Additionally, recent increases in economic inflation, and an expectation that this trend will continue, have created more uncertainty around the ultimate losses that will be incurred to settle claims on these longer-tail product lines. In assessing the likelihood of whether the favorable trends previously discussed will continue and whether other trends may develop, we believe that a reasonably likely movement in prior years loss reserves during 2022 would range from favorable development of 2%, or $200 million, to favorable development of 7%, or $750 million, of December 31, 2021 net loss reserves.

Goodwill and Intangible Assets

Our consolidated balance sheet as of December 31, 2021 included goodwill and intangible assets of $4.7 billion as follows:

	December 31, 2021			
(dollars in millions)	Underwriting	Markel Ventures	Other [(1)]	Total
Goodwill	**$ 897.4**	**$ 1,196.6**	**$ 805.1**	**$ 2,899.1**
Intangible assets	**401.3**	**766.2**	**655.0**	**1,822.5**
Total	**$ 1,298.7**	**$ 1,962.8**	**$ 1,460.1**	**$ 4,721.6**

(1) Amounts included in Other reflect our operations that are not included in a reportable segment, including our insurance-linked securities operations and our program services operations.

Goodwill and intangible assets are recorded as a result of business acquisitions. Goodwill represents the excess of the amount paid to acquire a business over the net fair value of assets acquired and liabilities assumed at the date of acquisition. Indefinite-lived and other intangible assets are recorded at fair value as of the acquisition date. The determination of the fair value of certain assets acquired, including goodwill and intangible assets, and liabilities assumed involves significant judgment and the use of valuation models and other estimates, which require assumptions that are inherently subjective. During the years ended December 31, 2021 and 2020, we recorded $497.7 million and $497.1 million, respectively, of goodwill and intangible assets in connection with acquisitions.

Intangible assets with definite lives are reviewed for impairment when events or circumstances indicate that their carrying value may not be recoverable. Goodwill and indefinite-lived intangible assets are tested for impairment annually, or when events or circumstances indicate that their carrying value may not be recoverable. A significant amount of judgment is required in performing impairment tests, including the optional assessment of qualitative factors for the annual impairment

test, which is used to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. This assessment serves as a basis for determining whether it is necessary to perform a quantitative impairment test.

We completed our annual tests for impairment as of October 1, 2021 based upon results of operations through September 30, 2021. We elected to perform a qualitative assessment for all of our reporting units, with the exception of our Nephila reporting unit, for which we performed a quantitative assessment.

When performing our qualitative assessments, we considered macroeconomic factors such as industry conditions and market conditions. We also considered reporting unit-specific events, actual financial performance versus expectations and management's future business expectations, as well as the amount by which the fair value of the reporting unit exceeded its carrying value at the date of the last quantitative assessment. As part of our qualitative assessment of recently acquired reporting units with material goodwill, we considered the fact that the businesses had been acquired in orderly transactions between market participants, and our purchase price represented fair value at acquisition. For recent acquisitions for which we elected to perform a qualitative assessment, there were no events since acquisition that had a significant adverse impact on the fair value of these reporting units through the assessment date. Based on the results of our qualitative assessments, we believe it is more likely than not that the fair value of each of these reporting units exceeded its respective carrying amount as of the assessment date and December 31, 2021 and none of these reporting units are at risk of a material impairment of goodwill. We considered similar factors to determine if there were any indicators requiring an assessment of the recoverability of our definite lived intangible assets and concluded there were not. However, deterioration of market conditions related to the general economy or the specific industries in which we operate, a sustained trend of weaker than anticipated financial performance within a reporting unit beyond that which we considered or included in our assessments, or an increase in the market-based weighted average cost of capital, among other factors, could significantly impact the impairment analysis and may result in future goodwill or intangible asset impairment charges.

We performed a quantitative assessment for our Nephila reporting unit, which is the primary component of our Nephila operations. We acquired our Nephila operations in late 2018 at which time they were recorded at fair value. At December 31, 2021, the carrying value of our Nephila reporting unit included goodwill of $413.2 million. The Nephila reporting unit serves as an insurance and investment fund manager that offers a broad range of investment products, including insurance-linked securities, catastrophe bonds, insurance swaps and weather derivatives. Nephila receives management fees for these services based on the net asset value of the accounts managed and, for certain funds, incentive fees based on the annual performance of the funds managed. This reporting unit also includes our Velocity managing general agent operations, through which it underwrites and administers property insurance policies and provides delegated underwriting services to providers of insurance capital, including capital provided through the funds it manages, as well as third-party capital.

We estimated the fair value of our Nephila reporting unit primarily using an income approach based on a discounted cash flow model. The cash flow projections used in the discounted cash flow model included management's best estimate of future growth and margins. The discount rates used to determine the fair value estimates were developed based on a capital asset pricing model using market-based inputs as well as an assessment of the inherent risk in projected future cash flows. Given the limited time since acquisition, the carrying value of this reporting unit continues to closely approximate fair value, making our impairment assessment more sensitive to changes in assumptions used to calculate fair value. Since acquiring this business, investment performance in the broader ILS market has been adversely impacted by consecutive years of elevated catastrophe losses and COVID-19 in 2020. These events, as well as recent volatility in the capital markets, also have impacted investor decisions around allocation of capital to ILS, which in turn has impacted our assumptions for capital raises and redemptions within the funds we manage. Our cash flow assumptions reflect management's best estimate of the reporting unit's future cash flows, based on information currently available, however, these assumptions are inherently uncertain, require a high degree of estimation and judgment and are subject to change depending on the outcome of future events. As of the assessment date, the estimated fair value of the Nephila reporting unit exceeded its carrying amount.

In conjunction with the planned disposition of our Velocity managing general agent operations, we reassessed the retained portion of the Nephila reporting unit for impairment as of December 31, 2021 based on its allocated goodwill and associated cash flows. As of December 31, 2021, the estimated fair value of the retained portion of the Nephila reporting unit also exceeded its carrying amount. However, changes to certain assumptions or an increase in the market-based weighted average cost of capital could have an adverse impact on the estimated fair value, which could result in an impairment of goodwill.

See the risk factor titled "Impairment in the value of our goodwill or other intangible assets could have a material adverse effect on our operating results and financial condition" within Item 1A Risk Factors for further discussion of risks associated with our goodwill and intangible assets.

Safe Harbor and Cautionary Statement

This report contains statements concerning or incorporating our expectations, assumptions, plans, objectives, future financial or operating performance and other statements that are not historical facts. These statements are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements may use words such as "anticipate," "believe," "estimate," "expect," "intend," "predict," "project" and similar expressions as they relate to us or our management.

There are risks and uncertainties that may cause actual results to differ materially from predicted results in forward-looking statements. Factors that may cause actual results to differ are often presented with the forward-looking statements themselves. Additional factors that could cause actual results to differ from those predicted are set forth under Item 1 Business, Item 1A Risk Factors and Item 7 Management's Discussion and Analysis of Financial Condition and Results of Operations in this report or are included in the items listed below:

- our expectations about future results of our underwriting, investing, Markel Ventures and other operations are based on current knowledge and assume no significant man-made or natural catastrophes, no significant changes in products or personnel and no adverse changes in market conditions;
- the effect of cyclical trends on our underwriting, investing, Markel Ventures and other operations, including demand and pricing in the insurance, reinsurance and other markets in which we operate;
- actions by competitors, including the use of technology and innovation to simplify the customer experience, increase efficiencies, redesign products, alter models and effect other potentially disruptive changes in the insurance industry, and the effect of competition on market trends and pricing;
- our efforts to develop new products, expand in targeted markets or improve business processes and workflows may not be successful and may increase or create new risks (e.g., insufficient demand, change to risk exposures, distribution channel conflicts, execution risk, increased expenditures);
- the frequency and severity of man-made and natural catastrophes (including earthquakes, wildfires and weather-related catastrophes) may exceed expectations, are unpredictable and, in the case of wildfires and weather-related catastrophes, may be exacerbated if, as many forecast, changing conditions in the climate, oceans and atmosphere result in increased hurricane, flood, drought or other adverse weather-related activity;
- we offer insurance and reinsurance coverage against terrorist acts in connection with some of our programs, and in other instances we are legally required to offer terrorism insurance; in both circumstances, we actively manage our exposure, but if there is a covered terrorist attack, we could sustain material losses;
- emerging claim and coverage issues, changing industry practices and evolving legal, judicial, social and other environmental trends or conditions, can increase the scope of coverage, the frequency and severity of claims and the period over which claims may be reported; these factors, as well as uncertainties in the loss estimation process, can adversely impact the adequacy of our loss reserves and our allowance for reinsurance recoverables;
- reinsurance reserves are subject to greater uncertainty than insurance reserves, primarily because of reliance upon the original underwriting decisions made by ceding companies and the longer lapse of time from the occurrence of loss events to their reporting to the reinsurer for ultimate resolution;
- inaccuracies (whether due to data error, human error or otherwise) in the various modeling techniques and data analytics (e.g., scenarios, predictive and stochastic modeling, and forecasting) we use to analyze and estimate exposures, loss trends and other risks associated with our insurance and insurance-linked securities businesses could cause us to misprice our products or fail to appropriately estimate the risks to which we are exposed;
- changes in the assumptions and estimates used in establishing reserves for our life and annuity reinsurance book (which is in runoff), for example, changes in assumptions and estimates of mortality, longevity, morbidity and interest rates, could result in material increases in our estimated loss reserves for such business;
- adverse developments in insurance coverage litigation or other legal or administrative proceedings could result in material increases in our estimates of loss reserves;
- initial estimates for catastrophe losses are often based on limited information, are dependent on broad assumptions about the nature and extent of losses, coverage, liability and reinsurance, and those losses may ultimately differ materially from our expectations;

- changes in the availability, costs, quality and providers of reinsurance coverage, which may impact our ability to write or continue to write certain lines of business or to mitigate the volatility of losses on our results of operations and financial condition;
- the ability or willingness of reinsurers to pay balances due may be adversely affected by industry and economic conditions, deterioration in reinsurer credit quality and coverage disputes, and collateral we hold, if any, may not be sufficient to cover a reinsurer's obligation to us;
- after the commutation of ceded reinsurance contracts, any subsequent adverse development in the re-assumed loss reserves will result in a charge to earnings;
- regulatory actions can impede our ability to charge adequate rates and efficiently allocate capital;
- general economic and market conditions and industry specific conditions, including extended economic recessions or expansions; prolonged periods of slow economic growth; inflation or deflation; fluctuations in foreign currency exchange rates, commodity and energy prices and interest rates; volatility in the credit and capital markets; and other factors;
- economic conditions, actual or potential defaults in corporate bonds, municipal bonds, mortgage-backed securities or sovereign debt obligations, volatility in interest and foreign currency exchange rates and changes in market value of concentrated investments can have a significant impact on the fair value of our fixed maturity securities and equity securities, as well as the carrying value of our other assets and liabilities, and this impact may be heightened by market volatility and our ability to mitigate our sensitivity to these changing conditions;
- economic conditions may adversely affect our access to capital and credit markets;
- the effects of government intervention, including material changes in the monetary policies of central banks, to address financial downturns and economic and currency concerns;
- the impacts that political and civil unrest and regional conflicts may have on our businesses and the markets they serve or that any disruptions in regional or worldwide economic conditions generally arising from these situations may have on our businesses, industries or investments;
- the significant volatility, uncertainty and disruption caused by health epidemics and pandemics, including the COVID-19 pandemic and its variants, as well as governmental, legislative, judicial or regulatory actions or developments in response thereto;
- changes in U.S. tax laws, regulations or interpretations, or in the tax laws, regulations or interpretations of other jurisdictions in which we operate, and adjustments we may make in our operations or tax strategies in response to those changes;
- a failure or security breach of, or cyber-attack on, enterprise information technology systems that we use or a failure to comply with data protection or privacy regulations;
- third-party providers may perform poorly, breach their obligations to us or expose us to enhanced risks;
- our acquisitions may increase our operational and internal control risks for a period of time;
- we may not realize the contemplated benefits, including cost savings and synergies, of our acquisitions;
- any determination requiring the write-off of a significant portion of our goodwill and intangible assets;
- the failure or inadequacy of any methods we employ to manage our loss exposures;
- the loss of services of any executive officer or other key personnel could adversely impact one or more of our operations;
- the manner in which we manage our global operations through a network of business entities could result in inconsistent management, governance and oversight practices and make it difficult for us to implement strategic decisions and coordinate procedures;
- our substantial international operations and investments expose us to increased political, civil, operational and economic risks, including foreign currency exchange rate and credit risk;
- the political, legal, regulatory, financial, tax and general economic impacts, and other impacts we cannot anticipate, related to the United Kingdom's withdrawal from the European Union (Brexit), which could have adverse consequences for our businesses, particularly our London-based international insurance operations;
- our ability to obtain additional capital for our operations on terms favorable to us;

- our compliance, or failure to comply, with covenants and other requirements under our revolving credit facility, senior debt and other indebtedness and our preferred shares;
- our ability to maintain or raise third-party capital for existing or new investment vehicles and risks related to our management of third party capital;
- the effectiveness of our procedures for compliance with existing and future guidelines, policies and legal and regulatory standards, rules, laws and regulations;
- the impact of economic and trade sanctions and embargo programs on our businesses, including instances in which the requirements and limitations applicable to the global operations of U.S. companies and their affiliates are more restrictive than, or conflict with, those applicable to non-U.S. companies and their affiliates;
- regulatory changes, or challenges by regulators, regarding the use of certain issuing carrier or fronting arrangements;
- our dependence on a limited number of brokers for a large portion of our revenues and third-party capital;
- adverse changes in our assigned financial strength, debt or preferred share ratings or outlook could adversely impact us, including our ability to attract and retain business, the amount of capital our insurance subsidiaries must hold and the availability and cost of capital;
- changes in the amount of statutory capital our insurance subsidiaries are required to hold, which can vary significantly and is based on many factors, some of which are outside our control;
- losses from litigation and regulatory investigations and actions;
- investor litigation or disputes, as well as regulatory inquiries, investigations or proceedings, including the inquiry by the Bermuda Monetary Authority, related to our Markel CATCo operations; delays or disruptions in the run-off of those operations; or the inability to complete, or failure to realize the benefits of, the proposed transaction that would allow the accelerated return of capital to our Markel CATCo investors, including due to the failure to obtain requisite approvals or satisfaction of other conditions on the proposed terms and schedule; and
- a number of additional factors may adversely affect our Markel Ventures operations, and the markets they serve, and negatively impact their revenues and profitability, including, among others: adverse weather conditions, plant disease and other contaminants; changes in government support for education, healthcare and infrastructure projects; changes in capital spending levels; changes in the housing, commercial and industrial construction markets; liability for environmental matters; supply chain and shipping issues, including increases in freight costs; volatility in the market prices for their products; and volatility in commodity, wholesale and raw materials prices and interest and foreign currency exchange rates.

Results from our underwriting, investing, Markel Ventures and other operations have been and will continue to be potentially materially affected by these factors.

By making forward-looking statements, we do not intend to become obligated to publicly update or revise any such statements whether as a result of new information, future events or other changes. Readers are cautioned not to place undue reliance on any forward-looking statements, which speak only as at their dates.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market risk is the risk of economic losses due to adverse changes in the estimated fair value of a financial instrument as the result of changes in equity prices, interest rates, foreign currency exchange rates and commodity prices. Our consolidated balance sheets include assets and liabilities with estimated fair values that are subject to market risk. Our primary market risks are equity price risk associated with investments in equity securities, interest rate risk associated with investments in fixed maturity securities and foreign currency exchange rate risk associated with our international operations. Some businesses within our Markel Ventures operations are exposed to commodity price risk resulting from changes in the price of raw materials, parts and other components necessary to manufacture products, however, this risk is not material to the Company. The operating results of these businesses could be adversely impacted should they be unable to obtain price increases from customers in response to significant increases in raw material, parts and other component prices.

Our fixed maturity securities and equity securities are recorded at fair value, which is measured based upon quoted prices in active markets, if available. We determine fair value for these investments after considering various sources of information, including information provided by a third party pricing service. The pricing service provides prices for substantially all of our fixed maturity securities and equity securities. In determining fair value, we generally do not adjust the prices obtained from the pricing service. We obtain an understanding of the pricing service's valuation methodologies and related inputs, which include, but are not limited to, reported trades, benchmark yields, issuer spreads, bids, offers, duration, credit ratings, estimated cash flows and prepayment speeds. We validate prices provided by the pricing service by reviewing prices from other pricing sources and analyzing pricing data in certain instances.

Equity Price Risk

We invest a portion of shareholder funds in equity securities, which have historically produced higher long-term returns relative to fixed maturity securities. We seek to invest in profitable companies, with honest and talented management, that exhibit reinvestment opportunities and capital discipline, at reasonable prices. We intend to hold these investments over the long term and focus on long-term total investment return, understanding that gains or losses on investments may fluctuate from one period to the next. Changes in the fair value of equity securities are recognized in net income.

At December 31, 2021, our equity portfolio was concentrated in terms of the number of issuers and industries. Such concentrations can lead to higher levels of volatility. At December 31, 2021, our ten largest equity holdings represented $3.9 billion, or 43%, of the equity portfolio. Investments in the property and casualty insurance industry represented $1.3 billion, or 15%, of our equity portfolio at December 31, 2021 and included a $962.4 million investment in the common stock of Berkshire Hathaway Inc., a company whose subsidiaries engage in a number of diverse business activities in addition to insurance. We have investment guidelines that set limits on the equity holdings of our insurance subsidiaries.

The following table summarizes our equity price risk and shows the effect of a hypothetical 35% increase or decrease in market prices as of December 31, 2021 and 2020. The selected hypothetical changes do not indicate what could be the potential best or worst case scenarios.

(dollars in millions)	Estimated Fair Value	Hypothetical Price Change	Estimated Fair Value after Hypothetical Change in Prices	Estimated Hypothetical Percentage Increase (Decrease) in Shareholders' Equity
As of December 31, 2021				
Equity securities	**$ 9,024**	**35% increase**	**$ 12,182**	**17.0 %**
		35% decrease	**5,866**	**(17.0)**
As of December 31, 2020				
Equity securities	$ 6,994	35% increase	$ 9,442	15.1 %
		35% decrease	4,546	(15.1)

Interest Rate Risk

Our fixed maturity investments and borrowings are subject to interest rate risk. Increases and decreases in interest rates typically result in decreases and increases, respectively, in the fair value of these financial instruments.

The majority of our investable assets come from premiums paid by policyholders. These funds are invested predominantly in high quality government, municipal and corporate bonds that generally match the duration and currency of our loss reserves. The fixed maturity portfolio, including short-term investments and cash and cash equivalents, has an average duration of 3.1 years and an average rating of "AAA." See note 4(c) of the notes to consolidated financial statements included under Item 8 for details regarding contractual maturity dates of our fixed maturity portfolio. The changes in the estimated fair value of the fixed maturity portfolio are presented as a component of shareholders' equity in accumulated other comprehensive income, net of taxes.

We work to manage the impact of interest rate fluctuations on our fixed maturity portfolio. The effective duration of the fixed maturity portfolio is managed with consideration given to the estimated duration of our liabilities. We have investment guidelines that limit the maximum duration and maturity of the fixed maturity portfolio.

We use a commercially available model to estimate the effect of interest rate risk on the fair values of our fixed maturity portfolio and borrowings. The model estimates the impact of interest rate changes on a wide range of factors including duration, prepayment, put options and call options. Fair values are estimated based on the net present value of cash flows, using a representative set of possible future interest rate scenarios. The model requires that numerous assumptions be made about the future. To the extent that any of the assumptions are invalid, incorrect estimates could result. The usefulness of a single point-in-time model is limited, as it is unable to accurately incorporate the full complexity of market interactions.

The following table summarizes our interest rate risk and shows the effect of hypothetical changes in interest rates as of December 31, 2021 and 2020. The selected hypothetical changes do not indicate what could be the potential best or worst case scenarios.

(dollars in millions)	Estimated Fair Value	Hypothetical Change in Interest Rates (bp=basis points)	Estimated Fair Value after Hypothetical Change in Interest Rates	Hypothetical Percentage Increase (Decrease) in: Fair Value of Fixed Maturity Securities	Hypothetical Percentage Increase (Decrease) in: Shareholders' Equity
Fixed Maturity Securities					
As of December 31, 2021					
Total fixed maturity securities	**$ 12,587**	**200 bp decrease**	**$ 13,841**	**10.0 %**	**6.7 %**
		100 bp decrease	**13,189**	**4.8**	**3.2**
		100 bp increase	**12,022**	**(4.5)**	**(3.0)**
		200 bp increase	**11,490**	**(8.7)**	**(5.9)**
As of December 31, 2020					
Total fixed maturity securities	$ 10,682	200 bp decrease	$ 11,938	11.8 %	7.8 %
		100 bp decrease	11,277	5.6	3.7
		100 bp increase	10,128	(5.2)	(3.4)
		200 bp increase	9,597	(10.2)	(6.7)
Liabilities [(1)]					
As of December 31, 2021					
Borrowings	**$ 5,017**	**200 bp decrease**	**$ 6,500**		
		100 bp decrease	**5,678**		
		100 bp increase	**4,478**		
		200 bp increase	**4,036**		
As of December 31, 2020					
Borrowings	$ 4,367	200 bp decrease	$ 5,727		
		100 bp decrease	4,975		
		100 bp increase	3,872		
		200 bp increase	3,464		

(1) Changes in estimated fair value have no impact on shareholders' equity.

Foreign Currency Exchange Rate Risk

We have foreign currency exchange rate risk associated with certain of our assets and liabilities related to certain of our foreign operations. We manage this risk primarily by matching assets and liabilities denominated in each foreign currency that are subject to foreign exchange rate risk as closely as possible. To assist with this matching, we periodically purchase foreign currency forward contracts and we purchase or sell foreign currencies in the open market. Realized and unrealized gains and losses on our forward contracts are recorded in earnings. Our forward contracts generally have maturities of three months. At December 31, 2021 and 2020, substantially all of our foreign currency denominated assets and liabilities that are subject to foreign currency exchange rate risk were either matched or hedged.

At December 31, 2021 and 2020, 90% and 88%, respectively, of our invested assets were denominated in United States (U.S.) Dollars. At December 31, 2021 and 2020, 86% and 85%, respectively, of our reserves for unpaid losses and loss adjustment expenses and life and annuity benefits were denominated in U.S. Dollars. At those dates, the largest foreign currency denominated balances within both our invested assets and reserves for unpaid losses and loss adjustment expenses and life and annuity benefits were the Euro and British Pound Sterling.

Credit Risk

Fixed Maturity Investments

Credit risk exists within our fixed maturity portfolio from the potential for loss resulting from adverse changes in an issuer's ability to repay its debt obligations. We monitor our investment portfolio to ensure that credit risk does not exceed prudent levels. We have consistently invested in high credit quality, investment grade securities. Our fixed maturity portfolio has an average rating of "AAA," with 99% rated "A" or better by at least one nationally recognized rating organization. Our policy is to invest in investment grade securities and to minimize investments in fixed maturity securities that are unrated or rated below investment grade. Our fixed maturity portfolio includes securities issued with financial guaranty insurance. We purchase fixed maturity securities based on our assessment of the credit quality of the underlying assets without regard to insurance.

Our fixed maturity portfolio includes securities issued by foreign governments and non-sovereign foreign institutions. General concern exists about foreign countries that experience financial difficulties during periods of adverse economic conditions. We monitor developments in foreign countries, currencies and issuers that could pose risks to our fixed maturity portfolio, including ratings downgrades, political and financial changes and the widening of credit spreads. We believe that our fixed maturity portfolio is highly diversified and comprised of high quality securities.

We obtain information from news services, rating agencies and various financial market participants to assess potential negative impacts on a country or company's financial risk profile. We analyze concentrations within our fixed maturity portfolio by country, currency and issuer, which allows us to assess our level of diversification with respect to these exposures, reduce troubled exposures should they occur and mitigate any future financial distress that these exposures could cause.

General concern exists about municipalities that experience financial difficulties during periods of adverse economic conditions. We manage the exposure to credit risk in our municipal bond portfolio by investing in high quality securities and by diversifying our holdings, which are typically either general obligation or revenue bonds related to essential products and services.

Reinsurance Recoverables

We have credit risk to the extent any of our reinsurers are unwilling or unable to meet their obligations under our ceded reinsurance agreements. We monitor changes in the financial condition of each of our reinsurers, and we assess our concentration of credit risk on a regular basis. While we believe our net reinsurance recoverable balances are collectible, deterioration in reinsurers' ability to pay, or collection disputes, could adversely affect our operating cash flows, financial position and results of operations. See note 10 of the notes to consolidated financial statements included under Item 8 for additional details about our reinsurance recoverables and exposures.

Underwriting

Within our underwriting operations, our reinsurance recoverables balance for the ten largest reinsurers was $1.9 billion at December 31, 2021, representing 63% of the $3.0 billion total reinsurance recoverables, before considering allowances for credit losses. All of our ten largest reinsurers within our underwriting operations were rated "A" or better by A.M. Best Company (Best). We were the beneficiary of letters of credit, trust accounts and funds withheld in the aggregate amount of $514.5 million at December 31, 2021, collateralizing reinsurance recoverable balances due from these ten reinsurers.

Within our underwriting operations, we attempt to minimize credit exposure to reinsurers through adherence to internal reinsurance guidelines. To participate in our reinsurance program, prospective companies generally must: (i) maintain a Best or Standard & Poor's rating of "A" (excellent) or better; (ii) maintain minimum capital and surplus of $750 million and (iii) provide collateral for recoverables in excess of an individually established amount. In addition, certain foreign reinsurers for our U.S. insurance operations must provide collateral equal to 100% of recoverables, with the exception of reinsurers who have been granted certified or authorized status by an insurance company's state of domicile. Our credit exposure to Lloyd's of London syndicates is managed through individual and aggregate exposure thresholds.

Program Services

Within our program services business, our reinsurance recoverables balance for the ten largest reinsurers was $2.8 billion at December 31, 2021, representing 68% of the $4.2 billion total reinsurance recoverables, before considering allowances for credit losses. We were the beneficiary of letters of credit, trust accounts and funds withheld in the aggregate amount of $2.1 billion at December 31, 2021, collateralizing reinsurance recoverable balances due from these ten reinsurers, and $2.9 billion for our total reinsurance recoverables balance. Four of our ten largest reinsurers were rated "A" or better by Best. For each of the remaining six reinsurers, as of December 31, 2021, our reinsurance recoverable was fully collateralized, and for five of these reinsurers, collateral held exceeded the related reinsurance recoverable.

Within our program services business, we mitigate credit risk by either selecting well capitalized, highly rated authorized reinsurers or requiring that the reinsurer post substantial collateral to secure the reinsured risks, which, in some instances, exceeds the related reinsurance recoverable. For reinsurers with a credit rating of lower than "A" we employ a stringent collateral monitoring program, under which the majority of the reinsurance recoverable balances are fully collateralized. These collateral requirements are regularly monitored by a credit committee within our program services operations.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors
Markel Corporation:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Markel Corporation and subsidiaries (the Company) as of December 31, 2021 and 2020, the related consolidated statements of income and comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2021, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2021, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 18, 2022 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of a critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Estimation of the liability for unpaid losses and loss adjustment expenses for the Company's underwriting operations

As described in Note 9, the Company has recorded a liability for unpaid losses and loss adjustment expenses (loss reserves) of $18.2 billion as of December 31, 2021. Of this amount, $14.0 billion represents loss reserves for the Company's underwriting operations. The Company's actuaries use established actuarial methods and past development patterns to estimate ultimate losses to be paid. For its underwriting operations, loss reserves are established at the Company's best estimates, which incorporate the actuarial point estimates and are adjusted for certain subjective factors.

We identified the assessment of loss reserve estimation for the Company's underwriting operations as a critical audit matter because it involved significant measurement uncertainty. The assessment of actuarial methods and key assumptions used to estimate ultimate losses required specialized actuarial skills and subjective auditor judgment. Key assumptions included weighting of actuarial methods, expected loss ratios, and patterns and variability of loss development.

The following are the primary procedures we performed to address this critical audit matter. With the assistance of actuarial professionals, as appropriate, we evaluated the design and tested the operating effectiveness of internal controls over the Company's loss reserving process for its underwriting operations. This included controls over key assumptions and the determination of loss reserves. We also involved actuarial professionals with specialized skills and knowledge, who assisted in:

- assessing the Company's actuarial methodologies by comparing to generally accepted actuarial methodologies and evaluating the weighting of the methods based on common industry practice
- developing independent actuarial estimates for certain product lines with long-tail loss reporting and payment patterns using the Company's underlying historical claims and policy data, as well as industry loss reporting and payment data for workers' compensation lines
- for certain product lines comprised of those with smaller balances or shorter tail loss reporting and payment patterns, assessing the Company's assumptions about future claims reporting and payments for consistency with historical loss development and payment patterns
- developing an independent range of consolidated loss reserves based on actuarial methods and assumptions, comparing those results to the Company's recorded reserves and evaluating the movement of the Company's recorded reserve within our range.

/s/ KPMG LLP

We have served as the Company's auditor since 1980.

Richmond, Virginia
February 18, 2022

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

	December 31,	
	2021	2020
	(dollars in thousands)	
ASSETS		
Investments, at estimated fair value:		
Fixed maturity securities, available-for-sale (amortized cost of $12,061,467 in 2021 and $9,655,261 in 2020)	**$ 12,587,305**	$ 10,681,734
Equity securities (cost of $2,867,899 in 2021 and $2,732,998 in 2020)	**9,023,927**	6,994,110
Short-term investments, available-for-sale (estimated fair value approximates cost)	**1,799,988**	2,034,099
Total Investments	**23,411,220**	19,709,943
Cash and cash equivalents	**3,978,490**	4,341,736
Restricted cash and cash equivalents	**902,457**	874,913
Receivables	**2,413,938**	1,930,211
Reinsurance recoverables	**7,293,555**	5,989,337
Deferred policy acquisition costs	**765,915**	630,794
Prepaid reinsurance premiums	**1,798,571**	1,451,858
Goodwill	**2,899,140**	2,604,624
Intangible assets	**1,822,486**	1,782,718
Other assets	**3,163,094**	2,393,920
Total Assets	**$ 48,448,866**	$ 41,710,054
LIABILITIES AND EQUITY		
Unpaid losses and loss adjustment expenses	**$ 18,178,894**	$ 16,222,376
Life and annuity benefits	**902,980**	1,069,986
Unearned premiums	**5,383,619**	4,433,245
Payables to insurance and reinsurance companies	**616,665**	493,470
Senior long-term debt and other debt (estimated fair value of $5,017,000 in 2021 and $4,367,000 in 2020)	**4,361,266**	3,484,023
Other liabilities	**3,826,156**	2,946,631
Total Liabilities	**33,269,580**	28,649,731
Redeemable noncontrolling interests	**461,378**	245,642
Commitments and contingencies		
Shareholders' equity:		
Preferred stock	**591,891**	591,891
Common stock	**3,441,079**	3,428,340
Retained earnings	**10,424,461**	8,195,182
Accumulated other comprehensive income	**237,617**	584,376
Total Shareholders' Equity	**14,695,048**	12,799,789
Noncontrolling interests	**22,860**	14,892
Total Equity	**14,717,908**	12,814,681
Total Liabilities and Equity	**$ 48,448,866**	$ 41,710,054

See accompanying notes to consolidated financial statements.

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME AND COMPREHENSIVE INCOME

	Years Ended December 31,		
	2021	2020	2019
	(dollars in thousands, except per share data)		
OPERATING REVENUES			
Earned premiums	**$ 6,503,029**	$ 5,612,205	$ 5,049,793
Net investment income	**374,601**	371,830	451,888
Net investment gains	**1,978,534**	617,979	1,601,722
Products revenues	**1,712,120**	1,439,515	1,609,586
Services and other revenues	**2,278,141**	1,693,537	813,202
Total Operating Revenues	**12,846,425**	9,735,066	9,526,191
OPERATING EXPENSES			
Losses and loss adjustment expenses	**3,581,205**	3,466,961	2,891,190
Underwriting, acquisition and insurance expenses	**2,293,739**	2,017,627	1,878,093
Products expenses	**1,544,506**	1,256,159	1,455,245
Services and other expenses	**2,022,935**	1,561,120	675,679
Amortization of intangible assets	**160,539**	159,315	148,638
Total Operating Expenses	**9,602,924**	8,461,182	7,048,845
Operating Income	**3,243,501**	1,273,884	2,477,346
Interest expense	**(183,579)**	(177,582)	(171,687)
Net foreign exchange gains (losses)	**72,271**	(95,853)	(2,265)
Loss on early extinguishment of debt	**—**	—	(17,586)
Income Before Income Taxes	**3,132,193**	1,000,449	2,285,808
Income tax expense	**(684,458)**	(168,682)	(486,346)
Net Income	**2,447,735**	831,767	1,799,462
Net income attributable to noncontrolling interests	**(22,732)**	(15,737)	(8,996)
Net Income to Shareholders	**2,425,003**	816,030	1,790,466
Preferred stock dividends	**(36,000)**	(18,400)	—
Net Income to Common Shareholders	**$ 2,389,003**	$ 797,630	$ 1,790,466
OTHER COMPREHENSIVE INCOME (LOSS)			
Change in net unrealized gains on available-for-sale investments, net of taxes:			
Net holding gains (losses) arising during the period	**$ (348,315)**	$ 356,159	$ 299,125
Reclassification adjustments for net gains included in net income	**(6,623)**	(3,386)	(1,148)
Change in net unrealized gains on available-for-sale investments, net of taxes	**(354,938)**	352,773	297,977
Change in foreign currency translation adjustments, net of taxes	**(213)**	29,847	382
Change in net actuarial pension loss, net of taxes	**8,390**	(6,998)	5,042
Total Other Comprehensive Income (Loss)	**(346,761)**	375,622	303,401
Comprehensive Income	**2,100,974**	1,207,389	2,102,863
Comprehensive income attributable to noncontrolling interests	**(22,730)**	(15,755)	(8,975)
Comprehensive Income to Shareholders	**$ 2,078,244**	$ 1,191,634	$ 2,093,888
NET INCOME PER COMMON SHARE			
Basic	**$ 176.92**	$ 55.67	$ 129.25
Diluted	**$ 176.51**	$ 55.63	$ 129.07

See accompanying notes to consolidated financial statements.

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

(dollars in thousands)	Preferred Stock	Common Stock	Retained Earnings	Accumulated Other Comprehensive Income	Total Shareholders' Equity	Noncontrolling Interests	Total Equity	Redeemable Noncontrolling Interests
December 31, 2018	$ —	$3,392,993	$5,782,310	$ (94,650)	$ 9,080,653	$ 19,649	$ 9,100,302	$ 174,062
Net income (loss)			1,790,466	—	1,790,466	(7,820)	1,782,646	16,816
Other comprehensive income (loss)			—	303,422	303,422	—	303,422	(21)
Comprehensive Income (Loss)					2,093,888	(7,820)	2,086,068	16,795
Repurchase of common stock	—	—	(116,307)	—	(116,307)	—	(116,307)	—
Restricted stock awards expensed	—	16,000	—	—	16,000	—	16,000	—
Adjustment to Nephila purchase price allocation	—	—	—	—	—	(8,250)	(8,250)	—
Adjustment of redeemable noncontrolling interests	—	—	1,105	—	1,105	—	1,105	(1,105)
Purchase of noncontrolling interest	—	(4,219)	—	—	(4,219)	—	(4,219)	(4,542)
Other	—	145	(398)	—	(253)	3,970	3,717	(7,648)
December 31, 2019	—	3,404,919	7,457,176	208,772	11,070,867	7,549	11,078,416	177,562
Cumulative effect of adoption of ASC 326, *Financial Instruments—Credit Losses*			(3,827)	—	(3,827)	—	(3,827)	—
January 1, 2020	—	3,404,919	7,453,349	208,772	11,067,040	7,549	11,074,589	177,562
Net income			816,030	—	816,030	3,226	819,256	12,511
Other comprehensive income			—	375,604	375,604	—	375,604	18
Comprehensive Income					1,191,634	3,226	1,194,860	12,529
Issuance of preferred stock	591,891	—	—	—	591,891	—	591,891	—
Repurchase of common stock	—	—	(26,832)	—	(26,832)	—	(26,832)	—
Preferred stock dividends	—	—	(18,400)	—	(18,400)	—	(18,400)	—
Restricted stock awards expensed	—	29,779	—	—	29,779	—	29,779	—
Acquisition of Lansing	—	—	—	—	—	—	—	43,566
Adjustment of redeemable noncontrolling interests	—	—	(28,705)	—	(28,705)	—	(28,705)	28,705
Purchase of noncontrolling interest	—	(6,131)	—	—	(6,131)	—	(6,131)	(7,029)
Other	—	(227)	(260)	—	(487)	4,117	3,630	(9,691)
December 31, 2020	591,891	3,428,340	8,195,182	584,376	12,799,789	14,892	12,814,681	245,642
Net income			**2,425,003**	**—**	**2,425,003**	**7,257**	**2,432,260**	**15,475**
Other comprehensive loss			**—**	**(346,759)**	**(346,759)**	**—**	**(346,759)**	**(2)**
Comprehensive Income					**2,078,244**	**7,257**	**2,085,501**	**15,473**
Repurchase of common stock	**—**	**—**	**(206,518)**	**—**	**(206,518)**	**—**	**(206,518)**	**—**
Preferred stock dividends	**—**	**—**	**(36,000)**	**—**	**(36,000)**	**—**	**(36,000)**	**—**
Restricted stock awards expensed	**—**	**30,916**	**—**	**—**	**30,916**	**—**	**30,916**	**—**
Acquisition of Buckner	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**26,438**
Acquisition of Metromont	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**269,908**
Adjustment of redeemable noncontrolling interests	**—**	**—**	**46,874**	**—**	**46,874**	**—**	**46,874**	**(46,874)**
Purchase of noncontrolling interest	**—**	**(18,779)**	**—**	**—**	**(18,779)**	**—**	**(18,779)**	**(38,214)**
Other	**—**	**602**	**(80)**	**—**	**522**	**711**	**1,233**	**(10,995)**
December 31, 2021	**$591,891**	**$3,441,079**	**$10,424,461**	**$ 237,617**	**$ 14,695,048**	**$ 22,860**	**$14,717,908**	**$ 461,378**

See accompanying notes to consolidated financial statements.

MARKEL CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2021	2020	2019
	(dollars in thousands)		
OPERATING ACTIVITIES			
Net income	**$ 2,447,735**	$ 831,767	$ 1,799,462
Adjustments to reconcile net income to net cash provided by operating activities:			
Deferred income tax expense (benefit)	**453,905**	(2,733)	323,385
Depreciation and amortization	**336,393**	307,069	269,239
Net investment gains	**(1,978,534)**	(617,979)	(1,601,722)
Net foreign exchange losses (gains)	**(72,271)**	95,853	2,265
Increase in receivables	**(372,491)**	(28,174)	(103,982)
Increase in reinsurance recoverables	**(1,312,258)**	(549,654)	(209,971)
Increase in deferred policy acquisition costs	**(139,609)**	(61,569)	(93,015)
Increase in prepaid reinsurance premiums	**(347,982)**	(34,480)	(84,835)
Increase in unpaid losses and loss adjustment expenses	**2,042,486**	1,383,430	436,234
Decrease in life and annuity benefits	**(54,591)**	(44,651)	(52,159)
Increase in unearned premiums	**970,246**	354,679	438,951
Increase in payables to insurance and reinsurance companies	**131,559**	76,586	65,460
Increase (decrease) in income taxes payable	**24,582**	(70,277)	36,938
Other	**144,897**	97,720	47,870
Net Cash Provided By Operating Activities	**2,274,067**	1,737,587	1,274,120
INVESTING ACTIVITIES			
Proceeds from sales of fixed maturity securities and equity securities	**224,720**	1,580,288	353,918
Proceeds from maturities, calls and prepayments of fixed maturity securities	**683,961**	642,135	772,336
Cost of fixed maturity securities and equity securities purchased	**(3,420,759)**	(1,322,218)	(955,970)
Net change in short-term investments	**228,955**	(829,457)	(95,867)
Cost of equity method investments	**(41,860)**	(5,066)	(257,663)
Additions to property and equipment	**(145,249)**	(101,301)	(123,376)
Acquisitions, net of cash acquired	**(517,439)**	(554,127)	(245,332)
Other	**49,869**	77,998	16,795
Net Cash Used By Investing Activities	**(2,937,802)**	(511,748)	(535,159)
FINANCING ACTIVITIES			
Additions to senior long-term debt and other debt	**1,198,505**	223,183	1,645,182
Repayment of senior long-term debt and other debt	**(486,730)**	(275,996)	(1,103,674)
Premiums and fees related to early extinguishment of debt	**—**	—	(27,073)
Repurchases of common stock	**(206,518)**	(26,832)	(116,307)
Issuance of preferred stock, net	**—**	591,891	—
Dividends paid on preferred stock	**(36,000)**	(18,400)	—
Other	**(99,490)**	(59,290)	(38,811)
Net Cash Provided By Financing Activities	**369,767**	434,556	359,317
Effect of foreign currency rate changes on cash, cash equivalents, restricted cash and restricted cash equivalents	**(41,734)**	55,901	5,643
Increase (decrease) in cash, cash equivalents, restricted cash and restricted cash equivalents	**(335,702)**	1,716,296	1,103,921
Cash, cash equivalents, restricted cash and restricted cash equivalents at beginning of year	**5,216,649**	3,500,353	2,396,432
CASH, CASH EQUIVALENTS, RESTRICTED CASH AND RESTRICTED CASH EQUIVALENTS AT END OF YEAR	**$ 4,880,947**	$ 5,216,649	$ 3,500,353

See accompanying notes to consolidated financial statements.

1. Summary of Significant Accounting Policies

Markel Corporation is a diverse financial holding company serving a variety of niche markets. Markel Corporation's principal business markets and underwrites specialty insurance products. Through its wholly owned subsidiary, Markel Ventures, Inc. (Markel Ventures), Markel Corporation also owns controlling interests in various businesses that operate outside of the specialty insurance marketplace. See note 2 for details regarding reportable segments.

a) Basis of Presentation. The accompanying consolidated financial statements have been prepared in accordance with United States (U.S.) generally accepted accounting principles (GAAP) and include the accounts of Markel Corporation and its consolidated subsidiaries, as well as any variable interest entities (VIEs) that meet the requirements for consolidation (the Company). All significant intercompany balances and transactions have been eliminated in consolidation. The Company consolidates the results of its Markel Ventures subsidiaries on a one-month lag, with the exception of significant transactions or events that occur during the intervening period. Certain prior period amounts have been reclassified to conform to the current period presentation.

b) Use of Estimates. The preparation of financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities. Management periodically reviews its estimates and assumptions. Quarterly reviews include evaluating the adequacy of reserves for unpaid losses and loss adjustment expenses and contingencies. Estimates and assumptions for goodwill and intangible assets are reviewed in conjunction with an acquisition, and goodwill and indefinite-lived intangible assets are reassessed at least annually for impairment. Actual results may differ materially from the estimates and assumptions used in preparing the consolidated financial statements.

c) Investments. Available-for-sale investments and equity securities are recorded at estimated fair value. Unrealized gains and losses on available-for-sale investments, net of income taxes, are included in other comprehensive income. Unrealized gains and losses on equity securities, net of income taxes, are included in net income as net investment gains. The Company completes a detailed analysis each quarter to assess declines in the fair value of its available-for-sale investments. Any impairment losses on the Company's available-for-sale investments are recorded as an allowance, subject to reversal.

Premiums and discounts are amortized or accreted over the lives of the related fixed maturity securities as an adjustment to the yield using the effective interest method. Dividend and interest income are recognized when earned. Accrued interest receivable is excluded from both the estimated fair value and the amortized cost basis of available-for-sale securities and included within other assets on the Company's consolidated balance sheets. Any uncollectible accrued interest receivable is written off in the period it is deemed uncollectible. Realized investment gains or losses on available-for-sale investments are included in net income. Realized gains or losses from sales of available-for-sale investments are derived using the first-in, first-out method on the trade date.

The Company's other investments are primarily comprised of investments accounted for under the equity method of accounting, which initially are recorded at cost within other assets on the consolidated balance sheets and subsequently increased or decreased by the Company's proportionate share of the net income or loss of the investee and other transactions impacting the investee's equity. The Company records its proportionate share of net income or loss of the investee in net investment income. The Company records its proportionate share of other comprehensive income or loss of the investee as a component of other comprehensive income. Dividends or other equity distributions in excess of the Company's cumulative equity in earnings of the investee are recorded as a reduction of the investment. The Company reviews equity method investments for impairment when events or circumstances indicate that a decline in the fair value of the investment below its carrying value is other-than-temporary.

See note 4 and note 5 for further details regarding the Company's investment portfolio.

d) Cash and Cash Equivalents. The Company considers all investments with original maturities of 90 days or less to be cash equivalents. The carrying value of the Company's cash and cash equivalents approximates fair value.

e) Restricted Cash and Cash Equivalents. Cash and cash equivalents that are restricted as to withdrawal or use are recorded as restricted cash and cash equivalents. The carrying value of the Company's restricted cash and cash equivalents approximates fair value.

f) Receivables. Receivables include amounts receivable from agents, brokers and insureds, which represent premiums that are both currently due and amounts not yet due on insurance and reinsurance policies. Premiums for insurance policies are generally due at inception. Premiums for reinsurance policies generally become due over the period of coverage based on the policy terms. Changes in the estimate of reinsurance premiums written will result in an adjustment to premiums receivable in the period they are determined. Receivables also include amounts receivable from contracts with customers, which represent the Company's unconditional right to consideration for satisfying the performance obligations outlined in the contract.

The Company monitors credit risk associated with receivables, taking into consideration the fact that in certain instances in the Company's insurance operations credit risk may be reduced by the Company's right to offset loss obligations or unearned premiums against premiums receivable. An allowance is established for credit losses expected to be incurred over the life of the receivable, which is recorded net of this allowance. The allowance is charged to net income in the period the receivable is recorded and revised in subsequent periods to reflect changes in the Company's estimate of expected credit losses. As of December 31, 2021 and 2020, the allowance for credit losses associated with the Company's receivables was not material to the consolidated financial statements.

g) Reinsurance Recoverables. Amounts recoverable from reinsurers are estimated in a manner consistent with the claim liability associated with the reinsured business. The Company evaluates the financial condition of its reinsurers and monitors concentration of credit risk to minimize its exposure to significant losses from individual reinsurers. To further reduce credit exposure on reinsurance recoverables, the Company has received collateral, including letters of credit and trust accounts, from certain reinsurers. Collateral related to these reinsurance agreements is available, without restriction, when the Company pays losses covered by the reinsurance agreements. An allowance is established for credit losses expected to be incurred over the life of the reinsurance recoverable, which is recorded net of this allowance. The allowance is charged to net income in the period the recoverable is recorded and revised in subsequent periods to reflect changes in the Company's estimate of expected credit losses. As of December 31, 2021 and 2020, the allowance for credit losses associated with the Company's reinsurance recoverables was not material to the consolidated financial statements.

h) Deferred Policy Acquisition Costs. Costs directly related to the acquisition of insurance premiums are deferred and amortized over the related policy period, generally one year. The Company only defers acquisition costs incurred that are related directly to the successful acquisition of new or renewal insurance contracts, including commissions to agents and brokers and premium taxes. Commissions received related to reinsurance premiums ceded are netted against broker commissions in determining acquisition costs eligible for deferral. To the extent that future policy revenues on existing policies are not adequate to cover related costs and expenses, deferred policy acquisition costs are charged to earnings. The Company does not consider anticipated investment income in determining whether a premium deficiency exists. See note 2(a) and (e) for further details regarding policy acquisition costs.

i) Goodwill and Intangible Assets. Goodwill and intangible assets are recorded as a result of business acquisitions. Goodwill represents the excess of the amount paid to acquire a business over the net fair value of assets acquired and liabilities assumed at the date of acquisition. Indefinite-lived and other intangible assets are recorded at fair value as of the acquisition date. The determination of the fair value of certain assets acquired and liabilities assumed involves significant judgment and the use of valuation models and other estimates, which require assumptions that are inherently subjective. Goodwill and indefinite-lived intangible assets are tested for impairment at least annually. The Company completes an annual test during the fourth quarter of each year based upon the results of operations through September 30. Intangible assets with definite lives are amortized using the straight-line method over their estimated useful lives, generally five to 20 years, and are reviewed for impairment when events or circumstances indicate that their carrying value may not be recoverable. See note 6 for further details regarding goodwill and intangible assets.

j) Property and Equipment. Property and equipment is maintained primarily by certain of the Company's Markel Ventures businesses and is stated at cost less accumulated depreciation. Depreciation of property and equipment is calculated using the straight-line method over the estimated useful lives of the respective assets. Property and equipment, net of accumulated depreciation, was $1.1 billion and $632.0 million as of December 31, 2021 and 2020, respectively, and is included in other assets on the Company's consolidated balance sheets.

k) Leases. The present value of future lease payments for the Company's leases with terms greater than 12 months is included on the consolidated balance sheets as lease liabilities and right-of-use lease assets.

The Company's lease portfolio primarily consists of operating leases for real estate. Total expected lease payments are based on the lease payments specified in the contract and the stated term, including any options to extend or terminate that the Company is reasonably certain to exercise. The Company accounts for lease components and any associated non-lease components within a contract as a single lease component, and therefore allocates all of the expected lease payments to the lease component.

The lease liability, which represents the Company's contractual obligation to make lease payments, is calculated based on the present value of expected lease payments over the remaining lease term, discounted using the Company's collateralized incremental borrowing rate at the lease commencement date. The lease liability is then adjusted for any prepaid rent, lease incentives received or capitalized initial direct costs to determine the lease asset, which represents the Company's right to use the underlying asset for the lease term. Lease liabilities and lease assets are included in other liabilities and other assets, respectively, on the Company's consolidated balance sheets.

Total lease costs are primarily comprised of rental expense for operating leases, which is recognized on a straight line basis over the lease term. Rental expense attributable to the Company's underwriting operations is included in underwriting, acquisition and insurance expenses and rental expense attributable to the Company's other operations is included in products expenses and services and other expenses in the consolidated statements of income and comprehensive income. See note 7 for further details regarding leases.

l) Inventories. Inventories are maintained at certain of the Company's Markel Ventures businesses and consist primarily of raw materials, work-in-process and finished goods. Inventories are generally valued using the first-in-first-out method and stated at the lower of cost or net realizable value. Inventories were $529.3 million and $412.6 million as of December 31, 2021 and 2020, respectively, and are included in other assets on the Company's consolidated balance sheets.

m) Redeemable Noncontrolling Interests. The Company owns controlling interests in various companies through its Markel Ventures operations. In some cases, the Company has the option to acquire the remaining equity interests, and the remaining equity interests have the option to sell their interests to the Company, in the future. The redemption value of the remaining equity interests is generally based on the respective company's earnings in specified periods preceding the redemption date. The redeemable noncontrolling interests are currently redeemable or become redeemable between 2022 and 2032.

The Company recognizes changes in the redemption value that exceed the carrying value of redeemable noncontrolling interests to retained earnings as if the balance sheet date was also the redemption date. Changes in the redemption value also result in an adjustment to net income to common shareholders in the calculation of basic and diluted net income per common share. See note 17 for further details regarding the calculation of basic and diluted net income per common share.

n) Income Taxes. The Company records deferred income taxes to reflect the net tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and their tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in years in which those temporary differences are expected to be recovered or settled. Deferred tax assets are reduced by a valuation allowance when management believes it is more likely than not that some, or all, of the deferred tax assets will not be realized. The Company recognizes the tax benefit from an uncertain tax position taken or expected to be taken in income tax returns only if it is more likely than not that the tax position will be sustained upon examination by tax authorities, based on the technical merits of the position. Tax positions that meet the more likely than not threshold are then measured using a probability weighted approach, whereby the largest amount of tax benefit that is greater than 50% likely of being realized upon ultimate settlement is recognized. The Company recognizes interest and penalties related to uncertain tax positions in income tax expense. See note 13 for further details regarding income taxes.

o) Unpaid Losses and Loss Adjustment Expenses. Unpaid losses and loss adjustment expenses on the Company's property and casualty insurance business are based on evaluations of reported claims and estimates for losses and loss adjustment expenses incurred but not reported. Estimates for losses and loss adjustment expenses incurred but not reported are based on reserve development studies, among other things. Recorded reserves are estimates, and the ultimate liability may be greater or less than the estimates. See note 9 for further details regarding unpaid losses and loss adjustment expenses.

p) Life and Annuity Benefits. The Company has a run-off block of life and annuity reinsurance contracts that subject the Company to mortality, longevity and morbidity risks. The assumptions used to determine policy benefit reserves are generally locked-in for the life of the contract unless an unlocking event occurs. To the extent existing policy reserves, together with the present value of future gross premiums and expected investment income earned thereon, are not adequate to cover the present value of future benefits, settlement and maintenance costs, the locked-in assumptions are revised to current best estimate

assumptions and a charge to earnings for life and annuity benefits is recognized at that time. Because of the assumptions and estimates used in establishing reserves for life and annuity benefit obligations and the long-term nature of these reinsurance contracts, the ultimate liability may be greater or less than the estimates. Results attributable to the run-off of life and annuity reinsurance business are included in services and other revenues and services and other expenses in the Company's consolidated statements of income and comprehensive income. See note 11 for further details regarding life and annuity benefits.

q) Revenue Recognition.

Property and Casualty Premiums

Insurance premiums written are generally recorded at the inception of a policy and earned on a pro rata basis over the policy period, typically one year. The cost of reinsurance ceded is initially recorded as prepaid reinsurance premiums and is amortized over the reinsurance contract period in proportion to the amount of insurance protection provided. Premiums ceded are netted against premiums written. For multi-year contracts where insurance premiums are payable in annual installments, written premiums are recorded at the inception of the contract based on management's best estimate of total premiums to be received. For contracts where the cedent has the ability to unilaterally commute or cancel coverage within the term of the policy, premiums are generally recorded on an annual basis or up to the contract cancellation point. The remaining premiums are estimated and included as written at each successive anniversary date within the multi-year term.

Assumed reinsurance premiums are recorded at the inception of each contract based upon contract terms and information received from cedents and brokers and are earned on a pro rata basis over the coverage period, or for multi-year contracts, in proportion with the underlying risk exposure to the extent there is variability in the exposure through the coverage period. Changes in reinsurance premium estimates are expected and may result in significant adjustments in any period. These estimates change over time as additional information regarding changes in underlying exposures is obtained. Any subsequent differences arising on such estimates are recorded as premiums written in the period they are determined and are earned on a pro rata basis over the coverage period, or immediately if the coverage period has ended. The Company uses the periodic method to account for assumed reinsurance from foreign reinsurers as a result of the sufficiency of the information provided by the reinsurer, which is consistent with its accounting for assumed reinsurance from U.S. reinsurers.

Certain contracts that the Company writes provide for reinstatement of coverage. Reinstatement premiums are the premiums for the restoration of the insurance or reinsurance limit of a contract to its full amount after a loss occurrence by the insured or reinsured. The Company accrues for reinstatement premiums resulting from losses recorded. Such accruals are based upon contractual terms and management judgment is involved with respect to the amount of losses recorded. Changes in estimates of losses recorded on contracts with reinstatement premium features will result in changes in reinstatement premiums based on contractual terms. Reinstatement premiums are recognized at the time losses are recorded and are generally earned on a pro rata basis over the remaining coverage period.

Other Revenues

Other revenues primarily relate to the Company's Markel Ventures, insurance-linked securities (ILS) and program services operations and consist of revenues from the sale of products and services. Revenues are recognized when, or as, control of the promised goods or services is transferred to the Company's customers, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services. Contracts with customers generally have an original term of one year or less. For contracts with customers that have an original term greater than one year, the Company recognizes revenue at the amount for which it has a right to invoice for the products delivered or services performed. Certain customers may receive volume rebates or credits for products and services, which are accounted for as variable consideration. The Company estimates these amounts based on the expected amount to be provided to the customer and reduces revenues recognized by a corresponding amount. The Company does not expect significant changes to its estimates of variable consideration over the term of the contracts.

Payment terms for products and services vary by the type of product or service offered and the location of the customer, and payment is typically received at or shortly after the point of sale. For certain products, the Company requires partial payment in the form of a deposit before the products are delivered to the customer, which is included in other liabilities on the Company's consolidated balance sheets.

Through its Markel Ventures operations, the Company has several different businesses that manufacture or produce a variety of products, including ornamental plants, equipment used in baking systems, over-the-road transportation equipment, portable dredges, residential homes and flooring for the trucking industry. Most of the Company's product revenues are recognized when the products are shipped to the customer or the products arrive at the agreed upon destination with the end customer. Some of the Company's contracts include multiple performance obligations. For such arrangements, revenues are allocated to each performance obligation based on the relative standalone selling price, which is derived from amounts stated in the contract.

Through its Markel Ventures operations, the Company also has several different businesses that provide various types of services, including distribution of exterior building products, fire protection and life safety services and consulting services. Service revenues are generally recognized over the term of the contracts based on hours incurred or as services are provided.

The Company's other revenues also include investment management fee income and managing general agent (MGA) commissions for services provided through our ILS operations. Investment management fee income is recognized over the period in which investment management services are provided and is calculated and recognized monthly based on the net asset value of the accounts managed. For certain accounts, the Company is also entitled to participate, on a fixed-percentage basis, in any net income generated in excess of an agreed-upon threshold as established by the underlying investment management agreements. In general, net income is calculated at the end of each calendar year and incentive fees are payable annually. Incentive fee income is recognized at the conclusion of the contractual performance period, when the uncertainty related to performance has been resolved. MGA commissions are based on the direct written premiums of the insurance contracts placed. Commissions received for these services are generally recognized when the related policy is written.

Program services fees, or ceding fees, received in exchange for providing access to the U.S. property and casualty insurance market are based on the gross premiums written on behalf of general agent and capacity provider clients. Ceding fees are earned in a manner consistent with the recognition of the gross premiums earned on the underlying insurance policies, generally on a pro rata basis over the terms of the underlying policies reinsured.

See note 8 for further details regarding products, services, and other revenues.

r) Program Services. In connection with its program services business, the Company enters into contractual agreements with both producing general agents and reinsurers, whereby the general agents and reinsurers are typically obligated to each other for payment of insurance amounts, including premiums, commissions and losses. To the extent these funds are not the obligation of the Company and are settled directly between the general agent and the reinsurer, no receivables or payables are recorded for these amounts. All obligations of the Company's insurance subsidiaries owed to or on behalf of their policyholders are recorded by the Company and, to the extent appropriate, offsetting reinsurance recoverables are recorded.

s) Foreign Currency Transactions. The U.S. Dollar is the Company's reporting currency and the primary functional currency of its foreign underwriting operations. The functional currencies of the Company's other foreign operations are the currencies of the primary economic environments in which the majority of their business is transacted.

Foreign currency transaction gains and losses are the result of exchange rate changes on transactions denominated in currencies other than the functional currency at each foreign entity. Monetary assets and liabilities are remeasured to the functional currency at current exchange rates, with resulting gains and losses included in net foreign exchange gains within net income. Non-monetary assets and liabilities are remeasured to the functional currency at historic exchange rates. Available-for-sale securities are recorded at fair value with resulting gains and losses, including the portion attributable to movements in exchange rates, included in the change in net unrealized gains on available-for-sale investments, net of taxes within other comprehensive income. While we attempt to naturally hedge our exposure to foreign currency fluctuations by matching assets and liabilities in the same currencies, there is a financial statement mismatch between the gains or losses recorded in net income related to insurance reserves denominated in non-functional currencies and the gains or losses recorded in other comprehensive income related to the available-for-sale securities held in non-functional currencies supporting the reserves.

Assets and liabilities of foreign operations denominated in a functional currency other than the U.S. Dollar are translated into the U.S. Dollar at current exchange rates, with resulting gains or losses included, net of taxes, in the change in foreign currency translation adjustments within other comprehensive income. See note 18 for further details regarding the components of other comprehensive income.

t) Comprehensive Income. Comprehensive income represents all changes in equity that result from recognized transactions and other economic events during the period. Other comprehensive income refers to revenues, expenses, gains and losses that under U.S. GAAP are included in comprehensive income but excluded from net income, such as unrealized gains or losses on available-for-sale investments, foreign currency translation adjustments and changes in net actuarial pension loss. See note 18 for further details regarding comprehensive income.

u) Net Income Per Common Share. Basic net income per common share is computed by dividing adjusted net income to shareholders by the weighted average number of common shares outstanding during the year. Diluted net income per common share is computed by dividing adjusted net income to shareholders by the weighted average number of common shares and dilutive potential common shares outstanding during the year. See note 17 for further details regarding the calculation of basic and diluted net income per common share.

v) Variable Interest Entities. The Company determines whether it has relationships with entities defined as VIEs in accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 810, *Consolidation*. Under this guidance, a VIE is consolidated by the variable interest holder that is determined to be the primary beneficiary.

An entity in which the Company holds a variable interest is a VIE if any of the following conditions exist: (a) the total equity investment at risk is not sufficient to permit the entity to finance its activities without additional subordinated financial support, (b) as a group, the holders of equity investment at risk lack either the direct or indirect ability through voting rights or similar rights to make decisions about an entity's activities that most significantly impact the entity's economic performance or the obligation to absorb the expected losses or right to receive the expected residual returns, or (c) the voting rights of some investors are disproportionate to their obligation to absorb the expected losses of the entity, their rights to receive the expected residual returns of the entity, or both and substantially all of the entity's activities either involve or are conducted on behalf of an investor with disproportionately few voting rights.

The primary beneficiary is defined as the variable interest holder that is determined to have the controlling financial interest as a result of having both (a) the power to direct the activities of a VIE that most significantly impact the economic performance of the VIE and (b) the obligation to absorb losses or right to receive benefits from the VIE that could potentially be significant to the VIE.

The Company determines whether an entity is a VIE at the inception of its variable interest in the entity and upon the occurrence of certain reconsideration events. The Company continually reassesses whether it is the primary beneficiary of VIEs in which it holds a variable interest. See note 15 for further details regarding the Company's involvement with VIEs.

w) Recent Accounting Pronouncements.

Accounting Standards Adopted in 2021

The Company adopted FASB Accounting Standards Update (ASU) No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, effective January 1, 2021. Adoption of this standard did not have a material impact on the Company's financial position, results of operations or cash flows.

Accounting Standards Not Yet Adopted

In August 2018, the FASB issued ASU No. 2018-12, *Financial Services—Insurance (Topic 944): Targeted Improvements to the Accounting for Long-Duration Contracts*. The FASB subsequently issued several ASUs as amendments to ASU No. 2018-12. The standard requires insurance companies with long duration contracts to: (1) review and, if there is a change, update the assumptions used to measure expected cash flows at least annually; (2) update the discount rate assumption at each reporting date; and (3) enhance disclosures related to the liability, including the significant inputs, judgments, assumptions and methods used to measure the liability. ASU No. 2018-12 becomes effective for the Company during the first quarter of 2023 and will be applied using a modified retrospective approach that requires restatement of prior periods presented. The standard will, among other things, impact the discount rate used in estimating reserves for the Company's life and annuity reinsurance portfolio, which is in runoff. Currently, the discount rate assumption is locked-in for the life of the contracts, unless there is a loss recognition event. The Company is currently evaluating ASU No. 2018-12 to determine the impact that adopting this standard will have on its consolidated financial statements.

In October 2021, the FASB issued ASU No. 2021-08, *Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customer*s, which becomes effective for the Company during the first quarter of 2023. ASU No. 2021-08 requires contract assets and liabilities accounted for under FASB ASC 606, *Revenue from Contracts with Customers*, to be recorded at the acquisition date as if the acquirer entered into those contracts itself on the contract inception dates, rather than at fair value. At adoption, ASU No. 2021-08 will not impact the Company's financial position, results of operations or cash flows, but prospectively, the amendments will impact amounts recorded by the Company for assets acquired and liabilities assumed in conjunction with certain acquisitions.

2. Segment Reporting Disclosures

The chief operating decision maker reviews the Company's ongoing underwriting operations on a global basis in the following two segments: Insurance and Reinsurance. In determining how to allocate resources and assess the performance of the Company's underwriting results, management considers many factors, including the nature of the insurance product sold, the type of account written and the type of customer served. The Insurance segment includes all direct business and facultative placements written within the Company's underwriting operations. The Reinsurance segment includes all treaty reinsurance written within the Company's underwriting operations. All investing activities related to the Company's insurance operations are included in the Investing segment.

The chief operating decision maker reviews and assesses Markel Ventures' performance in the aggregate, as a single operating segment. The Markel Ventures segment primarily consists of controlling interests in a diverse portfolio of businesses that operate in various industries.

The Company's other operations primarily consist of the results of the Company's insurance-linked securities operations and program services business. Other operations also include results for lines of business discontinued prior to, or in conjunction with, acquisitions, including development on asbestos and environmental loss reserves and results attributable to the run-off of life and annuity reinsurance business, which are monitored separately from the Company's ongoing underwriting operations. For purposes of segment reporting, none of these other operations are considered to be reportable segments.

Segment profit for each of the Company's underwriting segments is measured by underwriting profit. The property and casualty insurance industry commonly defines underwriting profit as earned premiums net of losses and loss adjustment expenses and underwriting, acquisition and insurance expenses. Underwriting profit does not replace operating income or net income computed in accordance with U.S. GAAP as a measure of profitability. Underwriting profit or loss provides a basis for management to evaluate the Company's underwriting performance. Segment profit for the Company's underwriting segments may also include other revenues and expenses that are attributable to the Company's underwriting operations that are not captured in underwriting profit. Segment profit for the Investing segment is measured by net investment income and net investment gains. Segment profit for the Markel Ventures segment is measured by operating income.

For management reporting purposes, the Company allocates assets to its underwriting operations and to its Investing and Markel Ventures segments and certain of its other operations, including its insurance-linked securities and program services operations. Underwriting assets include assets attributed to the Company's Insurance and Reinsurance segments, discontinued underwriting lines of business, as well as assets that are not specifically allocated to the Company's other operations. Generally, the Company manages its underwriting assets in the aggregate and therefore does not allocate assets to individual underwriting segments.

a) The following tables summarize the Company's segment disclosures.

	Year Ended December 31, 2021					
(dollars in thousands)	Insurance	Reinsurance	Investing	Markel Ventures [(1)]	Other [(2)]	Consolidated
Gross premium volume	**$7,239,676**	**$1,246,143**	**$ —**	**$ —**	**$ 2,952,863**	**$11,438,682**
Net written premiums	**5,998,890**	**1,126,167**	**—**	**—**	**(5,326)**	**7,119,731**
Earned premiums	**5,465,284**	**1,042,048**	**—**	**—**	**(4,303)**	**6,503,029**
Losses and loss adjustment expenses:						
Current accident year	**(3,311,185)**	**(749,815)**	**—**	**—**	**—**	**(4,061,000)**
Prior accident years	**506,292**	**(19,928)**	**—**	**—**	**(6,569)**	**479,795**
Underwriting, acquisition and insurance expenses:						
Amortization of policy acquisition costs	**(1,153,049)**	**(266,217)**	**—**	**—**	**—**	**(1,419,266)**
Other underwriting expenses	**(810,929)**	**(61,326)**	**—**	**—**	**(2,218)**	**(874,473)**
Underwriting profit (loss)	**696,413**	**(55,238)**	**—**	**—**	**(13,090)**	**628,085**
Net investment income	**—**	**—**	**374,590**	**11**	**—**	**374,601**
Net investment gains	**—**	**—**	**1,978,534**	**—**	**—**	**1,978,534**
Products revenues	**—**	**—**	**—**	**1,712,120**	**—**	**1,712,120**
Services and other revenues	**—**	**—**	**—**	**1,931,696**	**346,445**	**2,278,141**
Products expenses	**—**	**—**	**—**	**(1,544,506)**	**—**	**(1,544,506)**
Services and other expenses	**—**	**109**	**—**	**(1,769,201)**	**(253,843)**	**(2,022,935)**
Amortization of intangible assets [(3)]	**—**	**—**	**—**	**(57,568)**	**(102,971)**	**(160,539)**
Segment profit (loss)	**$ 696,413**	**$ (55,129)**	**$ 2,353,124**	**$ 272,552**	**$ (23,459)**	**$3,243,501**
Interest expense						**(183,579)**
Net foreign exchange gains						**72,271**
Income before income taxes						**$3,132,193**
U.S. GAAP combined ratio [(4)]	**87 %**	**105 %**			**NM [(5)]**	**90 %**

(1) Products expenses and services and other expenses for the Markel Ventures segment include depreciation expense of $72.6 million for the year ended December 31, 2021.

(2) Other represents the total profit (loss) attributable to the Company's operations that are not included in a reportable segment as well as any amortization of intangible assets that is not allocated to a reportable segment. Amortization of intangible assets attributable to the Company's underwriting segments was $41.2 million for the year ended December 31, 2021, however, the Company does not allocate amortization of intangible assets between the Insurance and Reinsurance segments.

(3) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures. Amortization of intangible assets is not allocated to the Company's Insurance and Reinsurance segments.

(4) The U.S. GAAP combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

(5) NM - Ratio is not meaningful

(dollars in thousands)	Year Ended December 31, 2020 Insurance	Reinsurance	Investing	Markel Ventures [1]	Other [2]	Consolidated
Gross premium volume	$6,029,024	$1,130,923	$ —	$ —	$ 2,106,718	$9,266,665
Net written premiums	4,977,662	960,123	—	—	(5,547)	5,932,238
Earned premiums	4,688,448	929,348	—	—	(5,591)	5,612,205
Losses and loss adjustment expenses:						
Current accident year	(3,373,085)	(700,240)	—	—	—	(4,073,325)
Prior accident years	554,586	51,755	—	—	23	606,364
Underwriting, acquisition and insurance expenses:						
Amortization of policy acquisition costs	(988,668)	(240,493)	—	—	—	(1,229,161)
Other underwriting expenses	(712,280)	(74,379)	—	—	(1,807)	(788,466)
Underwriting profit (loss)	169,001	(34,009)	—	—	(7,375)	127,617
Net investment income	—	—	371,585	245	—	371,830
Net investment gains	—	—	617,979	—	—	617,979
Products revenues	—	—	—	1,439,515	—	1,439,515
Services and other revenues	—	—	—	1,355,199	338,338	1,693,537
Products expenses	—	—	—	(1,256,159)	—	(1,256,159)
Services and other expenses	—	(41,461)	—	(1,232,150)	(287,509)	(1,561,120)
Amortization of intangible assets [3]	—	—	—	(52,572)	(106,743)	(159,315)
Segment profit (loss)	$ 169,001	$ (75,470)	$ 989,564	$ 254,078	$ (63,289)	$1,273,884
Interest expense						(177,582)
Net foreign exchange losses						(95,853)
Income before income taxes						$1,000,449
U.S. GAAP combined ratio [4]	96 %	104 %			NM [5]	98 %

(1) Products expenses and services and other expenses for the Markel Ventures segment include depreciation expense of $60.3 million for the year ended December 31, 2020.

(2) Other represents the total profit (loss) attributable to the Company's operations that are not included in a reportable segment as well as any amortization of intangible assets that is not allocated to a reportable segment. Amortization of intangible assets attributable to the Company's underwriting segments was $41.9 million for the year ended December 31, 2020, however, the Company does not allocate amortization of intangible assets between the Insurance and Reinsurance segments.

(3) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures. Amortization of intangible assets is not allocated to the Company's Insurance and Reinsurance segments.

(4) The U.S. GAAP combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

(5) NM - Ratio is not meaningful

(dollars in thousands)	Year Ended December 31, 2019					
	Insurance	Reinsurance	Investing	Markel Ventures [1]	Other [2]	Consolidated
Gross premium volume	$5,320,253	$1,114,153	$ —	$ —	$ 2,345,565	$8,779,971
Net written premiums	4,444,702	964,947	—	—	2,422	5,412,071
Earned premiums	4,144,073	903,587	—	—	2,133	5,049,793
Losses and loss adjustment expenses:						
Current accident year	(2,730,971)	(695,470)	—	—	—	(3,426,441)
Prior accident years	462,124	64,768	—	—	8,359	535,251
Underwriting, acquisition and insurance expenses:						
Amortization of policy acquisition costs	(860,917)	(239,579)	—	—	—	(1,100,496)
Other underwriting expenses	(704,531)	(73,305)	—	—	239	(777,597)
Underwriting profit (loss)	309,778	(39,999)	—	—	10,731	280,510
Net investment income	—	—	451,152	736	—	451,888
Net investment gains	—	—	1,601,722	—	—	1,601,722
Products revenues	—	—	—	1,609,586	—	1,609,586
Services and other revenues	—	—	—	444,698	368,504	813,202
Products expenses	—	—	—	(1,455,245)	—	(1,455,245)
Services and other expenses	—	—	—	(389,385)	(286,294)	(675,679)
Amortization of intangible assets [3]	—	—	—	(41,973)	(106,665)	(148,638)
Segment profit (loss)	$ 309,778	$ (39,999)	$ 2,052,874	$ 168,417	$ (13,724)	$2,477,346
Interest expense						(171,687)
Net foreign exchange losses						(2,265)
Loss on early extinguishment of debt						(17,586)
Income before income taxes						$2,285,808
U.S. GAAP combined ratio [4]	93 %	104 %			NM [5]	94 %

(1) Products expenses and services and other expenses for the Markel Ventures segment include depreciation expense of $53.6 million for the year ended December 31, 2019.

(2) Other represents the total profit (loss) attributable to the Company's operations that are not included in a reportable segment as well as any amortization of intangible assets that is not allocated to a reportable segment. Amortization of intangible assets attributable to the Company's underwriting segments was $39.7 million for the year ended December 31, 2019, however, the Company does not allocate amortization of intangible assets between the Insurance and Reinsurance segments.

(3) Segment profit for the Markel Ventures segment includes amortization of intangible assets attributable to Markel Ventures. Amortization of intangible assets is not allocated to the Company's Insurance and Reinsurance segments.

(4) The U.S. GAAP combined ratio is a measure of underwriting performance and represents the relationship of incurred losses, loss adjustment expenses and underwriting, acquisition and insurance expenses to earned premiums.

(5) NM - Ratio is not meaningful

b) The following table summarizes earned premiums by major product grouping within each underwriting segment.

	Years Ended December 31,		
(dollars in thousands)	**2021**	2020	2019
Insurance segment:			
General liability	**$ 1,564,221**	$ 1,261,411	$ 1,039,617
Professional liability	**1,412,592**	1,068,365	814,587
Property	**362,637**	356,934	364,830
Marine and energy	**495,897**	458,050	391,464
Personal lines	**451,095**	405,210	378,522
Programs	**222,410**	238,909	294,418
Workers' compensation	**354,337**	338,186	349,770
Credit and surety	**161,155**	151,397	128,379
Other products	**440,940**	409,986	382,486
Total Insurance	**5,465,284**	4,688,448	4,144,073
Reinsurance segment:			
Property	**129,760**	191,968	201,486
Casualty	**635,345**	441,599	408,368
Specialty	**276,943**	295,781	293,733
Total Reinsurance	**1,042,048**	929,348	903,587
Other	**(4,303)**	(5,591)	2,133
Total earned premiums	**$ 6,503,029**	$ 5,612,205	$ 5,049,793

The Company does not manage products at this level of aggregation as it offers a diverse portfolio of products and manages these products in logical groupings within each underwriting segment.

During the years ended December 31, 2021, 2020 and 2019, 80%, 79% and 81%, respectively, of gross premiums written in the Company's underwriting segments were attributed to risks or cedents located in the United States. Substantially all of the gross premiums written in the Company's program services and other fronting businesses during 2021, 2020 and 2019 were attributed to risks located in the United States.

Most of the Company's gross written premiums are placed through insurance and reinsurance brokers. During the years ended December 31, 2021, 2020 and 2019, the Company's top three independent brokers accounted for 28%, 31% and 28% of gross premiums written in the Company's underwriting segments. During the years ended December 31, 2021, 2020 and 2019, the top three independent brokers accounted for 19%, 20% and 17%, respectively, of gross premiums written in the Insurance segment and 84%, 84% and 82%, respectively, of gross premiums written in the Reinsurance segment.

c) The following table summarizes total products revenues and services and other revenues by major product and service grouping within our Markel Ventures segment.

(dollars in thousands)	Years Ended December 31, 2021	2020	2019
Products:			
Consumer and building	**$ 911,422**	$ 814,697	$ 771,378
Transportation-related	**474,839**	351,559	507,463
Equipment manufacturing	**325,859**	273,259	330,745
Total products revenues	**1,712,120**	1,439,515	1,609,586
Services and other:			
Construction	**1,554,592**	915,696	—
Consulting	**277,902**	283,386	292,512
Other	**99,202**	156,117	152,186
Total services and other revenues	**1,931,696**	1,355,199	444,698
Total products revenues and services and other revenues	**$ 3,643,816**	$ 2,794,714	$ 2,054,284

The Company does not manage the Markel Ventures portfolio of businesses at this level of aggregation due to the distinct characteristics of each business and the autonomy with which each business operates. Management reviews and assesses the performance of the Markel Ventures businesses in the aggregate at the Markel Ventures segment level, while individual management teams are responsible for developing strategic initiatives, managing day-to-day operations and making investment and capital allocation decisions for their respective companies.

During the years ended December 31, 2021, 2020 and 2019, the portion of Markel Ventures segment revenues attributable to U.S. operations was 95%, 95%, and 90%, respectively.

d) The following table reconciles segment assets to the Company's consolidated balance sheets.

(dollars in thousands)	December 31, 2021	2020
Segment assets:		
Investing	**$ 28,277,801**	$ 24,781,946
Underwriting	**8,083,086**	7,228,297
Markel Ventures	**4,958,279**	3,636,060
Total segment assets	**41,319,166**	35,646,303
Other operations	**7,129,700**	6,063,751
Total assets	**$ 48,448,866**	$ 41,710,054

e) The following table summarizes deferred policy acquisition costs, unearned premiums and unpaid losses and loss adjustment expenses.

(dollars in thousands)	Deferred Policy Acquisition Costs	Unearned Premiums	Unpaid Losses and Loss Adjustment Expenses
December 31, 2021			
Insurance segment	**$ 549,250**	**$ 3,350,054**	**$ 10,051,994**
Reinsurance segment	**216,665**	**802,824**	**3,639,210**
Other underwriting	**—**	**—**	**271,356**
Total underwriting	**765,915**	**4,152,878**	**13,962,560**
Program services and other fronting	**—**	**1,230,741**	**4,216,334**
Total	**$ 765,915**	**$ 5,383,619**	**$ 18,178,894**
December 31, 2020			
Insurance segment	$ 454,723	$ 2,746,032	$ 9,241,952
Reinsurance segment	176,071	708,855	3,417,973
Other underwriting	—	—	276,090
Total underwriting	630,794	3,454,887	12,936,015
Program services and other fronting	—	978,358	3,286,361
Total	$ 630,794	$ 4,433,245	$ 16,222,376

3. Acquisitions

Metromont LLC

In December 2021, the Company acquired 51% of Metromont LLC (Metromont), a precast concrete manufacturer and concrete building solutions provider for commercial projects. Under the terms of the acquisition agreement, the Company has the option to acquire the remaining equity interests and the remaining equity holders have the option to sell their interests to the Company in the future. The redemption value of the remaining equity interests is generally based on Metromont's earnings in specified periods preceding the redemption date. Total consideration for the transaction was $282.3 million, all of which was cash. The purchase price was preliminarily allocated to the acquired assets and liabilities of Metromont based on estimated fair value at the acquisition date. The Company recognized goodwill of $219.3 million and intangible assets of $143.9 million. Goodwill is primarily attributable to expected future earnings and cash flow potential of Metromont, and it is expected to be deductible for income tax purposes. Additionally, the Company recognized redeemable noncontrolling interests of $269.9 million. Results attributable to Metromont will be included in the Company's Markel Ventures segment. Due to the one month lag in consolidating the results of the Company's Markel Ventures operations, the financial results for Metromont will be included in the Company's consolidated statements of income and comprehensive income beginning in January 2022.

The Company has not completed the process of determining the fair value of the assets acquired and liabilities assumed. These valuations are required to be completed within 12 months from the acquisition date. As a result, the fair value recorded for these items is a provisional estimate and is subject to adjustment. Once completed, any adjustments resulting from the valuations may impact the individual amounts recorded for assets acquired and liabilities assumed, as well as the residual goodwill.

Buckner HeavyLift Cranes

In August 2021, the Company acquired 90% of the holding company for the Buckner HeavyLift Cranes companies (Buckner), a provider of crane rental services for large commercial contractors. Under the terms of the acquisition agreement, the Company has the option to acquire the remaining equity interests and the remaining equity holders have the option to sell their interests to the Company in the future. The redemption value of the remaining equity interests is generally based on Buckner's earnings in specified periods preceding the redemption dates. Total consideration for the transaction was $237.9 million, all of which was cash. The purchase price was preliminarily allocated to the acquired assets and liabilities of Buckner based on estimated fair value at the acquisition date. The Company recognized goodwill of $74.5 million, intangible assets of $60.0 million and fixed assets of $332.6 million, primarily related to cranes. Goodwill is primarily attributable to expected future earnings and cash flow potential of Buckner, and it is not expected to be deductible for income tax purposes. Intangible assets include $50.0 million of customer relationships and $10.0 million of trade names, which are expected to be amortized over 6 years and 15 years, respectively. Additionally, the Company assumed long-term debt of $165.1 million and recognized redeemable noncontrolling interests of $26.4 million. Results attributable to Buckner are included in the Company's Markel Ventures segment.

The Company has not completed the process of determining the fair value of the assets acquired and liabilities assumed. These valuations are required to be completed within 12 months from the acquisition date. As a result, the fair value recorded for these items is a provisional estimate and is subject to adjustment. Once completed, any adjustments resulting from the valuations may impact the individual amounts recorded for assets acquired and liabilities assumed, as well as the residual goodwill.

Lansing Building Products, LLC

In April 2020, the Company acquired a controlling interest in Lansing Building Products, LLC, a supplier of exterior building products and materials to professional contractors throughout the U.S., which simultaneously acquired the distribution business of Harvey Building Products to enhance geographic reach and scale (together, Lansing), bringing the Company's ownership in Lansing to 91%. Under the terms of the acquisition agreement, the Company has the option to acquire the remaining equity interests and the remaining equity holders have the option to sell their interests to the Company in the future. The redemption value of the remaining equity interests is generally based on Lansing's earnings in specified periods preceding the redemption dates. Total consideration for both transactions was $559.2 million, all of which was cash.

The purchase price was allocated to the acquired assets and liabilities of Lansing based on estimated fair value at the acquisition date. The Company recognized goodwill of $287.1 million, which is primarily attributable to expected future earnings and cash flow potential of Lansing. The majority of the goodwill recognized is not deductible for income tax purposes. The Company also recognized other intangible assets of $210.0 million, which included $188.0 million of customer relationships and $22.0 million of trade names, which are being amortized over a weighted average period of 16 years and 14 years, respectively. The Company also recognized redeemable noncontrolling interests of $43.6 million. Results attributable to Lansing are included in the Company's Markel Ventures segment.

VSC Fire & Security, Inc.

In November 2019, the Company acquired VSC Fire & Security, Inc. (VSC), a provider of comprehensive fire protection, life safety, and low voltage solutions to retailers, commercial campuses, healthcare facilities, and government properties throughout the southeastern United States. Total consideration for the acquisition was $225.0 million, which included cash of $204.0 million. Total consideration also included the estimated fair value of contingent consideration, which the Company paid in 2021 based on VSC's earnings, as defined in the purchase agreement.

The purchase price was allocated to the acquired assets and liabilities of VSC based on estimated fair value at the acquisition date. The Company recognized goodwill of $124.9 million, which is primarily attributable to expected future earnings and cash flow potential of VSC. All of the goodwill recognized is deductible for income tax purposes. The Company also recognized other intangible assets of $64.5 million, which included $48.0 million of customer relationships, $14.0 million of trade names and $2.5 million of other intangible assets, which are being amortized over a weighted average period of 12 years, 12 years and 8 years, respectively. Results attributable to VSC are included in the Company's Markel Ventures segment.

4. Investments

a) The following tables summarize the Company's available-for-sale investments. Commercial and residential mortgage-backed securities include securities issued by U.S. government-sponsored enterprises and U.S. government agencies. The net unrealized holding gains in the tables below are presented before taxes and any reserve deficiency adjustments for life and annuity benefit reserves. See note 11.

(dollars in thousands)	December 31, 2021			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Estimated Fair Value
Fixed maturity securities:				
U.S. Treasury securities	**$ 2,489,032**	**$ 2,633**	**$ (21,471)**	**$ 2,470,194**
U.S. government-sponsored enterprises	**753,029**	**28,997**	**(6,439)**	**775,587**
Obligations of states, municipalities and political subdivisions	**4,007,211**	**266,575**	**(7,862)**	**4,265,924**
Foreign governments	**1,394,771**	**134,071**	**(9,488)**	**1,519,354**
Commercial mortgage-backed securities	**1,928,775**	**69,810**	**(8,152)**	**1,990,433**
Residential mortgage-backed securities	**699,136**	**27,084**	**(170)**	**726,050**
Asset-backed securities	**3,035**	**46**	**—**	**3,081**
Corporate bonds	**786,478**	**54,475**	**(4,271)**	**836,682**
Total fixed maturity securities	**12,061,467**	**583,691**	**(57,853)**	**12,587,305**
Short-term investments	**1,805,300**	**28**	**(5,340)**	**1,799,988**
Investments, available-for-sale	**$ 13,866,767**	**$ 583,719**	**$ (63,193)**	**$ 14,387,293**

(dollars in thousands)	December 31, 2020			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Estimated Fair Value
Fixed maturity securities:				
U.S. Treasury securities	$ 580,716	$ 9,091	$ (507)	$ 589,300
U.S. government-sponsored enterprises	500,053	51,593	(92)	551,554
Obligations of states, municipalities and political subdivisions	3,903,292	386,784	(235)	4,289,841
Foreign governments	1,352,616	275,450	(57)	1,628,009
Commercial mortgage-backed securities	1,736,257	149,359	(34)	1,885,582
Residential mortgage-backed securities	811,732	58,742	(29)	870,445
Asset-backed securities	5,812	154	—	5,966
Corporate bonds	764,783	96,257	(3)	861,037
Total fixed maturity securities	9,655,261	1,027,430	(957)	10,681,734
Short-term investments	2,030,460	3,645	(6)	2,034,099
Investments, available-for-sale	$ 11,685,721	$ 1,031,075	$ (963)	$ 12,715,833

b) The following tables summarize gross unrealized investment losses on available-for-sale investments by the length of time that securities have continuously been in an unrealized loss position.

	December 31, 2021					
	Less than 12 months		12 months or longer		Total	
(dollars in thousands)	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses
Fixed maturity securities:						
U.S. Treasury securities	**$ 2,236,637**	**$ (18,433)**	**$ 97,173**	**$ (3,038)**	**$ 2,333,810**	**$ (21,471)**
U.S. government-sponsored enterprises	**381,495**	**(5,640)**	**14,010**	**(799)**	**395,505**	**(6,439)**
Obligations of states, municipalities and political subdivisions	**393,249**	**(6,941)**	**23,589**	**(921)**	**416,838**	**(7,862)**
Foreign governments	**322,813**	**(8,596)**	**25,564**	**(892)**	**348,377**	**(9,488)**
Commercial mortgage-backed securities	**345,616**	**(7,765)**	**9,189**	**(387)**	**354,805**	**(8,152)**
Residential mortgage-backed securities	**12,828**	**(159)**	**269**	**(11)**	**13,097**	**(170)**
Corporate bonds	**193,786**	**(4,271)**	**—**	**—**	**193,786**	**(4,271)**
Total fixed maturity securities	**3,886,424**	**(51,805)**	**169,794**	**(6,048)**	**4,056,218**	**(57,853)**
Short-term investments	**228,870**	**(5,340)**	**—**	**—**	**228,870**	**(5,340)**
Total	**$ 4,115,294**	**$ (57,145)**	**$ 169,794**	**$ (6,048)**	**$ 4,285,088**	**$ (63,193)**

At December 31, 2021, the Company held 277 available-for-sale securities in an unrealized loss position with a total estimated fair value of $4.3 billion and gross unrealized losses of $63.2 million. Of these 277 securities, 13 securities had been in a continuous unrealized loss position for one year or longer and had a total estimated fair value of $169.8 million and gross unrealized losses of $6.0 million. The Company does not intend to sell or believe it will be required to sell these available-for-sale securities before recovery of their amortized cost.

	December 31, 2020					
	Less than 12 months		12 months or longer		Total	
(dollars in thousands)	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses	Estimated Fair Value	Gross Unrealized Holding Losses
Fixed maturity securities:						
U.S. Treasury securities	$ 66,220	$ (507)	$ —	$ —	$ 66,220	$ (507)
U.S. government-sponsored enterprises	14,878	(92)	—	—	14,878	(92)
Obligations of states, municipalities and political subdivisions	28,037	(223)	2,960	(12)	30,997	(235)
Foreign governments	20,790	(57)	—	—	20,790	(57)
Commercial mortgage-backed securities	13,178	(26)	2,526	(8)	15,704	(34)
Residential mortgage-backed securities	3,345	(29)	—	—	3,345	(29)
Corporate bonds	92	(3)	—	—	92	(3)
Total fixed maturity securities	146,540	(937)	5,486	(20)	152,026	(957)
Short-term investments	349,978	(6)	—	—	349,978	(6)
Total	$ 496,518	$ (943)	$ 5,486	$ (20)	$ 502,004	$ (963)

At December 31, 2020, the Company held 36 available-for-sale securities in an unrealized loss position with a total estimated fair value of $502.0 million and gross unrealized losses of $963 thousand. Of these 36 securities, six securities had been in a continuous unrealized loss position for one year or longer and had a total estimated fair value of $5.5 million and gross unrealized losses of $20 thousand.

The Company completes a detailed analysis each quarter to assess whether the decline in the fair value of any investment below its cost basis is the result of a credit loss. All available-for-sale securities with unrealized losses are reviewed. The Company considers many factors in completing its quarterly review of securities with unrealized losses for credit-related impairment to determine whether a credit loss exists, including the extent to which fair value is below cost, the implied yield to maturity, rating downgrades of the security and whether or not the issuer has failed to make scheduled principal or interest payments. The Company also takes into consideration information about the financial condition of the issuer and industry factors that could negatively impact the capital markets.

If the decline in fair value of an available-for-sale security below its amortized cost is considered to be the result of a credit loss, the Company compares the estimated present value of the cash flows expected to be collected to the amortized cost of the security. The extent to which the estimated present value of the cash flows expected to be collected is less than the amortized cost of the security represents the credit loss, which is recorded as an allowance and recognized in net income. The allowance is limited to the difference between the fair value and the amortized cost of the security. Any remaining decline in fair value represents the non-credit portion of the impairment, which is recognized in other comprehensive income. The Company did not have an allowance for credit losses as of December 31, 2021 or 2020.

Quarterly, the Company also considers whether it intends to sell an available-for-sale security or if it is more likely than not that it will be required to sell the security before recovery of its amortized cost. In these instances, a decline in fair value is recognized in net income based on the fair value of the security at the time of assessment, resulting in a new cost basis for the security.

c) The amortized cost and estimated fair value of fixed maturity securities at December 31, 2021 are shown below by contractual maturity.

(dollars in thousands)	Amortized Cost	Estimated Fair Value
Due in one year or less	**$ 582,521**	**$ 585,681**
Due after one year through five years	**3,855,478**	**3,927,196**
Due after five years through ten years	**2,839,521**	**2,947,481**
Due after ten years	**2,153,001**	**2,407,383**
	9,430,521	**9,867,741**
Commercial mortgage-backed securities	**1,928,775**	**1,990,433**
Residential mortgage-backed securities	**699,136**	**726,050**
Asset-backed securities	**3,035**	**3,081**
Total fixed maturity securities	**$ 12,061,467**	**$ 12,587,305**

Expected maturities may differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without penalties, and the holders may have the right to put the securities back to the issuer. Based on expected maturities, the estimated average duration of fixed maturity securities at December 31, 2021 was 4.7 years.

d) The following table presents the components of net investment income.

(dollars in thousands)	Years Ended December 31, 2021	2020	2019
Interest:			
Tax-exempt municipal bonds	**$ 57,460**	$ 63,718	$ 71,351
Taxable municipal bonds	**66,052**	66,713	72,818
Other taxable bonds	**159,854**	157,990	162,861
Short-term investments, including overnight deposits	**2,954**	14,321	50,425
Dividends on equity securities	**98,099**	89,303	100,222
Income (loss) from equity method investments	**8,890**	(4,430)	4,368
Other	**(1,706)**	434	5,338
	391,603	388,049	467,383
Investment expenses	**(17,002)**	(16,219)	(15,495)
Net investment income	**$ 374,601**	$ 371,830	$ 451,888

e) The following table presents the components of net investment gains and the change in net unrealized gains included in other comprehensive income (loss). Gross realized investment gains and losses on fixed maturity securities, short-term investments and other investments were not material to the consolidated financial statements and are presented on a net basis in the following table.

(dollars in thousands)	Years Ended December 31, 2021	2020	2019
Fixed maturity securities, short-term investments and other investments:			
Net realized investment gains (losses)	**$ 37,908**	$ 14,780	$ (1,482)
Equity securities:			
Change in fair value of securities sold during the period	**25,902**	(470,008)	38,291
Change in fair value of securities held at the end of the period	**1,914,724**	1,073,207	1,564,913
Total change in fair value	**1,940,626**	603,199	1,603,204
Net investment gains	**$ 1,978,534**	$ 617,979	$ 1,601,722
Change in net unrealized gains on available-for-sale investments included in other comprehensive income (loss):			
Fixed maturity securities	**$ (504,133)**	$ 507,903	$ 429,654
Short-term investments	**(8,951)**	2,344	3,626
Reserve deficiency adjustment for life and annuity benefit reserves (see note 11)	**62,988**	(68,158)	(51,390)
Net increase (decrease)	**$ (450,096)**	$ 442,089	$ 381,890

f) Total restricted assets are included on the Company's consolidated balance sheets as follows.

(dollars in thousands)	December 31, 2021	2020
Investments	**$ 4,403,414**	$ 4,217,230
Restricted cash and cash equivalents	**902,457**	874,913
Total	**$ 5,305,871**	$ 5,092,143

The following table presents the components of restricted assets.

(dollars in thousands)	December 31, 2021	2020
Assets held in trust or on deposit to support underwriting activities	**$ 4,895,627**	$ 4,704,943
Assets pledged as security for letters of credit	**410,244**	387,200
Total	**$ 5,305,871**	$ 5,092,143

g) At December 31, 2021 and 2020, investments in securities issued by the U.S. Treasury, U.S. government agencies and U.S. government-sponsored enterprises were the only investments in any one issuer that exceeded 10% of shareholders' equity.

h) The Company's equity method investments, which totaled $459.7 million and $378.0 million as of December 31, 2021 and 2020, respectively, are included in other assets on the consolidated balance sheets.

The Company's most significant equity method investment is an investment in Hagerty, Inc. (Hagerty), an automotive enthusiast brand offering integrated membership products and programs as well as a specialty insurance provider focused on the global automobile enthusiast market that became a publicly traded company in December 2021. At that time, Hagerty raised additional capital through a private offering of Class A common shares, including an additional $30.0 million investment by the Company, resulting in a dilution of the Company's ownership interest in Hagerty from 25% to 23% and a corresponding investment gain of $24.6 million on the deemed sale, which was included in net investment gains in the Company's consolidated statement of income and comprehensive income. Following these transactions, the Company's investment is comprised of Class A common shares, which are listed for trading on the New York Stock Exchange, as well as Class V common shares, associated with the Company's original investment in 2019, that have special voting rights and can be converted on a one-for-one basis into Class A common shares. The Company accounts for its investment under the equity method as it is deemed to have the ability to exercise significant influence over Hagerty's operating and financial policies through a combination of its voting interest, its right to designate a board member and business it conducts with Hagerty. As of December 31, 2021 and 2020, the carrying value of the Company's investment in Hagerty was $256.6 million and $205.6 million, respectively.

As of December 31, 2021, the estimated value of the Company's investment, based on the closing stock price of Hagerty's Class A common shares, was $1.1 billion. See note 16 for further details regarding related party transactions with Hagerty.

5. Fair Value Measurements

ASC 820, *Fair Value Measurements and Disclosures,* establishes a three-level hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). If the inputs used to measure the assets or liabilities fall within different levels of the hierarchy, the classification is based on the lowest level input that is significant to the fair value measurement of the asset or liability.

Classification of assets and liabilities within the hierarchy considers the markets in which the assets and liabilities are traded and the reliability and transparency of the assumptions used to determine fair value. The hierarchy requires the use of observable market data when available. The levels of the hierarchy are defined as follows:

- Level 1 – Inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities traded in active markets.
- Level 2 – Inputs to the valuation methodology include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the asset or liability and market-corroborated inputs.
- Level 3 – Inputs to the valuation methodology are unobservable for the asset or liability and are significant to the fair value measurement.

In accordance with ASC 820, the Company determines fair value based on the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In determining fair value, the Company uses various methods, including the market, income and cost approaches. The Company uses valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs. The following section describes the valuation methodologies used by the Company to measure assets and liabilities at fair value, including an indication of the level within the fair value hierarchy in which each asset or liability is generally classified.

Available-for-sale investments and equity securities. Available-for-sale investments and equity securities are recorded at fair value on a recurring basis. Available-for-sale investments include fixed maturity securities and short-term investments. Short-term investments include certificates of deposit, commercial paper, discount notes and treasury bills with original maturities of one year or less. Fair value is determined by the Company after considering various sources of information, including information provided by a third party pricing service. The pricing service provides prices for substantially all of the Company's fixed maturity securities and equity securities. In determining fair value, the Company generally does not adjust the prices obtained from the pricing service. The Company obtains an understanding of the pricing service's valuation methodologies and related inputs, which include, but are not limited to, reported trades, benchmark yields, issuer spreads, bids, offers, duration, credit ratings, estimated cash flows and prepayment speeds. The Company validates prices provided by the pricing service by reviewing prices from other pricing sources and analyzing pricing data in certain instances.

The Company has evaluated the various types of securities in its investment portfolio to determine an appropriate fair value hierarchy level based upon trading activity and the observability of market inputs. Level 1 investments include those traded on an active exchange, such as the New York Stock Exchange. Level 2 investments include U.S. Treasury securities, U.S. government-sponsored enterprises, municipal bonds, foreign government bonds, commercial mortgage-backed securities, residential mortgage-backed securities, asset-backed securities and corporate debt securities. Level 3 investments include the Company's investments in insurance-linked securities funds that are not traded on an active exchange and are valued using unobservable inputs.

Fair value for available-for-sale investments and equity securities is measured based upon quoted prices in active markets, if available. Due to variations in trading volumes and the lack of quoted market prices, fixed maturity securities are classified as Level 2 investments. The fair value of fixed maturity securities is normally derived through recent reported trades for identical or similar securities, making adjustments through the reporting date based upon available market observable data previously described. If there are no recent reported trades, the fair value of fixed maturity securities may be derived through the use of matrix pricing or model processes, where future cash flow expectations are developed based upon collateral performance and discounted at an estimated market rate. Significant inputs used to determine the fair value of obligations of states, municipalities and political subdivisions, corporate bonds and obligations of foreign governments include reported trades, benchmark yields, issuer spreads, bids, offers, credit information and estimated cash flows. Significant inputs used to determine the fair value of commercial mortgage-backed securities, residential mortgage-backed securities and asset-backed securities include the type of underlying assets, benchmark yields, prepayment speeds, collateral information, tranche type and volatility, estimated cash flows, credit information, default rates, recovery rates, issuer spreads and the year of issue.

Due to the significance of unobservable inputs required in measuring the fair value of the Company's investments in certain insurance-linked securities funds, these investments are classified as Level 3 within the fair value hierarchy. The fair value of the securities is derived using their reported net asset value (NAV) as the primary input, as well as other observable and unobservable inputs as deemed necessary by management. Management has obtained an understanding of the inputs, assumptions, process and controls used to determine NAV, which is calculated by an independent third party. Unobservable inputs to the NAV calculations include assumptions around premium earnings patterns and loss reserve estimates for the underlying securitized reinsurance contracts. The Company's valuation policies and procedures for Level 3 investments are determined by management. Fair value measurements are analyzed quarterly to ensure the change in fair value from prior periods is reasonable relative to management's understanding of the underlying investments, recent market trends and external market data.

Senior long-term debt and other debt. Senior long-term debt and other debt is carried at amortized cost with the estimated fair value disclosed on the consolidated balance sheets. Senior long-term debt and other debt is classified as Level 2 within the fair value hierarchy due to variations in trading volumes and the lack of quoted market prices. Fair value is generally derived through recent reported trades for identical securities, making adjustments through the reporting date, if necessary, based upon available market observable data including U.S. Treasury securities and implied credit spreads. Significant inputs used to determine the fair value of senior long-term debt and other debt include reported trades, benchmark yields, issuer spreads, bids and offers.

The following tables present the balances of assets measured at fair value on a recurring basis by level within the fair value hierarchy.

	December 31, 2021			
(dollars in thousands)	Level 1	Level 2	Level 3	Total
Assets:				
Investments:				
Fixed maturity securities, available-for-sale:				
U.S. Treasury securities	**$ —**	**$ 2,470,194**	**$ —**	**$ 2,470,194**
U.S. government-sponsored enterprises	**—**	**775,587**	**—**	**775,587**
Obligations of states, municipalities and political subdivisions	**—**	**4,265,924**	**—**	**4,265,924**
Foreign governments	**—**	**1,519,354**	**—**	**1,519,354**
Commercial mortgage-backed securities	**—**	**1,990,433**	**—**	**1,990,433**
Residential mortgage-backed securities	**—**	**726,050**	**—**	**726,050**
Asset-backed securities	**—**	**3,081**	**—**	**3,081**
Corporate bonds	**—**	**836,682**	**—**	**836,682**
Total fixed maturity securities, available-for-sale	**—**	**12,587,305**	**—**	**12,587,305**
Equity securities:				
Insurance, banks and other financial institutions	**3,307,755**	**—**	**56,472**	**3,364,227**
Industrial, consumer and all other	**5,659,700**	**—**	**—**	**5,659,700**
Total equity securities	**8,967,455**	**—**	**56,472**	**9,023,927**
Short-term investments, available-for-sale	**1,619,496**	**180,492**	**—**	**1,799,988**
Total investments	**$ 10,586,951**	**$ 12,767,797**	**$ 56,472**	**$ 23,411,220**

	December 31, 2020			
(dollars in thousands)	Level 1	Level 2	Level 3	Total
Assets:				
Investments:				
Fixed maturity securities, available-for-sale:				
U.S. Treasury securities	$ —	$ 589,300	$ —	$ 589,300
U.S. government-sponsored enterprises	—	551,554	—	551,554
Obligations of states, municipalities and political subdivisions	—	4,289,841	—	4,289,841
Foreign governments	—	1,628,009	—	1,628,009
Commercial mortgage-backed securities	—	1,885,582	—	1,885,582
Residential mortgage-backed securities	—	870,445	—	870,445
Asset-backed securities	—	5,966	—	5,966
Corporate bonds	—	861,037	—	861,037
Total fixed maturity securities, available-for-sale	—	10,681,734	—	10,681,734
Equity securities:				
Insurance, banks and other financial institutions	2,516,361	—	58,493	2,574,854
Industrial, consumer and all other	4,419,256	—	—	4,419,256
Total equity securities	6,935,617	—	58,493	6,994,110
Short-term investments, available-for-sale	1,922,459	111,640	—	2,034,099
Total investments	$ 8,858,076	$ 10,793,374	$ 58,493	$ 19,709,943

The following table summarizes changes in Level 3 investments measured at fair value on a recurring basis.

(dollars in thousands)	**2021**	2020
Equity securities, beginning of period	**$ 58,493**	$ 45,992
Purchases	**18,900**	90,000
Sales	**(15,015)**	(73,902)
Net investment losses	**(5,906)**	(3,597)
Equity securities, end of period	**$ 56,472**	$ 58,493

Level 3 investments include the Company's investment in an insurance-linked securities fund managed by Markel CATCo Investment Management Ltd. (MCIM). See note 15 for further detail regarding investments managed by MCIM. In connection with the run-off of one of the funds managed by MCIM and to facilitate the return of capital to third party investors, the Company invested $90.0 million in that fund effective January 1, 2020. This investment replaced collateral previously provided by other investors for risk exposures within the underlying reinsurance contracts in which the fund is invested related to loss events that occur after December 31, 2019 and through the expiration of the reinsurance contracts. All of these reinsurance contracts expired or were commuted in 2020, resulting in the subsequent return of a portion of the Company's capital. However, the Company continues to have exposure to adverse loss development on 2020 exposures under any unsettled contracts through its remaining investment in the fund ($40.7 million at December 31, 2021).

Level 3 investments also include the Company's investment in Lodgepine Fund Limited (Lodgepine Fund), an insurance-linked securities fund managed by Lodgepine Capital Management Limited (LCM). In connection with the launch of Lodgepine Fund on July 1, 2021, the Company invested $18.9 million in that fund. In November 2021, the Lodgepine operations were placed into run-off. As of December 31, 2021, the Company's remaining investment in Lodgepine Fund was $15.7 million.

Except as disclosed in note 3, the Company did not have any assets or liabilities measured at fair value on a non-recurring basis during the years ended December 31, 2021 and 2020.

6. Goodwill and Intangible Assets

The following table presents a rollforward of the components of goodwill by reportable segment.

(dollars in thousands)	Insurance	Reinsurance	Markel Ventures	Other[1]	Total
January 1, 2020	$ 771,447	$ 122,745	$ 606,777	$ 807,579	$ 2,308,548
Acquisitions (see note 3)	—	—	287,097	—	287,097
Foreign currency movements and other adjustments [2]	1,253	—	7,171	555	8,979
December 31, 2020 [3]	$ 772,700	$ 122,745	$ 901,045	$ 808,134	$ 2,604,624
Acquisitions (see note 3)	**—**	**—**	**293,838**	**—**	**293,838**
Foreign currency movements and other adjustments [2]	**2,012**	**—**	**1,707**	**(3,041)**	**678**
December 31, 2021 [3]	**$ 774,712**	**$ 122,745**	**$ 1,196,590**	**$ 805,093**	**$ 2,899,140**

(1) Amounts included in Other reflect the Company's operations that are not included in a reportable segment and are primarily related to the Company's program services and insurance-linked securities operations.

(2) Foreign currency movements and other adjustments includes adjustments to goodwill resulting from changes to the preliminary purchase price allocation, if any, for acquisitions that occurred in the prior year.

(3) As of December 31, 2021, goodwill was net of accumulated impairment losses of $110.6 million, of which $91.9 million was in Other and $18.7 million was in Markel Ventures. As of December 31, 2020, goodwill was net of accumulated impairment losses of $139.2 million, of which $91.9 million was in Other and $47.3 million was in Markel Ventures. The decrease in accumulated impairment losses in 2021 reflects a disposal transaction that was completed during the year.

The Company completed its annual tests for goodwill and indefinite-lived intangible asset impairment as of October 1, 2021 based upon results of operations through September 30, 2021. See note 1 for further details regarding impairment testing. Based on the results of these tests, as well as analysis of definite-lived intangible assets, the Company determined none of its goodwill or intangible assets were impaired. However, revenues within the Company's Nephila ILS operations continue to be impacted by consecutive years of elevated catastrophe losses and uncertainty resulting from COVID-19, both of which have impacted investment performance in the broader ILS market. These events, as well as recent volatility in the capital markets, also have impacted investor decisions around allocation of capital to ILS, which in turn have impacted the Company's assumptions for capital raises and redemptions within the funds managed. The Company's cash flow assumptions for the Nephila reporting unit ($413.2 million of goodwill as of December 31, 2021) reflect management's best estimate of the reporting unit's future cash flows, based on information currently available, however, these assumptions are inherently uncertain, require a high degree of estimation and judgment and are subject to change depending on the outcome of future events. Changes to these assumptions or an increase in the market-based weighted average cost of capital could have an adverse impact on the fair value of the Nephila reporting unit, which could result in an impairment of goodwill.

The following table presents a rollforward of net intangible assets by reportable segment.

(dollars in thousands)	Underwriting[1]	Markel Ventures	Other[2]	Total
January 1, 2020	$ 484,160	$ 473,122	$ 781,192	$ 1,738,474
Acquisitions (see note 3)	—	210,000	—	210,000
Amortization of intangible assets	(41,906)	(52,572)	(64,837)	(159,315)
Foreign currency movements and other adjustments [3]	385	(7,430)	604	(6,441)
December 31, 2020	$ 442,639	$ 623,120	$ 716,959	$ 1,782,718
Acquisitions (see note 3)	**—**	**203,879**	**—**	**203,879**
Amortization of intangible assets	**(41,182)**	**(57,568)**	**(61,789)**	**(160,539)**
Foreign currency movements and other adjustments [3]	**(202)**	**(3,252)**	**(118)**	**(3,572)**
December 31, 2021	**$ 401,255**	**$ 766,179**	**$ 655,052**	**$ 1,822,486**

(1) Amounts included in Underwriting reflect the intangible assets associated with the Company's underwriting segments, which are not allocated between the Insurance and Reinsurance segments.

(2) Amounts included in Other reflect the Company's operations that are not included in a reportable segment and are primarily related to the Company's program services and insurance-linked securities operations.

(3) Foreign currency movements and other adjustments include adjustments to intangible assets resulting from changes to the preliminary purchase price allocation, if any, for acquisitions that occurred in the prior year.

Amortization of intangible assets is estimated to be $183.3 million for 2022, $181.4 million for 2023, $179.5 million for 2024, $172.8 million for 2025 and $164.6 million for 2026. Indefinite-lived intangible assets were $92.4 million at both December 31, 2021 and 2020.

For the year ended December 31, 2021, the Company acquired $203.9 million of intangible assets, all of which is expected to be amortizable over a weighted average period of 8 years. These definite-lived intangible assets acquired during 2021 include customer relationships and trade names, which are expected to be amortized over a weighted average period of 6 years and 15 years, respectively. The Company has not completed the process of determining the fair value of the assets acquired and liabilities assumed for the acquisitions that were completed in 2021. As a result, the fair value recorded for acquired intangible assets and their useful lives is a provisional estimate and is subject to adjustment.

The following table presents the components of intangible assets.

(dollars in thousands)	December 31, 2021 Gross Carrying Amount	2021 Accumulated Amortization	2020 Gross Carrying Amount	2020 Accumulated Amortization
Customer relationships	**$ 1,379,739**	**$ (405,057)**	$ 1,203,128	$ (340,424)
Investment management agreements	**468,000**	**(92,478)**	468,000	(62,911)
Broker relationships	**206,855**	**(109,210)**	207,360	(99,719)
Trade names	**238,331**	**(100,023)**	231,177	(85,610)
Technology	**113,200**	**(82,845)**	113,202	(71,888)
Agent relationships	**92,000**	**(28,622)**	92,000	(22,489)
Insurance licenses	**74,333**	**—**	74,333	—
Renewal rights	**21,449**	**(21,449)**	21,449	(20,616)
Other	**145,695**	**(77,432)**	152,635	(76,909)
Total	**$ 2,739,602**	**$ (917,116)**	$ 2,563,284	$ (780,566)

7. Leases

The Company's leases primarily consist of operating leases for real estate and have remaining terms of up to 21 years. Total lease costs for operating leases were $115.4 million, $94.4 million and $62.7 million for the years ended December 31, 2021, 2020 and 2019, respectively.

The following table summarizes details for the Company's operating leases recorded on the consolidated balance sheet.

(dollars in thousands)	December 31, 2021	2020
Right-of-use lease assets	**$ 533,702**	$ 528,418
Lease liabilities	**$ 571,337**	$ 565,249
Weighted average remaining lease term	**10.8 years**	12.1 years
Weighted average discount rate	**3.0 %**	3.0 %

The following table summarizes maturities of the Company's operating lease liabilities as of December 31, 2021, which reconciles to total operating lease liabilities included in other liabilities on the Company's consolidated balance sheet.

Years Ending December 31,	(dollars in thousands)
2022	**$ 103,358**
2023	**83,753**
2024	**67,731**
2025	**56,642**
2026	**50,434**
2027 and thereafter	**311,735**
Total lease payments	**673,653**
Less imputed interest	**(102,316)**
Total operating lease liabilities	**$ 571,337**

8. Products, Services and Other Revenues

The amount of revenues from contracts with customers for the years ended December 31, 2021, 2020 and 2019 was $3.8 billion, $2.9 billion and $2.2 billion, respectively.

The following table presents revenues from contracts with customers by segment and type, all of which are included in products revenues and services and other revenues in the consolidated statements of income and comprehensive income, along with a reconciliation to total products revenues and services and other revenues.

	Years Ended December 31,								
	2021			2020			2019		
(dollars in thousands)	Markel Ventures	Other	Total	Markel Ventures	Other	Total	Markel Ventures	Other	Total
Products	**$ 1,668,448**	**$ —**	**$ 1,668,448**	$1,396,706	$ —	$ 1,396,706	$1,558,265	$ —	$ 1,558,265
Services	**1,863,706**	**134,850**	**1,998,556**	1,295,734	116,476	1,412,210	392,680	97,447	490,127
Investment management	**—**	**86,257**	**86,257**	—	117,193	117,193	—	150,864	150,864
Total revenues from contracts with customers	**3,532,154**	**221,107**	**3,753,261**	2,692,440	233,669	2,926,109	1,950,945	248,311	2,199,256
Program services and other fronting	**—**	**123,823**	**123,823**	—	102,989	102,989	—	116,376	116,376
Other	**111,662**	**1,515**	**113,177**	102,274	1,680	103,954	103,339	3,817	107,156
Total	**$ 3,643,816**	**$ 346,445**	**$ 3,990,261**	$2,794,714	$ 338,338	$ 3,133,052	$2,054,284	$ 368,504	$ 2,422,788

Receivables from contracts with customers were $626.1 million and $406.4 million as of December 31, 2021 and 2020, respectively.

9. Unpaid Losses and Loss Adjustment Expenses

a) The following table presents a reconciliation of consolidated beginning and ending reserves for losses and loss adjustment expenses.

	Years Ended December 31,		
(dollars in thousands)	**2021**	2020	2019
Net reserves for losses and loss adjustment expenses, beginning of year	**$ 10,485,717**	$ 9,475,261	$ 9,214,443
Effect of foreign currency rate changes on beginning of year balance	**(54,736)**	68,368	18,857
Effect of adoption of ASC 326, *Financial Instruments—Credit Losses*	**—**	3,849	—
Adjusted net reserves for losses and loss adjustment expenses, beginning of year	**10,430,981**	9,547,478	9,233,300
Incurred losses and loss adjustment expenses:			
Current accident year	**4,061,000**	4,073,325	3,426,441
Prior accident years	**(478,930)**	(606,414)	(535,307)
Total incurred losses and loss adjustment expenses	**3,582,070**	3,466,911	2,891,134
Payments:			
Current accident year	**637,169**	749,887	671,208
Prior accident years	**2,066,290**	1,779,980	1,979,032
Total payments	**2,703,459**	2,529,867	2,650,240
Effect of foreign currency rate changes on current year activity	**(4,253)**	1,195	1,067
Net reserves for losses and loss adjustment expenses of insurance companies sold	**(2,762)**	—	—
Net reserves for losses and loss adjustment expenses, end of year	**11,302,577**	10,485,717	9,475,261
Reinsurance recoverables on unpaid losses	**6,876,317**	5,736,659	5,253,415
Gross reserves for losses and loss adjustment expenses, end of year	**$ 18,178,894**	$ 16,222,376	$ 14,728,676

Catastrophe Losses

In 2021, current accident year losses and loss adjustment expenses included $195.0 million of net losses and loss adjustment expenses from Winter Storm Uri, European Floods and Hurricane Ida (2021 Catastrophes). These net losses and loss adjustment expenses were net of ceded losses of $221.7 million.

In 2020, current accident year losses and loss adjustment expenses included $172.2 million of net losses and loss adjustment expenses from Hurricanes Isaias, Laura, Sally, Delta and Zeta, as well as wildfires in the western U.S. and the derecho in Iowa (2020 Catastrophes). The net losses and loss adjustment expenses on the 2020 Catastrophe for the year ended December 31, 2020 were net of ceded losses of $125.7 million.

In 2019, current accident year losses and loss adjustment expenses included $114.0 million of net losses and loss adjustment expenses from Hurricane Dorian and Typhoons Faxai and Hagibis (2019 Catastrophes). The net losses and loss adjustment expenses on the 2019 Catastrophes for the year ended December 31, 2019 were net of ceded losses of $62.5 million.

COVID-19 Losses

In 2020, current accident year losses and loss adjustment expenses included $358.3 million of net losses and loss adjustment expenses attributed to the COVID-19 pandemic. These losses and loss adjustment expenses were net of ceded losses of $106.2 million. In 2021, the Company increased its estimate of net losses and loss adjustment expenses attributed to COVID-19 by $15.7 million.

Both the gross and net loss estimates for losses attributed to COVID-19 represent the Company's best estimates as of December 31, 2021 based upon information currently available. The Company's estimates for these losses and loss adjustment expenses are based on reported claims, detailed policy level reviews and reviews of in-force assumed reinsurance contracts for potential exposures, as well as analysis of ceded reinsurance contracts. These estimates also consider analysis provided by the Company's reinsurers, brokers and claims counsel and the results of recent judicial rulings. There are no recent historical events with similar characteristics to COVID-19, and therefore the Company has no past loss experience on which to base its estimates.

Significant assumptions on which the Company's estimates of reserves for COVID-19 losses and loss adjustment expenses are based include the scope of coverage provided under the Company's policies, particularly those that provide for business interruption coverage, as well as coverage provided under the Company's ceded reinsurance contracts. Due to the inherent uncertainty associated with the assumptions surrounding the COVID-19 pandemic, these assumptions are subject to a wide range of variability. Assumptions about coverage, liability and reinsurance continue to be subject to judicial review and may be subject to other government action. Additionally, there has been significant litigation involving the handling of business interruption claims associated with COVID-19, and in certain instances, assessing the validity of policy exclusions for pandemics and interpreting policy terms to determine coverage for pandemics. Such matters have been, and are expected to continue to be, subject to judicial review and also may be subject to other government action.

While the Company believes the gross and net reserves for losses and loss adjustment expenses for COVID-19 as of December 31, 2021 are adequate based on information available at this time, the Company continues to closely monitor reported claims, ceded reinsurance contract attachment, government actions, judicial decisions and may adjust the estimates of gross and net losses as new information becomes available. Such adjustments to the Company's reserves for COVID-19 losses and loss adjustment expenses may be material to the Company's results of operations, financial condition and cash flows.

b) Reserving Methodology

The Company uses a variety of techniques to establish the liabilities for unpaid losses and loss adjustment expenses based upon estimates of the ultimate amounts payable. The Company maintains reserves for specific claims incurred and reported (case reserves) and reserves for claims incurred but not reported (IBNR reserves), which include expected development on reported claims. The Company does not discount its reserves for losses and loss adjustment expenses to reflect estimated present value, except for reserves held for a runoff book of United Kingdom (U.K.) motor business. Additionally, reserves assumed in connection with an acquisition are recorded at fair value at the acquisition date. The fair value adjustment includes an adjustment to reflect the acquired reserves for losses and loss adjustment expenses at present value plus a risk premium, the net of which is amortized to losses and loss adjustment expenses within the consolidated statements of income.

As of any balance sheet date, all claims have not yet been reported, and some claims may not be reported for many years. As a result, the liability for unpaid losses and loss adjustment expenses includes significant estimates for incurred but not reported claims.

There is normally a time lag between when a loss event occurs and when it is actually reported to the Company. The actuarial methods that the Company uses to estimate losses have been designed to address the lag in loss reporting as well as the delay in obtaining information that would allow the Company to more accurately estimate future payments. There is also a time lag between cedents establishing case reserves and re-estimating their reserves and notifying the Company of the new or revised case reserves. As a result, the reporting lag is more pronounced in reinsurance contracts than in the insurance contracts due to the reliance on ceding companies to report their claims and, in some instances, loss estimates. On reinsurance transactions, the reporting lag will generally be 60 to 90 days after the end of a reporting period, but can be longer in some cases. Based on the experience of the Company's actuaries and management, loss development factors and trending techniques are selected to mitigate the difficulties caused by reporting lags. The loss development and trending factor selections are evaluated at least annually and updated using cedent specific and industry data.

IBNR reserves are based on the estimated ultimate cost of settling claims, including the effects of inflation and other social and economic factors, using past experience adjusted for current trends and any other factors that would modify past experience. IBNR reserves are generally calculated by subtracting paid losses and loss adjustment expenses and case reserves from estimated ultimate losses and loss adjustment expenses. IBNR reserves were 67% of total unpaid losses and loss adjustment expenses at December 31, 2021 compared to 66% at December 31, 2020.

In establishing liabilities for unpaid losses and loss adjustment expenses, the Company's actuaries estimate an ultimate loss ratio, by accident year or policy year, for each product line with input from underwriting and claims personnel. For product lines in which loss reserves are established on a policy year basis, the Company has developed a methodology to convert from policy year to accident year for financial reporting purposes. In estimating an ultimate loss ratio for a particular line of business, the actuaries may use one or more actuarial reserving methods and select from these a single point estimate. To varying degrees, these methods include detailed statistical analysis of past claim reporting, settlement activity, claim frequency and severity, policyholder loss experience, industry loss experience and changes in market and economic conditions, policy forms and exposures. Greater judgment may be required when new product lines are introduced or when there have been changes in claims handling practices, as the statistical data available may be insufficient. These estimates also reflect implicit and explicit assumptions regarding the potential effects of external factors, including economic and social inflation, judicial decisions, changes in law, general economic conditions and recent trends in these factors. Management believes the process of evaluating past experience, adjusted for the effects of current developments and anticipated trends, is an appropriate basis for predicting future events.

Estimates for losses from widespread catastrophic events are based on claims received to date, detailed policy and reinsurance contract level reviews, industry loss estimates and output from both industry and proprietary models, as well as analysis of our ceded reinsurance contracts. The Company also considers loss experience on historical events that may have similar characteristics to the underlying event. Due to the inherent uncertainty in estimating such losses, these estimates are subject to variability, which increases with the severity and complexity of the underlying event. As additional claims are reported and paid, and industry loss estimates are revised, the Company incorporates this new information into its analysis and adjusts its estimate of ultimate losses and loss adjustment expenses as appropriate. For example, both the gross and net losses on the 2021, 2020 and 2019 Catastrophes as of December 31, 2021 represent the Company's best estimates based upon information currently available. For the 2021 Catastrophes, these estimates are still dependent on broad assumptions about coverage, liability and reinsurance. While the Company believes the reserves for the 2021, 2020 and 2019 Catastrophes as of December 31, 2021 are adequate, it continues to closely monitor reported claims and may adjust estimates of gross and net losses as new information becomes available.

Loss reserves are established at management's best estimate, which is developed using the actuarially calculated point estimate as the starting point. The actuarial point estimate represents the actuaries' estimate of the most likely amount that will ultimately be paid to settle the losses that have occurred at a particular point in time; however, there is inherent uncertainty in the point estimate as it is the expected value in a range of possible reserve estimates. In some cases, actuarial analyses, which are based on statistical analysis, cannot fully incorporate all of the subjective factors that affect development of losses. In other cases, management's perspective of these more subjective factors may differ from the actuarial perspective. Subjective factors influencing the development of management's best estimate include: the credibility and timeliness of claims and loss information received from cedents and third parties, economic and social inflation, judicial decisions, changes in law, changes in underwriting or claims handling practices, general economic conditions, the risk of moral hazard and other current and developing trends within the insurance and reinsurance markets, including the effects of competition.

Inherent in the Company's reserving practices is the desire to establish loss reserves that are more likely redundant than deficient, and therefore, will ultimately prove to be adequate. This approach to establishing loss reserves typically results in loss reserves that exceed the calculated actuarial point estimate. However, following an acquisition of insurance operations, acquired reserves initially are recorded at fair value, and therefore the acquired loss reserves may be closer to the actuarial point estimate until the Company builds total loss reserves that are consistent with the Company's historic level of confidence. Management continually attempts to improve its loss estimation process by refining its ability to analyze loss development patterns, claim payments and other information, but uncertainty remains regarding the potential for adverse development of estimated ultimate liabilities.

The Company's ultimate liability may be greater or less than current reserves. Changes in the Company's estimated ultimate liability for loss reserves generally occur as a result of the emergence of unanticipated loss activity, the completion of specific actuarial or claims studies or changes in internal or external factors that impact the assumptions used to derive the Company's estimates. The Company closely monitors new information on reported claims and uses statistical analyses prepared by its actuaries to evaluate the adequacy of recorded reserves. Management exercises judgment when assessing the relative credibility of loss development trends.

Management currently believes the Company's gross and net reserves are adequate. However, there is no precise method for evaluating the impact of any significant factor on the adequacy of reserves, and actual results will differ from original estimates.

c) Prior Accident Year Loss Development

The following tables summarize, by segment, the product lines with the most significant changes in prior accident years loss reserves for the years ended December 31, 2021, 2020 and 2019, along with the corresponding accident years and the trends and factors that impacted management's best estimate of ultimate losses and loss adjustment expenses on underlying products in each of these product lines. The Company does not estimate losses at this level of aggregation as it offers a diverse portfolio of products and manages these products in logical groupings within each underwriting segment. As a result of the trends and factors described in the following tables, the Company's actuaries adjusted their estimates of the ultimate liability for unpaid losses and loss adjustment expenses. Additionally, for those product lines with favorable development on prior accident years loss reserves, management has now given more credibility to the favorable trends observed by the Company's actuaries and after also incorporating these favorable trends into its best estimate, reduced prior years loss reserves accordingly.

	Year Ended December 31, 2021		
(dollars in millions)	Loss Development	Accident Years with Most Significant Development	Trends and Factors Impacting Loss Estimates
Insurance segment:			
General liability	$ **(139.7)**	Several	Lower than expected frequency of claims and more favorable experience than originally anticipated across several sub-product lines
Property	**(96.5)**	2018 to 2020	Lower than expected frequency of large claims as well as favorable development on COVID-19 and catastrophe events
Workers' compensation	**(79.0)**	Several	Lower loss severity than originally anticipated
Marine and energy	**(60.0)**	2018 to 2020	Lower loss frequency and severity than originally anticipated
Professional liability	**(54.7)**	Several	Lower loss frequency and severity than originally anticipated
Other products	**(76.4)**		
Total Insurance	**(506.3)**		
Reinsurance segment:			
Property	**35.0**	2020	Adverse development on COVID-19 and catastrophe events
Professional liability	**29.2**	Several	Recognition of additional exposures on prior accident years related to net favorable premium adjustments
General liability	**(19.2)**	2011, 2012, 2017 and 2020	Favorable development on COVID-19 and catastrophe events as well as lower than expected paid losses on reported claims
Credit and surety	**(16.6)**	2020	Recognition of reduced exposures on mortgage insurance risks
Other products	**(8.5)**		
Total Reinsurance	**19.9**		
Net other prior years' development	**6.6**		
Total decrease	$ **(479.8)**		

(dollars in millions)	Year Ended December 31, 2020 Loss Development	Accident Years with Most Significant Development	Trends and Factors Impacting Loss Estimates
Insurance segment:			
General liability	$ (131.8)	Several	More favorable claims experience than originally anticipated across several sub-product lines
Professional liability	(128.9)	Several	More favorable claims experience than originally anticipated across several sub-product lines
Workers' compensation	(92.3)	2017 to 2019	Lower loss severity than originally anticipated
Marine and energy	(46.0)	2016 to 2019	Lower than expected frequency of claims
Other products	(155.6)		
Total Insurance	(554.6)		
Reinsurance segment:			
Property	(68.4)	2017 to 2019	Lower than expected severity of claims
Public entity	34.4	2016 to 2019	Higher than expected frequency and severity of claims
Professional liability	21.0	2016 to 2019	Recognition of additional exposures on prior accident years related to net favorable premium adjustments and higher than expected loss severity and claims frequency
Other products	(38.8)		
Total Reinsurance	(51.8)		
Total decrease	$ (606.4)		

(dollars in millions)	Year Ended December 31, 2019 Loss Development	Accident Years with Most Significant Development	Trends and Factors Impacting Loss Estimates
Insurance segment:			
General liability	$ (161.4)	2015 to 2018	Lower loss severity than originally anticipated
Workers' compensation	(108.4)	2016 to 2018	Lower loss severity than originally anticipated and a net decrease in open claims
Professional liability	(61.8)	2017 and 2018	Lower than expected case incurred losses and a decrease in the frequency of large losses
Marine and energy	(43.7)	2017 and 2018	Lower than expected loss severity and claims frequency
Other products	(86.8)		
Total Insurance	(462.1)		
Reinsurance segment:			
Property	(29.6)	2016 and 2017	Lower than expected incurred and paid losses on reported claims
Whole account	(26.2)	2010 and prior	Lower than expected incurred and paid losses on reported claims
Other products	(9.0)		
Total Reinsurance	(64.8)		
Net other prior years' development	(8.4)		
Total decrease	$ (535.3)		

d) Historic Loss Development

The following tables present undiscounted loss development information, by accident year, for the Company's Insurance and Reinsurance segments, including cumulative incurred and paid losses and allocated loss adjustment expenses, net of reinsurance, as well as the corresponding amount of IBNR reserves as of December 31, 2021. This level of disaggregation is consistent with how the Company analyzes loss reserves for both internal and external reporting purposes. The loss development information for the years ended December 31, 2012 through 2020 is presented as supplementary information. All amounts included in the following tables related to transactions denominated in a foreign currency have been translated into U.S. Dollars using the exchange rates in effect at December 31, 2021.

The difference between the segment loss development implied by the tables for the year ended December 31, 2021 and actual losses and loss adjustment expenses recognized on prior accident years for the Insurance and Reinsurance segments for the year ended December 31, 2021 is primarily attributed to the fact that amounts presented in these tables exclude amounts attributed to the 2011 and prior accident years. Adverse development on 2011 and prior accident years for the year ended December 31, 2021 totaled $26.8 million for the Insurance segment. Favorable development on 2011 and prior accident years for the year ended December 31, 2021 totaled $57.2 million for the Reinsurance segment. For the Reinsurance segment, this favorable development was due in part to lower than expected paid and incurred losses on reported claims within the segment's professional liability product lines across multiple accident years prior to 2012, which partially offset the overall increase in prior accident year losses and loss adjustment expenses within the Reinsurance segment's professional liability product lines driven by the recognition of additional exposures related to net favorable premium adjustments on more recent accident years. This favorable development was also due in part to lower than expected paid losses on reported claims within the segment's general liability product lines on the 2011 accident year.

The remaining difference between the segment loss development implied by the tables for the year ended December 31, 2021 and actual losses and loss adjustment expenses on prior accident years is attributed to the fact that amounts presented in these tables exclude unallocated loss adjustment expenses and exclude amounts attributable to reserve discounting and fair value adjustments recorded in conjunction with acquisitions, as well as differences in the presentation of foreign currency movements, as previously described, none of which are material to the Insurance or Reinsurance segments.

The Insurance segment table that follows also includes claim frequency information, by accident year. The Company defines a claim as a single claim incident, per policy, which may include multiple claimants and multiple coverages on a single policy. Claim counts include claims closed without a payment as well as claims where the Company is monitoring to determine if an exposure exists, even if a reserve has not been established.

All of the business contained within the Company's Reinsurance segment represents treaty business that is assumed from other insurance or reinsurance companies, for which the Company does not have access to the underlying claim counts. Further, this business includes both quota share and excess of loss treaty reinsurance, through which only a portion of each reported claim results in losses to the Company. As such, the Company has excluded claim count information from the Reinsurance segment disclosures.

In 2013, the Company completed the acquisition of Alterra Capital Holdings Limited (Alterra), the results of which are included in both of the Company's reportable segments. Ultimate incurred losses and loss adjustment expenses, net of reinsurance as of December 31, 2013 include outstanding liabilities for losses and loss adjustment expenses of Alterra as of the acquisition date, by accident year, and not in any prior periods. Pre-acquisition data is not available by segment and accident year due in part to the impact of significant intercompany reinsurance contracts. Additionally, Alterra reserves were historically determined on a policy year basis and pre-acquisition data does not exist in a format that can be used to determine accident year. Following the acquisition, ongoing business attributable to Alterra was integrated with the Company's other insurance operations and is not separately tracked.

Insurance Segment

(dollars in millions)	Ultimate Incurred Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance										Total of Incurred-but-Not-Reported Liabilities, Net of Reinsurance	Cumulative Number of Reported Claims
	Unaudited									As of December 31,		
	As of December 31,											
Accident Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**	**December 31, 2021**	
2012	$1,374.7	$1,617.5	$1,495.8	$1,434.1	$1,401.2	$1,367.6	$1,354.4	$1,334.1	$1,323.2	**$ 1,315.0**	**$ 42.1**	**130,000**
2013		1,742.5	1,702.6	1,532.2	1,468.6	1,421.7	1,375.3	1,333.2	1,314.0	**1,310.3**	**71.2**	**91,000**
2014			1,869.5	1,704.6	1,636.7	1,578.3	1,529.8	1,508.8	1,475.8	**1,478.3**	**83.9**	**85,000**
2015				1,790.9	1,718.8	1,596.4	1,541.6	1,510.9	1,478.1	**1,474.1**	**99.4**	**88,000**
2016					1,879.0	1,876.0	1,774.1	1,719.5	1,693.0	**1,685.6**	**112.7**	**100,000**
2017						2,335.2	2,204.5	2,084.0	2,044.9	**2,031.4**	**168.4**	**137,000**
2018							2,460.4	2,357.1	2,127.5	**2,089.2**	**251.8**	**189,000**
2019								2,586.3	2,339.7	**2,285.1**	**599.0**	**224,000**
2020									3,114.6	**3,005.8**	**1,404.4**	**172,000**
2021										**3,127.9**	**2,234.7**	**113,000**
Total										**$19,802.7**		

	Cumulative Paid Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance									
	Unaudited									As of December 31,
	As of December 31,									
Accident Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
2012	$ 234.2	$ 569.7	$ 783.1	$ 941.6	$1,057.6	$1,122.6	$1,156.3	$1,183.3	$1,220.6	**$ 1,225.7**
2013		272.1	572.9	781.3	952.4	1,041.1	1,103.9	1,127.8	1,162.4	**1,176.1**
2014			333.0	660.8	898.2	1,066.9	1,173.0	1,257.8	1,306.5	**1,326.5**
2015				323.2	666.9	879.0	1,043.5	1,154.7	1,246.9	**1,276.5**
2016					372.7	754.5	985.1	1,171.7	1,302.8	**1,366.4**
2017						439.3	994.4	1,290.3	1,529.9	**1,638.9**
2018							495.7	1,029.0	1,364.7	**1,516.2**
2019								529.5	1,102.2	**1,281.2**
2020									822.0	**1,165.1**
2021										**478.2**
Total										**$12,450.8**
All outstanding liabilities for unpaid losses and loss adjustment expenses before 2012, net of reinsurance										**236.1**
Total liabilities for unpaid losses and loss adjustment expenses, net of reinsurance										**$ 7,588.0**

Ultimate incurred losses and allocated loss adjustment expenses as of December 31, 2013 for the Insurance segment include $256.9 million and $313.7 million of losses and loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to Alterra. Cumulative paid losses and allocated loss adjustment expenses as of December 31, 2013 include $36.8 million and $29.5 million of paid losses and allocated loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to the acquired Alterra reserves and post-acquisition Alterra business. Cumulative paid losses and allocated loss adjustment expenses and cumulative reported claims for the 2012 and 2013 accident years exclude any claims paid or closed prior to the acquisition.

Variability in claim counts is primarily attributable to claim counts associated with a personal lines product with high claim frequency and low claim severity, which we did not write from 2014 to 2016. The related net incurred losses and allocated loss adjustment expenses are not material to the Insurance segment.

Reinsurance Segment

(dollars in millions)	Ultimate Incurred Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance										Total of Incurred-but-Not-Reported Liabilities, Net of Reinsurance
	Unaudited									As of December 31,	
	As of December 31,										
Accident Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**	**December 31, 2021**
2012	$ 73.1	$ 553.1	$ 510.3	$ 487.0	$ 458.1	$ 456.9	$ 448.7	$ 445.8	$ 441.1	**$ 453.2**	**$ 40.8**
2013		590.1	582.1	547.4	533.5	544.1	506.9	488.8	491.1	**485.9**	**40.8**
2014			575.9	560.5	532.5	579.5	557.7	533.4	517.4	**518.6**	**71.3**
2015				528.2	514.4	532.8	524.0	512.9	507.8	**495.6**	**98.6**
2016					514.0	524.4	523.6	521.9	531.5	**555.8**	**85.5**
2017						901.6	933.9	939.6	940.9	**913.1**	**138.0**
2018							753.7	784.9	778.2	**783.0**	**203.0**
2019								673.0	687.1	**700.3**	**285.5**
2020									684.8	**740.2**	**455.3**
2021										**741.1**	**560.6**
Total										**$ 6,386.8**	

	Cumulative Paid Losses and Allocated Loss Adjustment Expenses, Net of Reinsurance									
	Unaudited									As of December 31,
	As of December 31,									
Accident Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	**2021**
2012	$ 4.1	$ 64.5	$ 129.0	$ 184.2	$ 231.9	$ 264.4	$ 289.6	$ 309.6	$ 327.2	**$ 340.5**
2013		71.2	155.9	209.0	267.7	300.6	330.7	349.8	365.6	**377.5**
2014			98.1	157.2	222.9	269.8	306.9	341.1	359.5	**376.3**
2015				63.8	132.2	204.4	255.4	303.0	328.2	**348.5**
2016					79.7	169.9	240.7	297.3	349.6	**383.7**
2017						157.5	358.8	480.5	562.8	**626.7**
2018							87.3	252.6	355.5	**426.1**
2019								53.9	178.5	**276.1**
2020									94.7	**206.4**
2021										**79.8**
Total										**$ 3,441.6**
All outstanding liabilities for unpaid losses and loss adjustment expenses before 2012, net of reinsurance										**372.2**
Total liabilities for unpaid losses and loss adjustment expenses, net of reinsurance										**$ 3,317.4**

Ultimate incurred losses and allocated loss adjustment expenses as of December 31, 2013 for the Reinsurance segment include $477.7 million and $539.3 million of losses and loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to Alterra. Cumulative paid losses and allocated loss adjustment expenses as of December 31, 2013 include $52.6 million and $68.6 million of paid losses and allocated loss adjustment expenses on the 2012 and 2013 accident years, respectively, attributable to the acquired Alterra reserves and post-acquisition Alterra business. Cumulative paid losses and allocated loss adjustment expenses for the 2012 and 2013 accident years exclude any claims paid prior to the acquisition.

The following table presents supplementary information about average historical claims duration as of December 31, 2021 based on the cumulative incurred and paid losses and allocated loss adjustment expenses presented above.

Unaudited	Average Annual Percentage Payout of Incurred Losses by Age (in Years), Net of Reinsurance									
	1	2	3	4	5	6	7	8	9	10
Insurance	21.6 %	22.9 %	14.3 %	11.8 %	7.2 %	5.0 %	2.4 %	2.0 %	1.9 %	0.4 %
Reinsurance	12.1 %	16.5 %	13.2 %	10.3 %	8.4 %	6.2 %	4.3 %	3.6 %	3.2 %	2.9 %

The following table reconciles the net incurred and paid loss development tables to the liability for losses and loss adjustment expenses on the consolidated balance sheet.

(dollars in thousands)	December 31, 2021
Net outstanding liabilities	
Insurance segment	$ 7,588,025
Reinsurance segment	3,317,369
Other underwriting	120,740
Program services and other fronting	11,577
Liabilities for unpaid losses and loss adjustment expenses, net of reinsurance	11,037,711
Reinsurance recoverable on unpaid losses	
Insurance segment	2,180,653
Reinsurance segment	352,193
Other underwriting	134,155
Program services and other fronting	4,209,316
Total reinsurance recoverable on unpaid losses	6,876,317
Unallocated loss adjustment expenses	322,210
Unamortized discount, net of acquisition fair value adjustments, included in unpaid losses and loss adjustment expenses	(57,344)
	264,866
Total gross liability for unpaid losses and loss adjustment expenses	$ 18,178,894

e) The Company has exposure to asbestos and environmental (A&E) claims primarily resulting from policies written by acquired insurance operations before their acquisition by the Company. The Company's exposure to A&E claims originated from umbrella, excess and commercial general liability insurance policies and assumed reinsurance contracts that were written on an occurrence basis from the 1970s to mid-1980s. Exposure also originated from claims-made policies that were designed to cover environmental risks provided that all other terms and conditions of the policy were met. A&E claims include property damage and clean-up costs related to pollution, as well as personal injury allegedly arising from exposure to hazardous materials. Development on A&E loss reserves is monitored separately from the Company's ongoing underwriting operations and is not included in a reportable segment.

At December 31, 2021, A&E reserves were $218.6 million and $66.2 million on a gross and net basis, respectively. At December 31, 2020, A&E reserves were $219.7 million and $65.5 million on a gross and net basis, respectively.

The Company's reserves for losses and loss adjustment expenses related to A&E exposures represent management's best estimate of ultimate settlement values based on statistical analysis of these reserves by the Company's actuaries. A&E exposures are subject to significant uncertainty due to potential loss severity and frequency resulting from the uncertain and unfavorable legal climate. A&E reserves could be subject to increases in the future, however, management believes the Company's gross and net A&E reserves at December 31, 2021 are adequate.

10. Reinsurance

In reinsurance and retrocession transactions, an insurance or reinsurance company transfers, or cedes, all or part of its exposure in return for a premium. The ceding of insurance does not legally discharge the Company from its primary liability for the full amount of the policies, and the Company will be required to pay the loss and bear collection risk if the reinsurer fails to meet its obligations under the reinsurance or retrocessional agreement. A credit risk exists with ceded reinsurance to the extent that any reinsurer is unable to meet the obligations assumed under the reinsurance or retrocessional contracts. Allowances are established for credit losses expected to be recognized over the life of the reinsurance recoverables.

Within its underwriting operations, the Company uses reinsurance and retrocessional reinsurance to manage its net retention on individual risks and overall exposure to losses while providing it with the ability to offer policies with sufficient limits to meet policyholder needs.

Within the Company's underwriting operations, at December 31, 2021 and 2020, balances recoverable from the ten largest reinsurers, by group, represented 63% and 60%, respectively, of reinsurance recoverables before considering reinsurance allowances and collateral. At December 31, 2021, the largest reinsurance balance was due from RenaissanceRe and represented 10% of reinsurance recoverables before considering reinsurance allowances and collateral.

Within its program services business, the Company generally enters into 100% quota share reinsurance agreements whereby the Company cedes to the capacity provider (reinsurer) substantially all of its gross liability under all policies issued by and on behalf of the Company by the general agent. However, there are certain programs that contain limits on the reinsurers' obligations to the Company that expose the Company to underwriting risk, including loss ratio caps, exclusions of the credit risk of producers and aggregate reinsurance limits that the Company believes are unlikely to be exceeded. The Company also remains exposed to the credit risk of the reinsurer, or the risk that one of its reinsurers becomes insolvent or otherwise unable or unwilling to pay policyholder claims. This credit risk is generally mitigated by either selecting well capitalized, highly rated authorized capacity providers or requiring that the capacity provider post substantial collateral to secure the reinsured risks, which, in some instances, exceeds the related reinsurance recoverable.

Within the Company's program services business, at December 31, 2021 and 2020, balances recoverable from the ten largest reinsurers, by group, represented 68% and 70%, respectively, of reinsurance recoverables before considering reinsurance allowances and collateral. At December 31, 2021, the largest reinsurance balance was due from Lloyd's of London (Lloyd's) and represented 14% of reinsurance recoverables before considering reinsurance allowances and collateral.

The following tables summarize the effect of reinsurance and retrocessional reinsurance on premiums written and earned.

	Year Ended December 31, 2021			
(dollars in thousands)	Direct	Assumed	Ceded	Net Premiums
Underwriting:				
Written	**$ 6,863,229**	**$ 1,622,700**	**$ (1,360,763)**	**$ 7,125,166**
Earned	**$ 6,275,078**	**$ 1,482,755**	**$ (1,250,392)**	**$ 6,507,441**
Program services and other fronting:				
Written	**2,644,955**	**307,798**	**(2,958,188)**	**(5,435)**
Earned	**2,453,990**	**261,591**	**(2,719,993)**	**(4,412)**
Consolidated:				
Written	**$ 9,508,184**	**$ 1,930,498**	**$ (4,318,951)**	**$ 7,119,731**
Earned	**$ 8,729,068**	**$ 1,744,346**	**$ (3,970,385)**	**$ 6,503,029**

(dollars in thousands)	Year Ended December 31, 2020 Direct	Assumed	Ceded	Net Premiums
Underwriting:				
Written	$ 5,715,038	$ 1,444,967	$ (1,222,390)	$ 5,937,615
Earned	$ 5,357,888	$ 1,394,239	$ (1,134,501)	$ 5,617,626
Program services and other fronting:				
Written	2,038,743	67,917	(2,112,037)	(5,377)
Earned	2,084,888	74,847	(2,165,156)	(5,421)
Consolidated:				
Written	$ 7,753,781	$ 1,512,884	$ (3,334,427)	$ 5,932,238
Earned	$ 7,442,776	$ 1,469,086	$ (3,299,657)	$ 5,612,205

(dollars in thousands)	Year Ended December 31, 2019 Direct	Assumed	Ceded	Net Premiums
Underwriting:				
Written	$ 5,084,641	$ 1,349,686	$ (1,024,097)	$ 5,410,230
Earned	$ 4,767,836	$ 1,289,375	$ (1,008,970)	$ 5,048,241
Program services and other fronting:				
Written	2,256,747	88,897	(2,343,803)	1,841
Earned	2,194,671	78,778	(2,271,897)	1,552
Consolidated:				
Written	$ 7,341,388	$ 1,438,583	$ (3,367,900)	$ 5,412,071
Earned	$ 6,962,507	$ 1,368,153	$ (3,280,867)	$ 5,049,793

Substantially all of the premiums written and earned in the Company's program services and other fronting operations for the years ended December 31, 2021, 2020 and 2019 were ceded. The percentage of consolidated ceded earned premiums to gross earned premiums was 38%, 37% and 39% for the years ended December 31, 2021, 2020 and 2019, respectively. The percentage of consolidated assumed earned premiums to net earned premiums was 27%, 26% and 27% for the years ended December 31, 2021, 2020 and 2019, respectively.

Substantially all of the incurred losses and loss adjustment expenses in the Company's program services and other fronting operations, which totaled $2.5 billion and $1.6 billion for the years ended December 31, 2021 and 2020, respectively, were ceded.

The following table summarizes the effect of reinsurance and retrocessional reinsurance on losses and loss adjustment expenses in the Company's underwriting operations.

(dollars in thousands)	Years ended December 31, **2021**	2020	2019
Gross	**$ 4,477,752**	$ 4,189,948	$ 3,447,186
Ceded	**(893,230)**	(722,619)	(556,618)
Net losses and loss adjustment expenses	**$ 3,584,522**	$ 3,467,329	$ 2,890,568

11. Life and Annuity Benefits

The following table presents life and annuity benefits.

(dollars in thousands)	December 31, 2021	December 31, 2020
Life	**$ 113,797**	$ 125,856
Annuities	**753,971**	900,298
Accident and health	**35,212**	43,832
Total	**$ 902,980**	$ 1,069,986

Life and annuity benefits are compiled on a reinsurance contract-by-contract basis and are discounted using standard actuarial techniques and cash flow models. Since the development of the life and annuity reinsurance reserves is based upon cash flow projection models, the Company must make estimates and assumptions based on cedent experience, industry mortality tables, and expense and investment experience, including a provision for adverse deviation. The assumptions used to determine policy benefit reserves are generally locked-in for the life of the contract unless an unlocking event occurs. Loss recognition testing is performed to determine if existing policy benefit reserves, together with the present value of future gross premiums and expected investment income earned thereon, are adequate to cover the present value of future benefits, settlement and maintenance costs. If the existing policy benefit reserves are not sufficient, the locked-in assumptions are revised to current best estimate assumptions and a charge to earnings for life and annuity benefits is recognized at that time.

Life and annuity benefits are also adjusted to the extent unrealized gains on the investments supporting the policy benefit reserves would result in a reserve deficiency if those gains were realized. As of December 31, 2021 and 2020, the cumulative increase to life and annuity benefits attributable to unrealized gains on the underlying investment portfolio totaled $56.6 million and $119.6 million, respectively. During 2021, the Company decreased life and annuity benefits by $63.0 million, reflecting an increase in market yield on the investment securities supporting the policy benefit reserves, and increased the change in net unrealized holding gains included in other comprehensive income by a corresponding amount. During 2020 and 2019, the Company increased life and annuity benefits by $68.2 million and $51.4 million, respectively, as a result of decreases in the market yield on the investment securities supporting the policy benefit reserves, and decreased the change in net unrealized holding gains included in other comprehensive income by corresponding amounts.

Because of the assumptions and estimates used in establishing the Company's reserves for life and annuity benefit obligations and the long-term nature of these reinsurance contracts, the ultimate liability may be greater or less than the estimates. The average discount rate for the life and annuity benefit reserves was 2.3% as of December 31, 2021.

As of December 31, 2021, the largest life and annuity benefits reserve for a single contract was 33.7% of the total.

None of the annuities included in life and annuity benefits on the consolidated balance sheets are subject to discretionary withdrawal.

12. Senior Long-Term Debt and Other Debt

The following table summarizes the Company's senior long-term debt and other debt.

(dollars in thousands)	December 31, 2021	December 31, 2020
4.90% unsecured senior notes, due July 1, 2022, interest payable semi-annually, net of unamortized discount of $159 in 2021 and $432 in 2020	**$ 349,815**	$ 349,498
3.625% unsecured senior notes, due March 30, 2023, interest payable semi-annually, net of unamortized discount of $251 in 2021 and $452 in 2020	**249,702**	249,464
3.50% unsecured senior notes, due November 1, 2027, interest payable semi-annually, net of unamortized discount of $1,445 in 2021 and $1,729 in 2020	**298,136**	297,769
3.35% unsecured senior notes, due September 17, 2029, interest payable semi-annually, net of unamortized discount of $1,916 in 2021 and $2,163 in 2020	**297,700**	297,404
7.35% unsecured senior notes, due August 15, 2034, interest payable semi-annually, net of unamortized discount of $868 in 2021 and $937 in 2020	**128,932**	128,859
5.0% unsecured senior notes, due March 30, 2043, interest payable semi-annually, net of unamortized discount of $4,759 in 2021 and $4,983 in 2020	**244,978**	244,742
5.0% unsecured senior notes, due April 5, 2046, interest payable semi-annually, net of unamortized discount of $5,933 in 2021 and $6,177 in 2020	**493,310**	493,035
4.30% unsecured senior notes, due November 1, 2047, interest payable semi-annually, net of unamortized discount of $3,821 in 2021 and $3,973 in 2020	**295,512**	295,333
5.0% unsecured senior notes, due May 20, 2049, interest payable semi-annually, net of unamortized discount of $7,161 in 2021 and $7,422 in 2020	**591,621**	591,316
4.15% unsecured senior notes, due September 17, 2050, interest payable semi-annually, net of unamortized discount of $5,095 in 2021 and $5,272 in 2020	**494,138**	493,935
3.45% unsecured senior notes, due May 7, 2052, interest payable semi-annually, net of unamortized discount of $8,461 in 2021	**590,378**	—
Other debt, at various interest rates ranging from 1.3% to 8.0%	**327,044**	42,668
Senior long-term debt and other debt	**$ 4,361,266**	$ 3,484,023

In May 2021, the Company issued $600 million of 3.45% unsecured senior notes due May 2052. Net proceeds to the Company were $591.4 million, before expenses. The Company expects to use a portion of these proceeds to retire its 4.9% unsecured senior notes due July 1, 2022 ($350.0 million aggregate principal outstanding at December 31, 2021) and the remainder for general corporate purposes.

In September 2019, the Company issued $300 million of 3.35% unsecured senior notes due September 17, 2029 and $500 million of 4.15% unsecured senior notes due September 17, 2050. Net proceeds to the Company were $297.5 million and $494.5 million, respectively, before expenses. The Company used a portion of these proceeds to purchase or redeem $350.0 million of principal on its 6.25% unsecured senior notes due September 30, 2020 and $250.0 million of principal on its 5.35% unsecured senior notes due June 1, 2021 for a total purchase price of $626.7 million. In connection with the purchases and redemptions described above, the Company recognized a loss on early extinguishment of debt of $17.6 million during 2019.

The Company's 7.35% unsecured senior notes due August 15, 2034 are not redeemable. The Company's other unsecured senior notes are redeemable by the Company at any time, subject to payment of a make-whole premium to the noteholders. None of the Company's senior long-term debt is subject to any sinking fund requirements.

The Company's other debt is primarily associated with its subsidiaries and includes $287.6 million and $42.7 million associated with its Markel Ventures subsidiaries as of December 31, 2021 and 2020, respectively. The Markel Ventures debt is non-recourse to the holding company and generally is secured by the assets of those subsidiaries.

The estimated fair value of the Company's senior long-term debt and other debt was $5.0 billion and $4.4 billion at December 31, 2021 and 2020, respectively.

The following table summarizes the future principal payments due at maturity on senior long-term debt and other debt as of December 31, 2021.

Years Ending December 31,	*(dollars in thousands)*
2022	**$ 499,043**
2023	**300,441**
2024	**27,881**
2025	**24,853**
2026	**25,267**
2027 and thereafter	**3,530,486**
Total principal payments	**$ 4,407,971**
Net unamortized discount	**(39,869)**
Net unamortized debt issuance costs	**(6,836)**
Senior long-term debt and other debt	**$ 4,361,266**

The Company maintains a revolving credit facility which provides up to $300 million of capacity for future acquisitions, investments and stock repurchases, and for other working capital and general corporate purposes. At the Company's discretion, up to $200 million of the total capacity may be used for letters of credit. The Company may increase the capacity of the facility by up to $200 million subject to obtaining commitments for the increase and certain other terms and conditions. The Company pays interest on balances outstanding under the facility and a utilization fee for letters of credit issued under the facility. The Company also pays a commitment fee (0.20% at December 31, 2021) on the unused portion of the facility based on the Company's leverage ratio as calculated under the credit agreement. The credit agreement includes financial covenants that require that the Company not exceed a maximum leverage ratio and maintain a minimum amount of consolidated net worth, as well as other customary covenants and events of default. At December 31, 2021 and 2020, the Company had no borrowings outstanding under this revolving credit facility. This facility expires in April 2024.

At December 31, 2021, the Company was in compliance with all covenants contained in its revolving credit facility. To the extent that the Company is not in compliance with its covenants, the Company's access to the revolving credit facility could be restricted.

The Company paid $178.6 million, $178.2 million and $169.7 million in interest on its senior long-term debt and other debt during the years ended December 31, 2021, 2020 and 2019, respectively.

13. Income Taxes

Income before incomes taxes includes the following components, based on country of domicile.

	Years Ended December 31,		
(dollars in thousands)	**2021**	2020	2019
U.S. operations	**$ 2,263,748**	$ 1,003,714	$ 1,664,762
Foreign operations	**868,445**	(3,265)	621,046
Income before incomes taxes	**$ 3,132,193**	$ 1,000,449	$ 2,285,808

Income tax expense includes the following components, based on the taxing authority to which taxes are paid. The Company's most significant U.K. and Bermuda subsidiaries have elected to be taxed as domestic corporations for U.S. tax purposes. U.S. income tax also includes state income tax expense, which is not material to the consolidated financial statements.

(dollars in thousands)	Years Ended December 31, 2021	2020	2019
Current:			
U.S. income tax	**$ 200,742**	$ 182,046	$ 122,120
Foreign income tax	**29,811**	(10,631)	40,841
Total current tax expense	**230,553**	171,415	162,961
Deferred:			
U.S. income tax	**438,240**	(557)	328,016
Foreign income tax	**15,665**	(2,176)	(4,631)
Total deferred tax expense (benefit)	**453,905**	(2,733)	323,385
Income tax expense	**$ 684,458**	$ 168,682	$ 486,346

For foreign subsidiaries that the Company has not elected to treat as domestic corporations for U.S. tax purposes, the Company is subject to the U.S. Global Intangible Low Taxes Income (GILTI) tax. The Company recognizes the impact of the GILTI tax as incurred, and for the years ended December 31, 2021, 2020 and 2019, GILTI tax was not material to the consolidated financial statements. Additionally, U.S. income taxes have not been recognized on any undistributed earnings of our foreign subsidiaries that are considered indefinitely reinvested, the amount of which is not material to the consolidated financial statements.

The Company made net income tax payments of $204.9 million, $241.7 million and $128.2 million in 2021, 2020 and 2019, respectively. Income taxes payable were $31.3 million and $17.2 million at December 31, 2021 and 2020, respectively, and were included in other liabilities on the consolidated balance sheets. Income taxes receivable were $18.9 million and $26.1 million at December 31, 2021 and 2020, respectively, and were included in other assets on the consolidated balance sheets.

The following table presents a reconciliation of income taxes computed using the U.S. corporate tax rate of 21% to the Company's income tax expense.

(dollars in thousands)	Years Ended December 31, 2021	2020	2019
Income taxes at U.S. corporate tax rate	**$ 657,760**	$ 210,093	$ 480,020
Increase (decrease) resulting from:			
Tax-exempt investment income	**(16,109)**	(16,415)	(18,430)
Foreign operations	**14,443**	6,500	14,718
Nondeductible (deductible) losses on certain foreign investments	**1,240**	(38,666)	—
Other	**27,124**	7,170	10,038
Income tax expense	**$ 684,458**	$ 168,682	$ 486,346
Effective tax rate	**22 %**	17 %	21 %

The following table presents the components of domestic and foreign deferred tax assets and liabilities.

(dollars in thousands)	December 31, 2021	2020
Assets:		
Unpaid losses and loss adjustment expenses	**$ 187,609**	$ 192,755
Unearned premiums	**139,350**	116,714
Lease liabilities	**135,795**	135,104
Life and annuity benefits	**78,777**	108,825
Accrued incentive compensation	**50,806**	30,374
Net operating loss carryforwards	**47,510**	27,341
Tax credit carryforwards	**21,734**	15,885
Other differences between financial reporting and tax bases	**66,951**	63,840
Total gross deferred tax assets	**728,532**	690,838
Less valuation allowance	**(23,352)**	(24,396)
Total gross deferred tax assets, net of allowance	**705,180**	666,442
Liabilities:		
Investments	**1,401,871**	1,102,476
Goodwill and other intangible assets	**185,195**	173,059
Deferred policy acquisition costs	**141,523**	118,581
Right-of-use lease assets	**127,313**	127,391
Property, plant and equipment	**126,846**	38,920
Other differences between financial reporting and tax bases	**129,866**	92,150
Total gross deferred tax liabilities	**2,112,614**	1,652,577
Net deferred tax liability	**$ 1,407,434**	$ 986,135

Deferred tax assets and liabilities are recorded on the consolidated balance sheets on a net basis by taxing jurisdiction. As of December 31, 2021 and 2020, the Company's consolidated balance sheets included net deferred tax liabilities of $1.4 billion and $990.1 million, respectively, in other liabilities and net deferred tax assets of $18.4 million and $3.9 million, respectively, in other assets.

At December 31, 2021, the Company had tax credit carryforwards of $21.7 million, substantially all of which related to foreign tax credits to be used against U.S. income tax. The Company expects to utilize all tax credit carryforwards before expiration. The earliest any of these credits will expire is 2031.

At December 31, 2021, the Company also had net operating losses of $103.8 million that can be used to offset future taxable income in the U.S. The Company's ability to use the majority of these losses is not subject to expiration. At December 31, 2021, certain branch operations in Europe had net operating losses of $75.5 million that can be used to offset future income in their local jurisdictions. The Company's ability to use these losses is not subject to expiration. As discussed below, the deferred tax assets related to losses at certain of the Company's subsidiaries and branches are offset by valuation allowances.

At December 31, 2021, the Company had total gross deferred tax assets of $728.5 million. The Company has a valuation allowance of $23.4 million to offset gross deferred tax assets primarily attributable to cumulative net operating losses at certain of the Company's subsidiaries and branches. The Company believes that it is more likely than not that it will realize the remaining $705.2 million of gross deferred tax assets through generating taxable income or the reversal of existing temporary differences attributable to the gross deferred tax liabilities.

At December 31, 2021, the Company did not have any material unrecognized tax benefits. The Company does not anticipate any changes in unrecognized tax benefits during 2022 that would have a material impact on the Company's income tax provision.

The Company is subject to income tax in the U.S. and in foreign jurisdictions. The Internal Revenue Service is currently examining the Company's 2017 U.S. federal income tax return. The Company believes its income tax liabilities are adequate as of December 31, 2021, however, these liabilities could be adjusted as a result of this examination. With few exceptions, the Company is no longer subject to income tax examination by tax authorities for years ended before January 1, 2017.

14. Employee Benefit Plans

a) The Company maintains defined contribution plans for employees of its U.S. insurance operations in accordance with Section 401(k) of the U.S. Internal Revenue Code of 1986. Employees of the Company's Markel Ventures subsidiaries are provided post-retirement benefits under separate defined contribution plans. The Company also provides various defined contribution plans for employees of its international insurance and other operations, which are in line with local market terms and conditions of employment. Expenses relating to the Company's defined contribution plans were $52.7 million, $48.6 million and $42.4 million in 2021, 2020 and 2019, respectively.

b) The Terra Nova Pension Plan is a defined benefit plan that covers certain employees in the Company's international insurance operations who meet the eligibility conditions set out in the plan. The plan has been closed to new participants since 2001, and employees have not accrued benefits for future service in the plan since April 2012. The projected benefit obligations of the Terra Nova Pension Plan as of December 31, 2021 and 2020 were $210.2 million and $220.5 million, respectively, and the related fair value of plan assets was $243.6 million and $242.3 million, respectively. The corresponding net asset for pension benefits, also referred to as the funded status of the plan, at December 31, 2021 and 2020 was included in other assets on the Company's consolidated balance sheets.

15. Variable Interest Entities

MCIM, a wholly-owned consolidated subsidiary of the Company, is an insurance-linked securities investment fund manager and reinsurance manager headquartered in Bermuda. Results attributable to MCIM are not included in a reportable segment.

MCIM serves as the insurance manager for Markel CATCo Re Ltd. (Markel CATCo Re), a Bermuda Class 3 reinsurance company, and as the investment manager for Markel CATCo Reinsurance Fund Ltd., a Bermuda exempted mutual fund company comprised of multiple segregated accounts (Markel CATCo Funds). The Markel CATCo Funds issued multiple classes of nonvoting, redeemable preference shares to investors and the Markel CATCo Funds are primarily invested in nonvoting preference shares of Markel CATCo Re. The underwriting results of Markel CATCo Re are attributed to the Markel CATCo Funds through those nonvoting preference shares. Voting shares in Markel CATCo Reinsurance Fund Ltd. and Markel CATCo Re are held by MCIM.

The Markel CATCo Funds and Markel CATCo Re are considered VIEs, as their preference shareholders have no voting rights. MCIM has the power to direct the activities that most significantly impact the economic performance of these entities, but does not have a variable interest in any of the entities. With the exception of an investment in one of the Markel CATCo Funds ($40.7 million and $58.5 million at December 31, 2021 and 2020, respectively), the Company's involvement is generally limited to that of an investment or insurance manager, receiving fees that are at market and commensurate with the level of effort required. The Company is not the primary beneficiary of the Markel CATCo Funds or Markel CATCo Re and therefore does not consolidate these entities.

The Company's exposure to risk from unconsolidated Markel CATCo Funds and Markel CATCo Re is generally limited to its investment and any earned but uncollected fees. The Company has not issued any investment performance guarantees to these VIEs or their investors. As of December 31, 2021 and 2020, net assets under management of MCIM for unconsolidated VIEs were $825.3 million and $929.2 million, respectively.

In July 2019, both the Markel CATCo Funds and Markel CATCo Re were placed into run-off. See note 19 for further details regarding developments in the Company's Markel CATCo operations.

16. Related Party Transactions

The Company engages in certain related party transactions in the normal course of business at arm's length.

Insurance-Linked Securities

Within the Company's insurance-linked securities operations, the Company provides investment and insurance management services through Nephila Holdings Ltd. (together with its consolidated subsidiaries, Nephila). Nephila serves as the investment manager to several Bermuda, Ireland and U.S. based private funds (the Nephila Funds). To provide access for the Nephila Funds to the insurance, reinsurance and weather markets, Nephila also provides managing general agent services and acts as an insurance manager to certain Bermuda Class 3 and 3A reinsurance companies and Lloyd's Syndicate 2357 (Syndicate 2357) (collectively, the Nephila Reinsurers), as well as other unaffiliated insurance entities. Nephila receives management fees for investment and insurance management services provided through its insurance-linked securities operations based on the net asset value of the accounts managed, and, for certain funds, incentive fees based on the annual performance of the funds managed. Nephila also receives commissions from the Nephila Reinsurers, which are based on the direct written premiums of the insurance contracts placed. For the years ended December 31, 2021, 2020 and 2019, total revenues attributed to unconsolidated entities managed by Nephila were $141.9 million, $152.0 million and $165.5 million, respectively.

Through the Company's program services operations and other fronting arrangements, the Company has programs with Nephila through which the Company writes insurance policies that are ceded to Syndicate 2357 and certain other Nephila Reinsurers. Through these programs, Nephila utilizes certain of the Company's licensed insurance companies to write U.S. catastrophe exposed property risk that is then ceded to Nephila Reinsurers. For the years ended December 31, 2021, 2020 and 2019, gross premiums written through these programs with Nephila were $689.2 million, $412.4 million and $425.0 million, respectively, all of which were ceded to Nephila Reinsurers. As of December 31, 2021 and 2020, reinsurance recoverables on the consolidated balance sheets included $751.0 million and $353.8 million, respectively, due from Nephila Reinsurers. Under these programs, the Company bears underwriting risk for annual aggregate agreement year losses in excess of a limit the Company believes is unlikely to be exceeded. To the extent losses under these programs exceed the prescribed limits, the Company is obligated to pay such losses to the cedents without recourse to the Nephila Reinsurers. While the Company believes losses under these programs are unlikely, those losses, if incurred, could be material to the Company's consolidated results of operations and financial condition.

The Company has also entered into other assumed and ceded reinsurance transactions with the Nephila Reinsurers in the normal course of business, which are not material to the Company's consolidated financial statements.

Hagerty

The Company holds a minority ownership interest in Hagerty, which operates primarily as a managing general agent under the names Hagerty Insurance Agency and Hagerty Classic Marine Insurance Agency and also includes Hagerty Re, a Bermuda Class 3 reinsurance company. Essentia Insurance Company (Essentia), one of the Company's insurance subsidiaries, is an underwriter for Hagerty in the U.S., and a portion of this insurance is ceded to Hagerty Re. For the years ended December 31, 2021, 2020 and 2019, gross written premiums attributable to Hagerty written on Essentia were $591.2 million, $506.7 million and $422.1 million, respectively, of which $335.0 million, $239.3 million and $202.1 million, respectively, were ceded to Hagerty Re.

17. Shareholders' Equity

a) The Company has 50,000,000 shares of no par value common stock authorized. The following table presents a rollforward of changes in common shares issued and outstanding.

	Years Ended December 31,	
(in thousands)	**2021**	2020
Issued and outstanding common shares, beginning of year	**13,783**	13,794
Issuance of common shares	**18**	13
Repurchase of common shares	**(169)**	(24)
Issued and outstanding common shares, end of year	**13,632**	13,783

b) The Company also has 10,000,000 shares of no par value preferred stock authorized, of which 600,000 shares were issued and outstanding at December 31, 2021 and 2020. The outstanding preferred shares were issued in May 2020 for an aggregate initial purchase price of $600 million and net proceeds of $591.9 million. The Company has the option to redeem the preferred shares:

- in whole but not in part, at any time, within 90 days after the occurrence of a "rating agency event," at $1,020 per preferred share, plus accrued and unpaid dividends,
- in whole but not in part, at any time, within 90 days after the occurrence of a "regulatory capital event" at $1,000 per preferred share, plus accrued and unpaid dividends, or
- in whole or in part, on June 1, 2025, or every fifth anniversary of that date, at $1,000 per preferred share, plus accrued and unpaid dividends.

A "rating agency event" means that any nationally recognized statistical rating organization that publishes a rating for the Company amends, clarifies or changes the criteria it uses to assign equity credit to securities like the preferred shares, which results in shortening the length of time that the preferred shares are assigned a particular level of equity credit or in the lowering of the equity credit assigned to the preferred shares.

A "regulatory capital event" means that the Company becomes subject to capital adequacy supervision by a capital regulator and determines that, under such capital adequacy guidelines, the liquidation preference amount of the preferred shares would not qualify as capital.

The preferred shares rank senior to the Company's common stock with respect to the payment of dividends and liquidation rights. Holders of the preferred shares are entitled to receive non-cumulative cash dividends, when, as and if declared by the Board of Directors, from the original issue date, semi-annually in arrears on the first day of June and December of each year. The Company accrues dividends when they are declared by the Board of Directors. To the extent declared, these dividends will accrue, on the liquidation preference of $1,000 per share, at a fixed annual rate of 6.00% from the original issue date to June 1, 2025. After June 1, 2025, the dividend rate will reset every five years and accrue at an annual rate equal to the five-year U.S. Treasury Rate as of two business days prior to the reset date, plus 5.662%. Dividends will not be cumulative and will not be mandatory. Accordingly, if dividends are not declared for any dividend period, then dividends for that dividend period will not accrue and will not be payable.

For the years ended December 31, 2021 and 2020, the Company declared and paid dividends on preferred shares of $36.0 million, or $60.00 per share, and $18.4 million, or $30.67 per share, respectively.

c) The following table presents net income per common share and diluted net income per common share.

	Years Ended December 31,		
(in thousands, except per share amounts)	**2021**	2020	2019
Net income to common shareholders	**$ 2,389,003**	$ 797,630	$ 1,790,466
Adjustment of redeemable noncontrolling interests	**46,874**	(28,705)	1,105
Adjusted net income to common shareholders	**$ 2,435,877**	$ 768,925	$ 1,791,571
Basic common shares outstanding	**13,768**	13,811	13,861
Dilutive potential common shares from restricted stock units and restricted stock [1]	**32**	12	20
Diluted common shares outstanding	**13,800**	13,823	13,881
Basic net income per common share	**$ 176.92**	$ 55.67	$ 129.25
Diluted net income per common share [1]	**$ 176.51**	$ 55.63	$ 129.07

(1) The Company has issued grants and awards of restricted stock units to employees as performance, retention or hiring incentives, as well as awards of restricted stock to non-employee directors, under its equity incentive compensation plan. At December 31, 2021, there were 151,417 shares available for future awards under the Company's equity incentive compensation plan.

18. Other Comprehensive Income

Other comprehensive income includes changes in net unrealized gains on available-for-sale investments, which is comprised of net holding gains arising during the period, changes in unrealized other-than-temporary impairment losses, if any, and reclassification adjustments for net realized gains included in net income. Other comprehensive income also includes changes in foreign currency translation adjustments and changes in net actuarial pension loss. The following table presents the change in accumulated other comprehensive income (loss) by component, net of noncontrolling interests.

(dollars in thousands)	Unrealized Gains on Available-for-Sale Investments	Foreign Currency	Net Actuarial Pension Loss	Total
December 31, 2018	$ 48,060	$ (86,652)	$ (56,058)	$ (94,650)
Total other comprehensive income before income taxes	381,890	403	6,390	388,683
Income tax expense	(83,913)	—	(1,348)	(85,261)
Total other comprehensive income	297,977	403	5,042	303,422
December 31, 2019	$ 346,037	$ (86,249)	$ (51,016)	$ 208,772
Total other comprehensive income (loss) before income taxes	442,089	29,829	(8,849)	463,069
Income tax (expense) benefit	(89,316)	—	1,851	(87,465)
Total other comprehensive income (loss)	352,773	29,829	(6,998)	375,604
December 31, 2020	$ 698,810	$ (56,420)	$ (58,014)	$ 584,376
Total other comprehensive income (loss) before income taxes	**(450,096)**	**(2,091)**	**10,663**	**(441,524)**
Income tax (expense) benefit	**95,158**	**1,880**	**(2,273)**	**94,765**
Total other comprehensive income (loss)	**(354,938)**	**(211)**	**8,390**	**(346,759)**
December 31, 2021	**$ 343,872**	**$ (56,631)**	**$ (49,624)**	**$ 237,617**

19. Commitments and Contingencies

a) Late in the fourth quarter of 2018, the Company was contacted by and received inquiries from the U.S. Department of Justice (DOJ), U.S. Securities and Exchange Commission (SEC) and Bermuda Monetary Authority (BMA) (collectively, Governmental Authorities) into loss reserves recorded in late 2017 and early 2018 at Markel CATCo Re (the Markel CATCo Inquiries), an unconsolidated subsidiary managed by MCIM. As a result, the Company engaged outside counsel to conduct an internal review.

The internal review was completed in April 2019 and found no evidence that MCIM personnel acted in bad faith in exercising business judgment in the setting of reserves and making related disclosures during late 2017 and early 2018. The Company's outside counsel met with the Governmental Authorities and reported the findings from the internal review.

On September 27, 2021, the SEC notified the Company that it has concluded its investigation and it does not intend to recommend an enforcement action against MCIM. On September 28, 2021, the Company was advised by the DOJ that it has concluded its investigation and will not take any action against MCIM. Throughout the Markel CATCo Inquiries, the Company has proactively kept the BMA informed of the status of the SEC and DOJ investigations, including the recent conclusion of those investigations. There are currently no pending requests from the BMA, and it has been over a year since the BMA has contacted the Company in relation to the Markel CATCo Inquiries.

Matters related to or arising from the Company's Markel CATCo operations, including matters of which the Company is currently unaware, could result in additional claims, litigation, investigations, enforcement actions or proceedings. For example, on December 2, 2021, seven jointly managed investment funds that were invested in the Markel CATCo Funds filed a lawsuit in the Circuit Court of the Twentieth Judicial Circuit in and for Collier County Florida against the former Chief Executive Officer of MCIM alleging fraudulent and negligent misrepresentation. This lawsuit seeks relief of, among other things, compensatory damages in the amount of $69.0 million, plus return of invested funds and related fees and expenses, punitive damages, and other costs and interest. On December 3, 2021, another investor in the Markel CATCo Funds filed a lawsuit the United States District Court for the Middle District of Florida against the former Chief Executive Officer of MCIM alleging fraudulent and negligent misrepresentation. This lawsuit claims that the plaintiff suffered losses of "nearly $20 million" and seeks relief of, among other things, compensatory damages, attorneys' fees, punitive damages, and other costs and interest. The former CEO of MCIM has sought indemnification from the Markel CATCo entities in connection with these lawsuits. The Company believes the claims are without merit and any material loss resulting from these lawsuits to be remote.

Additional litigation may be filed by other investors in the Markel CATCo Funds. The Company also could become subject to increased regulatory scrutiny, investigations or proceedings in any of the jurisdictions where it operates. If any regulatory authority takes action against the Company or the Company enters into an agreement to settle a matter, the Company may incur sanctions or be required to pay substantial fines or implement remedial measures that could prove costly or disruptive to its businesses and operations. An unfavorable outcome could have a material adverse effect on the Company's results of operations and financial condition. Even if an unfavorable outcome does not materialize, these matters could have an adverse impact on the Company's reputation and result in substantial expense and disruption. Costs incurred in connection with Markel CATCo litigation and disputes, and related matters, are being expensed as incurred.

In addition, the Company may take steps to mitigate potential risks or liabilities related to or arising from the Company's Markel CATCo operations. For example, in September and October 2021, and in February 2022, terms were announced of a proposed transaction that would allow the acceleration of a full return of remaining capital to investors in the Markel CATCo Funds, which are currently in run-off. Under the terms of the proposed transaction, the Company would provide cash funding that is not expected to exceed $175 million and tail risk cover of $145 million to Markel CATCo Re in exchange for the Markel CATCo Funds' interests in Markel CATCo Re. The Company would also make $120 million in payments to or for the benefit of investors, which would be an expense to the Company. These amounts are estimates and are subject to change, primarily based on the NAV of the Markel CATCo Funds at the closing of the transaction, the amount of capital available for distribution from the Markel CATCo Funds at the closing of the transaction and the ultimate level of tail risk cover provided by the Company. As a result of the transaction, the Company would have exposure to adverse loss development on reinsurance contracts written by Markel CATCo Re for loss events that occurred in 2020 and prior years. However, subsequent favorable development on loss reserves held by Markel CATCo Re, less estimated transaction costs and operating expenses, would be distributed to investors. As a condition to this transaction, all investors in the Markel CATCo Funds, the Markel CATCo Group Companies (MCIM, the Markel CATCo Funds and Markel CATCo Re), Markel Corporation and each of their related parties, among others, would grant mutual releases of all claims related to the transaction, the Markel CATCo Group Companies' businesses and the investors' investments in the Funds. Over 99% of investors in the Markel CATCo Funds have undertaken to support the proposed transaction, but it is still subject to formal investor approval and is also subject to court approvals in both Bermuda and the United States. If all required approvals are obtained, the transaction is expected to close in the first half of 2022. In connection with the transaction, the Markel CATCo Group Companies entered into provisional liquidation in Bermuda on October 1, 2021. On November 4, 2021, the provisional liquidation was recognized in the United States under Chapter 15 of the United States Bankruptcy Code. Other steps the Company may take to mitigate potential risks or liabilities related to or arising from the Company's Markel CATCo operations could have a material impact on the Company's results of operations or financial condition.

b) Contingencies arise in the normal course of the Company's operations and are not expected to have a material impact on the Company's financial condition or results of operations.

20. Statutory Financial Information

a) The following table summarizes statutory capital and surplus for the Company's insurance subsidiaries.

(dollars in thousands)	December 31, 2021	December 31, 2020
United States	**$ 4,493,310**	$ 3,967,112
United Kingdom	**$ 736,575**	$ 635,382
Bermuda	**$ 2,106,606**	$ 1,905,070
Other	**$ 95,693**	$ 103,828

As of December 31, 2021, the Company's actual statutory capital and surplus significantly exceeded the regulatory requirements. As a result, the amount of statutory capital and surplus necessary to satisfy regulatory requirements is not significant in relation to actual statutory capital and surplus.

The following table summarizes statutory net income (loss) for the Company's insurance subsidiaries.

(dollars in thousands)	Years Ended December 31, 2021	2020	2019
United States	**$ 705,908**	$ 616,135	$ 419,396
United Kingdom	**$ 56,546**	$ (25,776)	$ 108,759
Bermuda	**$ 556,275**	$ 228,740	$ 447,479
Other	**$ 1,780**	$ (4,628)	$ (4,499)

The Solvency II Directive (Solvency II) that governs the calculation of statutory capital and surplus for the Company's U.K. and German insurance subsidiaries does not provide requirements for the calculation of net income. Amounts presented in the table above for the Company's U.K. and German insurance subsidiaries, in which the amount attributable to Germany is included in Other, have been calculated in accordance with U.K. and German GAAP, respectively.

United States

The laws of the domicile states of the Company's U.S. insurance subsidiaries govern the amount of dividends that may be paid to the Company. Generally, statutes in the domicile states of the Company's U.S. insurance subsidiaries require prior approval for payment of extraordinary, as opposed to ordinary, dividends. As of December 31, 2021, the Company's U.S. insurance subsidiaries could pay up to $740.8 million to the holding company during the following 12 months under the ordinary dividend regulations.

In converting from U.S. statutory accounting principles to U.S. GAAP, typical adjustments include deferral of policy acquisition costs, differences in the calculation of deferred income taxes and the inclusion of net unrealized gains or losses relating to fixed maturity securities in shareholders' equity. The Company does not use any permitted statutory accounting practices that are different from prescribed statutory accounting practices which impact statutory capital and surplus.

United Kingdom

The Company's U.K. insurance subsidiary, Markel International Insurance Company Limited (MIICL), and its Lloyd's managing agent, Markel Syndicate Management Limited (MSM), are authorized by the Prudential Regulation Authority (PRA) and regulated by both the PRA and the Financial Conduct Authority (FCA). The PRA oversees compliance with established periodic auditing and reporting requirements, minimum solvency margins and individual capital assessment requirements under Solvency II and imposes dividend restrictions, while both the PRA and the FCA oversee compliance with risk assessment reviews and various other requirements. MIICL is required to give advance notice to the PRA for any transaction or proposed transaction with a connected or related person. MSM is required to satisfy the solvency requirements of Lloyd's. In addition, the Company's U.K. subsidiaries must comply with the United Kingdom Companies Act of 2006, which provides that dividends may only be paid out of profits available for that purpose. Earnings of the Company's U.K. insurance subsidiaries are available for distribution to the holding company to the extent not otherwise restricted.

Bermuda

The Company's Bermuda insurance subsidiary, Markel Bermuda Limited (MBL), is subject to enhanced capital requirements in addition to minimum solvency and liquidity requirements. The enhanced capital requirement is determined by reference to a risk-based capital model that determines a control threshold for statutory capital and surplus by taking into account the risk characteristics of different aspects of the insurer's business. At December 31, 2021, MBL satisfied both the enhanced capital requirements and the minimum solvency and liquidity requirements.

Under the Bermuda Insurance Act, MBL is prohibited from paying or declaring dividends during a fiscal year if it is in breach of its enhanced capital requirement, solvency margin or minimum liquidity ratio or if the declaration or payment of the dividend would cause a breach of those requirements. If an insurer fails to meet its solvency margin or minimum liquidity ratio on the last day of any financial year, it is prohibited from declaring or paying any dividends during the next financial year without the approval of the BMA. Further, MBL is prohibited from declaring or paying, in any financial year, dividends of more than 25% of its total statutory capital and surplus as set forth in its previous year's statutory balance sheet unless at least seven days before payment of those dividends it files with the BMA an affidavit stating that it will continue to meet its solvency margin and minimum liquidity ratio. MBL must obtain the BMA's prior approval for a reduction by 15% or more of the total statutory capital as set forth in its previous year's financial statements. In addition, as a long-term insurer, MBL may not declare or pay a dividend to any person other than a policyholder unless the value of the assets in its long-term business fund, as certified by MBL's approved actuary, exceeds the liabilities of its long-term business. The amount of the dividend cannot exceed the aggregate of that excess and any other funds legally available for the payment of the dividend. As of December 31, 2021, MBL could pay up to $526.7 million to the holding company during the following 12 months without making any additional filings with the BMA.

Other Jurisdictions

The Company's other foreign subsidiaries, including its German insurance subsidiary, are subject to capital and solvency requirements in their respective jurisdictions of domicile.

b) Lloyd's sets the corporate members' required capital annually based on each syndicates' business plans, rating environment, reserving environment and input arising from Lloyd's discussions with, among others, regulatory and rating agencies. Such required capital is referred to as Funds at Lloyd's (FAL) and comprises cash and investments. The amount of cash and investments held as FAL as of December 31, 2021 was $1.0 billion. Of this amount, $329.9 million was provided by the holding company and is not available for general use by the Company. The remaining amount, provided by the Company's insurance subsidiaries, is not available for distribution to the holding company. The Company's corporate member may also be required to maintain funds under the control of Lloyd's in excess of its capital requirements and such funds also may not be available for distribution to the holding company.

21. Markel Corporation (Parent Company Only) Financial Information

The following parent company only condensed financial information reflects the financial position, results of operations and cash flows of Markel Corporation.

CONDENSED BALANCE SHEETS

	December 31,	
	2021	2020
	(dollars in thousands)	
ASSETS		
Investments, at estimated fair value:		
Fixed maturity securities, available-for-sale (amortized cost of $210,111 in 2021 and $248,206 in 2020)	**$ 228,705**	$ 274,297
Equity securities (cost of $1,771,597 in 2021 and $1,307,230 in 2020)	**2,784,189**	1,817,068
Short-term investments, available-for-sale (estimated fair value approximates cost)	**1,474,997**	1,249,970
Total Investments	**4,487,891**	3,341,335
Cash and cash equivalents	**763,985**	657,539
Restricted cash and cash equivalents	**15,485**	65,971
Receivables	**18,770**	14,737
Investments in consolidated subsidiaries	**13,276,669**	12,259,007
Notes receivable from subsidiaries	**135,756**	85,756
Income taxes receivable	**48,344**	37,505
Other assets	**408,161**	364,403
Total Assets	**$ 19,155,061**	$ 16,826,253
LIABILITIES AND SHAREHOLDERS' EQUITY		
Senior long-term debt	**$ 4,034,223**	$ 3,441,355
Notes payable to subsidiaries	**32,753**	317,753
Net deferred tax liability	**295,289**	170,270
Other liabilities	**97,748**	97,086
Total Liabilities	**4,460,013**	4,026,464
Shareholders' equity:		
Preferred stock	**591,891**	591,891
Common stock	**3,441,079**	3,428,340
Retained earnings	**10,424,461**	8,195,182
Accumulated other comprehensive income	**237,617**	584,376
Total Shareholders' Equity	**14,695,048**	12,799,789
Total Liabilities and Shareholders' Equity	**$ 19,155,061**	$ 16,826,253

CONDENSED STATEMENTS OF INCOME AND COMPREHENSIVE INCOME

	Years Ended December 31,		
	2021	2020	2019
	(dollars in thousands)		
REVENUES			
Net investment income	**$ 20,177**	$ 18,026	$ 48,845
Dividends on common stock of consolidated subsidiaries	**1,081,988**	466,244	863,335
Net investment gains:			
Net realized investment gains	**23,652**	27,774	3,848
Change in fair value of equity securities	**514,727**	82,389	293,296
Net investment gains	**538,379**	110,163	297,144
Total Revenues	**1,640,544**	594,433	1,209,324
EXPENSES			
Services and other expenses	**22,379**	1,025	6,436
Interest expense	**185,568**	187,562	219,082
Net foreign exchange losses (gains)	**(6,236)**	6,823	3,973
Loss on early extinguishment of debt	**—**	—	13,656
Total Expenses	**201,711**	195,410	243,147
Income Before Equity in Undistributed Earnings of Consolidated Subsidiaries and Income Taxes	**1,438,833**	399,023	966,177
Equity in undistributed earnings of consolidated subsidiaries	**1,081,976**	400,289	851,337
Income tax (expense) benefit	**(95,806)**	16,718	(27,048)
Net Income to Shareholders	**2,425,003**	816,030	1,790,466
Preferred stock dividends	**(36,000)**	(18,400)	—
Net Income to Common Shareholders	**$ 2,389,003**	$ 797,630	$ 1,790,466
OTHER COMPREHENSIVE INCOME (LOSS) TO SHAREHOLDERS			
Change in net unrealized gains on available-for-sale investments, net of taxes:			
Net holding gains (losses) arising during the period	**$ (5,885)**	$ 21,482	$ 14,016
Consolidated subsidiaries' net holding gains (losses) arising during the period	**(342,430)**	334,677	285,109
Reclassification adjustments for net gains included in net income to shareholders	**(34)**	(14,937)	(4,591)
Consolidated subsidiaries' reclassification adjustments for net gains (losses) included in net income to shareholders	**(6,589)**	11,551	3,443
Change in net unrealized gains on available-for-sale investments, net of taxes	**(354,938)**	352,773	297,977
Consolidated subsidiaries' change in foreign currency translation adjustments, net of taxes	**(211)**	29,829	403
Consolidated subsidiaries' change in net actuarial pension loss, net of taxes	**8,390**	(6,998)	5,042
Total Other Comprehensive Income (Loss) to Shareholders	**(346,759)**	375,604	303,422
Comprehensive Income to Shareholders	**$ 2,078,244**	$ 1,191,634	$ 2,093,888

CONDENSED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2021	2020	2019
	(dollars in thousands)		
OPERATING ACTIVITIES			
Net income to shareholders	**$ 2,425,003**	$ 816,030	$ 1,790,466
Adjustments to reconcile net income to shareholders to net cash provided by operating activities	**(2,213,261)**	(708,162)	(1,530,940)
Net Cash Provided By Operating Activities	**211,742**	107,868	259,526
INVESTING ACTIVITIES			
Proceeds from sales of fixed maturity securities and equity securities	**105,700**	557,088	326,564
Proceeds from maturities, calls and prepayments of fixed maturity securities	**37,607**	39,051	41,673
Cost of fixed maturity securities and equity securities purchased	**(73,644)**	(90,459)	(82,332)
Net change in short-term investments	**(224,646)**	(522,666)	(236,251)
Return of capital from subsidiaries	**17,193**	15,164	14,865
Decrease (increase) in notes receivable due from subsidiaries	**(50,000)**	(25,000)	100,000
Capital contributions to subsidiaries	**(271,729)**	(605,426)	(413,148)
Cost of equity method investments	**(38,550)**	(4,917)	(213,100)
Other	**(5,368)**	17,984	6,719
Net Cash Used By Investing Activities	**(503,437)**	(619,181)	(455,010)
FINANCING ACTIVITIES			
Additions to senior long-term debt	**591,354**	—	1,384,182
Decrease in notes payable to subsidiaries	**—**	(50,000)	(99,839)
Repayment of senior long-term debt	**—**	—	(484,811)
Premiums and fees related to early extinguishment of debt	**—**	—	(13,248)
Repurchases of common stock	**(206,518)**	(26,832)	(116,307)
Issuance of preferred stock, net	**—**	591,891	—
Dividends paid on preferred stock	**(36,000)**	(18,400)	—
Other	**(1,181)**	15	(2,564)
Net Cash Provided By Financing Activities	**347,655**	496,674	667,413
Increase (decrease) in cash, cash equivalents, restricted cash and restricted cash equivalents	**55,960**	(14,639)	471,929
Cash, cash equivalents, restricted cash and restricted cash equivalents at beginning of year	**723,510**	738,149	266,220
CASH, CASH EQUIVALENTS, RESTRICTED CASH AND RESTRICTED CASH EQUIVALENTS AT END OF YEAR	**$ 779,470**	$ 723,510	$ 738,149

Item 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

As of December 31, 2021, we evaluated the effectiveness of the design and operation of our disclosure controls and procedures (Disclosure Controls), as defined under Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934 (Exchange Act). This evaluation was conducted under the supervision and with the participation of our management, including the Co-Principal Executive Officers (Co-PEOs) and the Principal Financial Officer (PFO).

Based upon this evaluation, the Co-PEOs and PFO concluded that effective Disclosure Controls were in place to ensure that the information required to be disclosed in reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms.

Management's Report On Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

Management does not expect that its internal control over financial reporting will prevent all error and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Internal control over financial reporting is a process that involves human diligence and compliance and is subject to lapses in judgment and breakdowns resulting from human failures. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. The design of any system of internal control over financial reporting also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Under the supervision and with the participation of management, including the Co-PEOs and the PFO, we evaluated the effectiveness of our internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our evaluation, we have concluded that we maintained effective internal control over financial reporting as of December 31, 2021.

KPMG LLP, our independent registered public accounting firm, has issued an attestation report on the effectiveness of our internal control over financial reporting as of December 31, 2021, which is included herein.

Changes in Internal Control Over Financial Reporting

In April 2020, we acquired Lansing Building Products, LLC (Lansing) whose assets and revenues represented 2% of our consolidated assets and 7% of our consolidated operating revenues as of and for the year ended December 31, 2020. We excluded Lansing from our evaluation of internal control over financial reporting as of December 31, 2020. During 2021, we incorporated Lansing into our evaluation of internal control over financial reporting.

There were no changes in our internal control over financial reporting during the fourth quarter of 2021 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors
Markel Corporation:

Opinion on Internal Control Over Financial Reporting

We have audited Markel Corporation and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2021 and 2020, the related consolidated statements of income and comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2021, and the related notes (collectively, the consolidated financial statements), and our report dated February 18, 2022 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG LLP

Richmond, Virginia
February 18, 2022

PART III

Except for the information set forth under "Information About Our Executive Officers" in Part I, the information required by Part III (Items 10, 11, 12, 13 and 14) will be incorporated by reference from the Company's Proxy Statement for its 2022 Annual Meeting of Shareholders pursuant to instructions G(1) and G(3) of the General Instructions to Form 10-K.

Our independent registered public accounting firm is KPMG LLP, Richmond, VA, Auditor Firm ID: 185.

PART IV

Item 15. EXHIBIT AND FINANCIAL STATEMENT SCHEDULES

(a) 1. Financial Statements

The following consolidated financial statements, as well as the Report of Independent Registered Public Accounting Firm, are included in Item 8.

	Page Number
Report of Independent Registered Public Accounting Firm	10K - 68
Consolidated Balance Sheets—December 31, 2021 and 2020	10K - 70
Consolidated Statements of Income and Comprehensive Income—Years Ended December 31, 2021, 2020 and 2019	10K - 71
Consolidated Statements of Changes in Equity—Years Ended December 31, 2021, 2020 and 2019	10K - 72
Consolidated Statements of Cash Flows—Years Ended December 31, 2021, 2020 and 2019	10K - 73
Notes to Consolidated Financial Statements	10K - 74

Other schedules are omitted because they are not required, information therein is not applicable, or is reflected in the consolidated financial statements or notes to consolidated financial statements.

(b) Exhibits

See Exhibit Index.

EXHIBIT INDEX

Exhibit No.	Document Description
3.1(a)	Amended and Restated Articles of Incorporation (incorporated by reference from Exhibit 3.1 in the Registrant's report on Form 8-K filed with the Commission May 13, 2011)
3.1(b)	Articles of Amendment to the Amended and Restated Articles of Incorporation (incorporated by reference from Exhibit 3.1 in the Registrant's report on Form 8-K filed with the Commission May 27, 2020)
3.2	Bylaws, as amended and restated May 11, 2020 (incorporated by reference from Exhibit 3.2 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2020)
4.1	Description of Registrant's Securities (incorporated by reference from Exhibit 4.1 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2020)
4.2(a)	Indenture dated as of June 5, 2001 between Markel Corporation and The Chase Manhattan Bank, as Trustee (incorporated by reference from Exhibit 4.1 in the Registrant's report on Form 8-K filed with the Commission June 5, 2001)
4.2(b)	Form of Third Supplemental Indenture dated as of August 13, 2004 between Markel Corporation and JPMorgan Chase Bank (formerly known as The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission August 11, 2004)
4.2(c)	Form of Seventh Supplemental Indenture dated as of July 2, 2012 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission June 29, 2012)
4.2(d)	Form of Eighth Supplemental Indenture dated as of March 8, 2013 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission March 7, 2013)
4.2(e)	Form of Ninth Supplemental Indenture dated as of March 8, 2013 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.3 in the Registrant's report on Form 8-K filed with the Commission March 7, 2013)
4.2(f)	Form of Tenth Supplemental Indenture dated as of April 5, 2016 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission March 31, 2016)
4.2(g)	Eleventh Supplemental Indenture dated as of November 2, 2017 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission November 2, 2017)
4.2(h)	Twelfth Supplemental Indenture dated as of November 2, 2017 between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.3 in the Registrant's report on Form 8-K filed with the Commission November 2, 2017)
4.2(i)	Thirteenth Supplemental Indenture, dated as of May 20, 2019, between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission May 20, 2019)
4.2(j)	Fourteenth Supplemental Indenture, dated as of September 17, 2019, between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission September 17, 2019)
4.2(k)	Fifteenth Supplemental Indenture, dated as of September 17, 2019, between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.3 in the Registrant's report on Form 8-K filed with the Commission September 17, 2019)
4.2(l)	Sixteenth Supplemental Indenture, dated as of May 7, 2021, between Markel Corporation and The Bank of New York Mellon (as successor to The Chase Manhattan Bank), as Trustee, including form of the securities as Exhibit A (incorporated by reference from Exhibit 4.2 in the Registrant's report on Form 8-K filed with the Commission May 7, 2021)

The registrant hereby agrees to furnish to the Securities and Exchange Commission, upon request, a copy of all other instruments defining the rights of holders of long-term debt of the registrant and its subsidiaries.

Exhibit No.	Document Description
10.1(a)	Credit Agreement, dated as of April 10, 2019, among Markel Corporation, Markel Bermuda Limited, Markel Global Reinsurance Company, Alterra Finance LLC, the lenders party from time to time thereto, and Wells Fargo Bank, National Association, as administrative agent (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission April 12, 2019)
10.1(b)	First Amendment to Credit Agreement, dated as of December 13, 2019, among Markel Corporation, Markel Bermuda Limited, Markel Global Reinsurance Company, Alterra Finance LLC and Wells Fargo National Association (incorporated by reference from Exhibit 10.1(b) in the Registrant's Report on Form 10-K filed with the Commission for the year ended December 31, 2019)
10.2	Form of Amended and Restated Employment Agreement with Anthony F. Markel (incorporated by reference from Exhibit 10.4 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2008)*
10.3(a)	Amended and Restated Employment Agreement with Steven A. Markel (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended September 30, 2015)*
10.3(b)	Amendment dated as of December 31, 2017 to Amended and Restated Employment Agreement with Steven A. Markel (incorporated by reference from Exhibit 10.6 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2017)*
10.4	Form of Amended and Restated Executive Employment Agreement with Thomas S. Gayner and Richard R. Whitt, III* **
10.5	Form of Amended and Restated Executive Employment Agreement with Robert C. Cox, Michael R. Heaton, Bradley J. Kiscaden, Jeremy A. Noble and Richard R. Grinnan* **
10.6(a)	Markel Corporation Voluntary Deferral Plan (incorporated by reference from Exhibit 10.14 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2015)*
10.6(b)	Amendment to Markel Corporation Voluntary Deferral Plan (incorporated by reference from Exhibit 10.20 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2018)*
10.6(c)	Amendment to Markel Corporation Voluntary Deferral Plan (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended September 30, 2019)*
10.7(a)	Markel Corporation Omnibus Incentive Plan (incorporated by reference from Appendix B in the Registrant's Proxy Statement and Definitive 14A filed with the Commission April 2, 2003)*
10.7(b)	May 2010 Restricted Stock Units Deferral Election Form (incorporated by reference from Exhibit 10.2 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2010)*
10.8(a)	Markel Corporation 2012 Equity Incentive Compensation Plan (incorporated by reference from Appendix A in the Registrant's Proxy Statement and Definitive 14A filed with the Commission March 16, 2012)*
10.8(b)	Restricted Stock Units Deferral Election Form for the 2012 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.24 in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2012)*
10.9	Markel Corporation Executive Bonus Plan, as amended and restated May 14, 2018 (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2018)*
10.10(a)	2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission May 19, 2016)*
10.10(b)	Form of Performance-Based (Graded Vesting) Restricted Stock Unit Award Agreement for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.2 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended March 31, 2018)*
10.10(c)	Form of Performance-Based (Cliff Vesting) Restricted Stock Unit Award Agreement for Executive Officers (revised 2019) for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.5 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended March 31, 2019)*

10.10(d)	Form of Performance-Based Restricted Stock Unit Award Agreement (adopted 2019) for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.15(i) in the Registrant's report on Form 10-K filed with the Commission for the year ended December 31, 2019)*
10.10(e)	Form of Restricted Stock Award Agreement for Outside Directors for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.2 in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended June 30, 2020)*
10.10(f)	Form of Performance-Based Restricted Stock Unit Award Agreement (adopted 2021) for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.1(a) in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended March 31, 2021)*
10.10(g)	Form of Time-Based Restricted Stock Unit Award Agreement (adopted 2021) for Executive Officers for the 2016 Equity Incentive Compensation Plan (incorporated by reference from Exhibit 10.1(b) in the Registrant's report on Form 10-Q filed with the Commission for the quarter ended March 31, 2021)*
10.11	Markel Corporation 2020 Employee Stock Purchase Plan (incorporated by reference from Exhibit 10.1 in the Registrant's report on Form 8-K filed with the Commission May 15, 2020)*
21	Certain Subsidiaries of Markel Corporation**
23	Consent of KPMG LLP**
31.1	Certification of Co-Principal Executive Officer Pursuant to Rule 13a-14(a)/ 15d-14(a)**
31.2	Certification of Co-Principal Executive Officer Pursuant to Rule 13a-14(a)/ 15d-14(a)**
31.3	Certification of Principal Financial Officer Pursuant to Rule 13a-14(a)/ 15d-14(a)**
32.1	Certification furnished Pursuant to 18 U.S.C. Section 1350**
101	The following consolidated financial statements from Markel Corporation's Annual Report on Form 10-K for the year ended December 31, 2021, filed on February 18, 2022, formatted in Inline XBRL: (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Income and Comprehensive Income, (iii) Consolidated Statements of Changes in Equity, (iv) Consolidated Statements of Cash Flows and (v) Notes to Consolidated Financial Statements.**
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

* Indicates management contract or compensatory plan or arrangement
** Filed with this report

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MARKEL CORPORATION

/s/ Thomas S. Gayner	/s/ Richard R. Whitt, III	/s/ Jeremy A. Noble
Thomas S. Gayner	Richard R. Whitt, III	Jeremy A. Noble
Co-Chief Executive Officer	Co-Chief Executive Officer	Senior Vice President and Chief Financial Officer
(Co-Principal Executive Officer)	(Co-Principal Executive Officer)	(Principal Financial Officer)
February 18, 2022	February 18, 2022	February 18, 2022

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signatures	Title	Date
/s/ Steven A. Markel Steven A. Markel	Chairman of the Board	February 18, 2022
/s/ Thomas S. Gayner Thomas S. Gayner	Director, Co-Chief Executive Officer (Co-Principal Executive Officer)	February 18, 2022
/s/ Richard R. Whitt, III Richard R. Whitt, III	Director, Co-Chief Executive Officer (Co-Principal Executive Officer)	February 18, 2022
/s/ Jeremy A. Noble Jeremy A. Noble	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 18, 2022
/s/ Brian J. Costanzo Brian J. Costanzo	Chief Accounting Officer (Principal Accounting Officer)	February 18, 2022
/s/ Mark M. Besca Mark M. Besca	Director	February 18, 2022
/s/ K. Bruce Connell K. Bruce Connell	Director	February 18, 2022
/s/ Greta J. Harris Greta J. Harris	Director	February 18, 2022
/s/ Morgan E. Housel Morgan E. Housel	Director	February 18, 2022
/s/ Diane Leopold Diane Leopold	Director	February 18, 2022
/s/ Lemuel E. Lewis Lemuel E. Lewis	Director	February 18, 2022
/s/ Anthony F. Markel Anthony F. Markel	Director	February 18, 2022
/s/ Harold L. Morrison, Jr. Harold L. Morrison, Jr.	Director	February 18, 2022
/s/ Michael O'Reilly Michael O'Reilly	Director	February 18, 2022
/s/ A. Lynne Puckett A. Lynne Puckett	Director	February 18, 2022

DIRECTORS

Steven A. Markel
Chairman of the Board

Mark M. Besca
Retired Leader of Long-Term Value and Stakeholder Capitalism initiative,
New York Office Managing Partner and a Lead and Senior Advisory Partner of Fortune 500 companies
EY (formerly Ernst & Young, LLP)

K. Bruce Connell
Retired Executive Vice President and Group Chief Underwriting Officer
XL Capital Ltd.

Thomas S. Gayner
Co-Chief Executive Officer
Markel Corporation

Greta J. Harris
President and Chief Executive Officer
Better Housing Coalition

Morgan E. Housel
Partner
The Collaborative Fund

Diane Leopold
Executive Vice President and Chief Operating Officer
Dominion Energy

Lemuel E. Lewis
Retired Executive Vice President and Chief Financial Officer
Landmark Communications, Inc.

Anthony F. Markel
Retired Vice Chairman, President and Chief Operating Officer
Markel Corporation

Harold L. Morrison, Jr.
Retired Senior Vice President, Chubb Group and
Division President, Field Operations, North America Insurance
Chubb Insurance Company

Michael O'Reilly
Retired Vice Chairman and Chief Financial Officer
The Chubb Corporation

A. Lynne Puckett
Senior Vice President and General Counsel
Celanese Corporation

Richard R. Whitt, III
Co-Chief Executive Officer
Markel Corporation

Markel Corporation
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