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R STREET POLICY STUDY NO. 239
September 2021

ESTIMATING POTENTIAL EFFECTS OF THE GLOBAL MINIMUM TAX ON CATASTROPHE INSURANCE MARKETS

By Lars Powell

CONTENTS

INTRODUCTION

The U.S. Department of the Treasury's Made in America Tax Plan (MATP) includes two provisions that will increase the cost of insurance in the United States.[1] First, it increases the corporate tax rate from 21 percent to 28 percent. Second, it implements a global minimum tax (GMT) regime with proposed rates from 15 percent to 28 percent. The first rule will directly increase the cost of providing insurance by increasing the tax burden on U.S. insurers. The second provision will increase the cost of insurance indirectly, by increasing the tax expenses of international reinsurance companies, which provide much of capital for U.S. risks, and are often located in low-tax jurisdictions.

In this policy study we estimate the expected increase in the cost of insurance for consumers in the United States and show how insurance expenses will increase for the average family in each state. As a preview of results, the expected increase in the cost of insurance will be between $10.8 billion and $20.3 billion per year, depending on the tax rates ultimately chosen by policymakers.

As these tax increases are passed through to consumers, they will effectively tax everyone who buys insurance, regardless of income. Though these changes will affect the cost of insurance for all U.S. consumers, the price increases will be largest for those living in areas exposed to catastrophe losses (e.g., hurricanes, earthquakes, tornadoes, floods and wildfires).

INSURANCE IN THE U.S. ECONOMY

Insurance provides a solid foundation for the U.S. economy. Without insurance, few people could own homes, drive vehicles or operate businesses. More generally, insurance helps people and businesses keep explicit promises to commercial interests and implicit promises to families, communities and society.

In recognition of these economic benefits, policymakers have intervened to promote the provision of catastrophe

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1. See, e.g., "The Made in America Tax Plan," U.S. Department of the Treasury, April, 2021. https://home.treasury.gov/system/files/136/MadeInAmericaTaxPlan_Report.pdf; "General Explanation of the Administration's Fiscal Year 2022 Revenue Proposals," U.S. Department of the Treasury, May, 2021. https://home.treasury.gov/system/files/131/General-Explanations-FY2022.pdf.

insurance in high-hazard areas. Interventions include state and federal income tax exemptions for special market mechanisms that provide coverage as insurers of last resort.

Most Americans live in areas exposed to catastrophic perils. Hurricanes affect the East coast and Gulf coast states, earthquakes and wildfires are more common in western states and tornadoes ravage the Midwestern and Plains states. Flooding impacts most states, with 14.6 million properties at substantial risk across the country.[2]

The effects of climate change on weather-related disasters are another significant concern for the U.S. insurance industry. The Intergovernmental Panel on Climate Change (IPCC) expects climate change to continue increasing the frequency and severity of floods, wildfires and hurricanes in the United States and around the world.[3]

Providing coverage for the United States' over-sized catastrophic loss exposure has been especially challenging since the early 1990s, when the combination of poor timing and growing populations living in harm's way (California and Florida) resulted in record-high losses for hurricane and earthquake perils.[4] Insurers paid out $16 billion for Hurricane Andrew losses in 1992, followed by $15.3 billion for the Northridge earthquake in 1994. Prior to Andrew, only one event (Hurricane Hugo in 1989) had exceeded $1 billion in insured damages.[5]

Figure 1 demonstrates the volume of catastrophe exposure in the United States compared to the rest of the world. The sum of 250-year exposure levels to the three U.S. perils (hurricanes, earthquakes and tornadoes) is more than 60 percent greater than that of all other major catastrophe perils in the world ($313 billion versus $194 billion). Unlike automobile insurance or health insurance, where winners and losers offset such that insurers pay approximately the average loss,

the large imbalance makes it impossible to effectively diversify U.S. perils in a portfolio of catastrophe risks. Therefore, insuring these perils requires placing hundreds of billions of dollars in capital at risk.

FIGURE I: EXPOSURE TO CATASTROPHIC PERILS (BILLIONS)
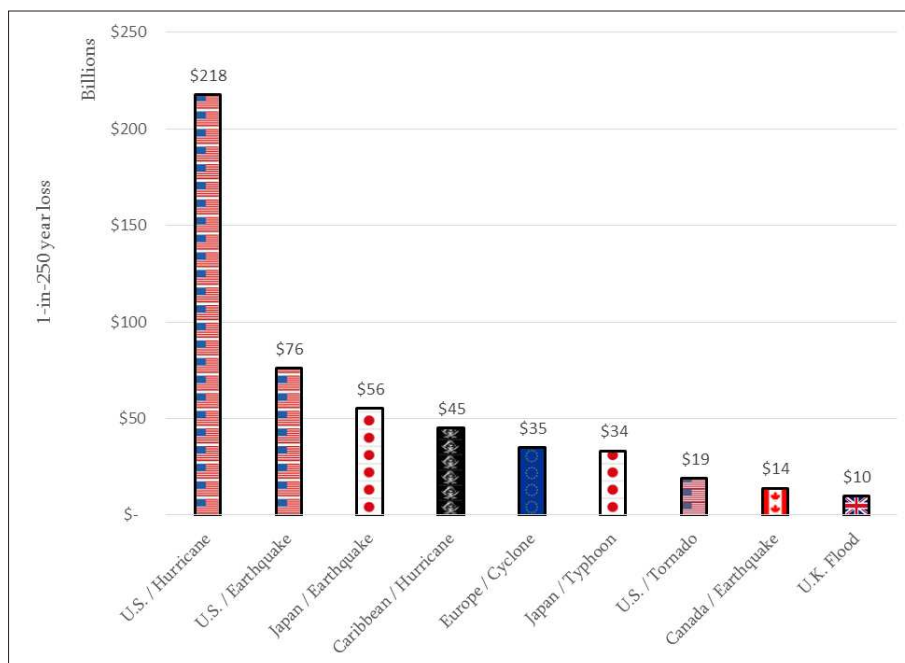
Source: Michael Cragg, et al., "The Impact of a Border-Adjustment Tax on the U.S. Insurance Market," The Brattle Group, November 2017. https://brattlefiles.blob.core.windows.net/files/11501_the_impact_of_a_border-adjustment_tax_on_the_u.s._insurance_market_-_november_2017.pdf.

Because so much capital is at risk and the probability of losses is uncertain, it is incredibly expensive to insure catastrophic losses. The expense is large, both in nominal terms, and relative to the expected cost of losses in a given year.

After more than a decade of limited U.S. disasters and intense market competition, insurance prices are beginning to rise due to recent loss events and suppressed interest rates. Figure 2 presents the Guy Carpenter U.S. property catastrophe rate-on-line (ROL) index, a consistent measure of the price of property reinsurance in the United States. The ROL is indexed to 2017, meaning that each annual observation is the ROL in that year divided by the ROL in 2017. In 2021 the ROL index was 1.29, meaning that the rate for property insurance was 29 percent higher in 2021 than in 2017. The ROL has risen since 2017, with a 10 percent increase from 2019 to 2020 followed by a 6 percent increase from 2020 to 2021.

2. "The flood insurance gap in the United States," *Munich RE, Aug. 28, 2020.* https://www.munichre.com/topics-online/en/climate-change-and-natural-disasters/natural-disasters/floods/the-flood-insurance-gap-in-the-us.html.

3. Rajendra K. Pachauri, et al., "Climate Change 2014 Synthesis Report," Intergovernmental Panel on Climate Change, 2015. https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf.

4. "State Intercensal Tables: 1900-1990," U.S. Census Bureau, Aug. 20, 2018. https://www.census.gov/data/tables/time-series/demo/popest/pre-1980-state.html.

5. "25th Anniversary of Hurricane Hugo," South Carolina Insurance Association, Sept. 22, 2015. https://scinsurance.net/news-room/view/26th-anniversary-of-hurricane-hugo.

FIGURE 2: U.S. PROPERTY CATASTROPHE REINSURANCE PRICE INDEX
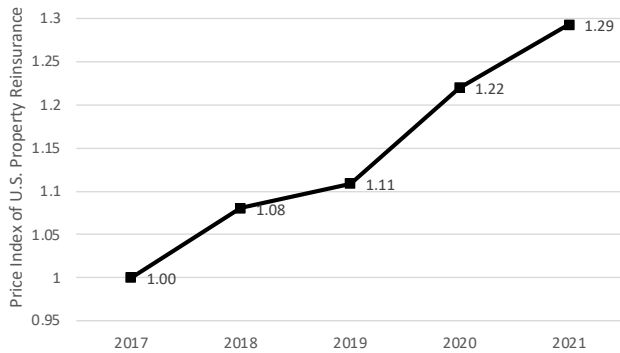
Source: "Guy Carpenter U.S. Property Catastrophe Rate-On-Line Index," *Artemis*, last accessed Aug. 26, 2021. https://www.artemis.bm/us-property-cat-rate-on-line-index.

Note: The price index represents the price each year as a multiple of the price in 2017.

Increasing taxes charged to insurance companies and passed directly through to consumers will further compound the increasing cost of insurance, leaving families, businesses and governments less prepared for the next large disaster.

INTERNATIONAL REINSURANCE AND CATASTROPHIC LOSSES

Given its enormous exposure to catastrophic perils, the United States relies heavily on foreign reinsurance markets. Figure 3 shows the distribution of reinsurance premium ceded by country. Nearly 60 percent of premium was ceded to companies headquartered outside of the United States, including Bermuda (24 percent), Switzerland (11 percent), Germany (7 percent) and Great Britain (5 percent).

## FIGURE 3: DISTRIBUTION OF REINSURANCE PREMIUM CEDED BY COUNTRY, 2019 ($US B)
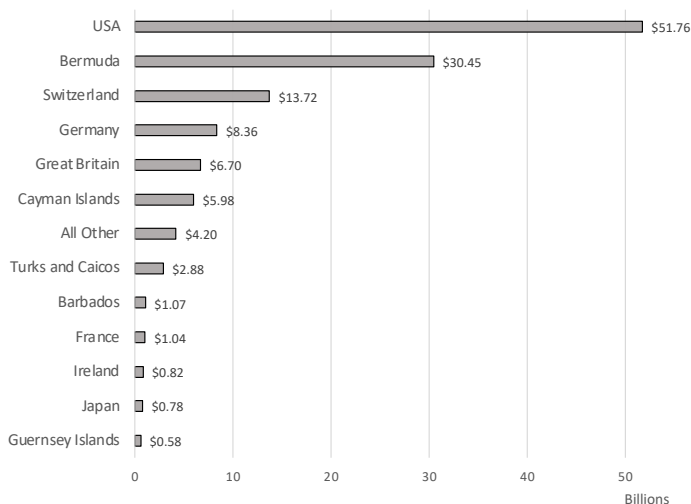
Source: NAIC Annual Statement data, Schedule F Part 3.
Note: Reinsurance premiums include those ceded to unaffiliated U.S. companies and all foreign companies.

Foreign countries add diversification to the global risk transfer market. Some countries also offer insurers and reinsurers a lesser tax burden than other countries, which benefits all consumers with lower prices. Though tax benefits decrease the cost of any type of risk, they are especially valuable when covering catastrophic risks, because such risks require high expected returns on large amounts of capital.

Premium ceded by country does not fully describe the role of international reinsurance markets. It is important to note that international reinsurance companies generally have greater risk appetites than U.S. reinsurers. Markets in Bermuda, Great Britain, Germany and Switzerland have historically supported the largest and most uncertain catastrophic exposures, like hurricanes and earthquakes, as well as man-made catastrophes, such as the 9/11 terrorist attacks. For example, Figure 4 shows the distribution of countries where notable large losses were insured.

FIGURE 4: DISTRIBUTION OF U.S. MAJOR CATASTROPHE INSURANCE COVERAGE BY COUNTRY
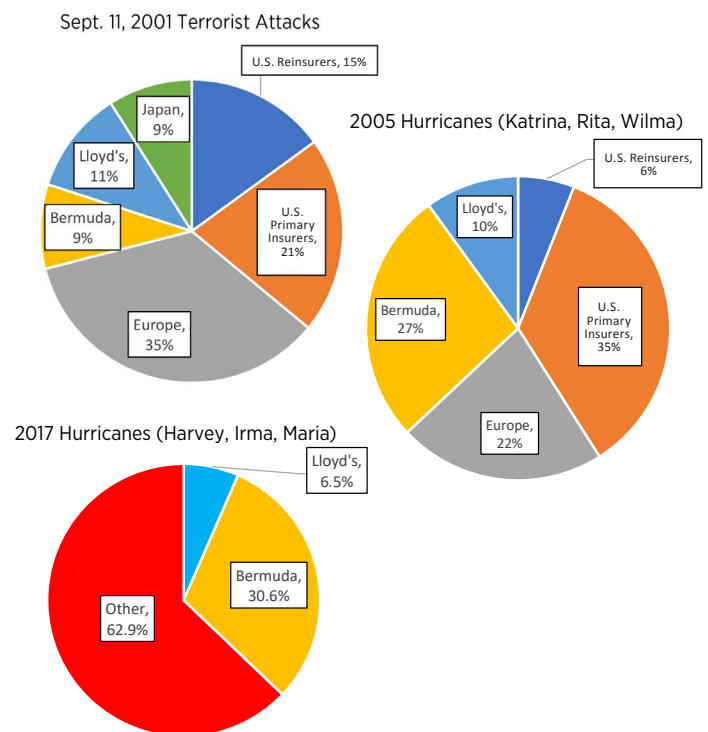
Sources: Cragg, et al. https://brattlefiles.blob.core.windows.net/files/11501_the_impact_of_a_border-adjustment_tax_on_the_u.s._insurance_market_-_november_2017.pdf; BMA Bermuda Monetary Authority, "Bermuda Reinsurers Paid Over $200 Billion to US Customers Since 1997," Press Release, Nov. 21, 2017. https://cdn.bma.bm/documents/2018-12-27-05-35-26-Bermuda-Reinsurers-Paid-Over-200-Billion-to-US-Customers-Since-1997.pdf; "After the storms, Harvey, Irma and Maria: lessons learned," Lloyd's, 2018. https://www.lloyds.com/-/media/files/news-and-insight/risk-insight/2018/him/after-the-storms.pdf.

International markets covered 64 percent of losses from the Sept. 11, 2001 terrorist attacks and 59 percent of the losses from the unprecedented 2005 hurricane season (Katrina, Rita and Wilma). More recently, Bermuda (re)insurers covered more than 30 percent of the $100 billion insured U.S. losses caused by hurricanes Harvey, Irma and Maria in 2017.

Reinsurers in Bermuda frequently serve as lead reinsurer on catastrophic reinsurance programs. The lead role bolsters competition in reinsurance markets. The lead reinsurer works closely with the primary insurer and its brokers to calculate prices for each layer of the program. Other reinsurers may then decide to participate in the program at the prices established by the primary insurer and the lead reinsurer. If the insurer cannot buy all the reinsurance it wants at the lead price, they can adjust the price for all of the reinsurers. The important aspect of this process is that the initial price is established by the lowest-cost market and then adjusted upward as necessary only until supply meets demand.

CORPORATE INCOME TAXES AND CATASTROPHE INSURANCE

Two features of the U.S. tax code are problematic when insuring catastrophic losses. First, taxes are calculated and paid annually, while large hurricanes, earthquakes and other events happen much less frequently.[6] Second, catastrophe insurance requires large amounts of capital. The income earned on insurers' substantial investment portfolios is taxed as realized or unrealized capital gains.[7]

For example, consider a hypothetical insurance company in the United States that insures houses on the Gulf Coast. On average, the area experiences a hurricane every 20 years. In years without a storm, the insurer appears to be very profitable and must pay taxes on annual income. In years when a storm strikes, losses can be 20 (or more) times larger than annual premiums. The U.S. tax code primarily allows recognition of losses after they happen, and only for a limited amount of time. If the insurance company's profits in the next 20 years do not exceed the amount lost in the storm, it has been taxed on profits it did not receive.

Because expected losses are highly correlated (the same hurricane can damage many houses at once), the insurer must hold significant amounts of capital, or assets in excess of its expected annual losses, to ensure it can pay losses when a hurricane strikes. The investment earnings from these funds are taxed as income or capital gains.

In Bermuda, home of the leading market for catastrophe reinsurance, the corporate income tax rate is zero. This creates a substantial advantage for all insurance consumers through market competition. Because other insurers must compete with Bermudan reinsurers, the tax benefits of operating in Bermuda are passed through to consumers in the form of lower prices.[8]

ESTIMATING THE EFFECT OF THE MATP ON U.S. INSURANCE PREMIUMS

In this section, we estimate the expected increase in U.S. insurance premiums due to the provisions of the Made in America tax plan that affect insurance. There are three steps in the empirical analysis. First, we estimate future earnings of insurance companies in the United States and Bermuda and apply the proposed new tax rules to expected earnings before tax. Next, we adjust the premiums charged by insurance companies to achieve the same returns as in previous years. Finally, we allocate costs across states by premium volume.

Increasing the U.S. Corporate Tax Rate

The MATP proposes increasing the U.S. corporate tax rate by one-third, from 21 percent to 28 percent. Thus, it is reasonable to expect taxes as a percentage of pre-tax net income to increase at the same rate.

Table 1 begins with premium, net income before tax (NIBT), and federal income tax paid (columns A-C) for the last ten years (2011-2020). Next, in columns D-F, we calculate the effective tax rate (D), net income after tax (E), and the ratio of net income to direct premiums earned (F).

Assuming insurers set prices to maintain a given level of return, the ratio of net income to premium earned should not change with the corporate tax rate. Here we observe that the average return from 2011 through 2017 (when the corporate income tax rate was 35 percent) is the same as the average return from 2018 through 2020 (when the rate was 21 percent). Therefore, it is reasonable to assume the return ratio will remain constant if the tax rate increases, other things being equal.

The last line in Table 1 shows that if the tax rate had been one-third greater in 2020, insurers would have increased premium by approximately $3.5 billion to maintain consistent returns.

6. Andreas Milidonis, et al., "Tax-Deductible Pre-Event Catastrophe Loss Reserves: The Case of Florida," *ASTIN Bulletin: The Journal of the IAA* 38:1, 2008, pp. 13-51. https://www.cambridge.org/core/journals/astin-bulletin-journal-of-the-iaa/article/taxdeductible-preevent-catastrophe-loss-reserves-the-case-of-florida1/141CE83FBB3512152EFBD2C7239CE145.

7. Scott E. Harrington and Greg Niehaus, "Capital, corporate income taxes, and catastrophe insurance," *Journal of Financial Intermediation* 12:4 (2003), pp. 365-389. https://doi.org/10.1016/j.jfi.2003.07.001.

8. Ibid.

Year	A Direct Premium Earned (DPE)	B Net Income Before Tax	C Federal Income Tax	D=C/B Tax Rate	E=B-C Net Income	F=E/A Net Income / DPE	
2011	496,917,911	22,564,485	3,025,674	13.4%	19,538,811	0.04	
2012	514,990,875	43,840,212	6,267,311	14.3%	37,572,901	0.07	
2013	537,672,429	82,009,488	11,948,379	14.6%	70,061,109	0.13	
2014	560,488,790	75,106,747	10,395,612	13.8%	64,711,135	0.12	mean = 0.09
2015	582,384,210	68,211,044	10,198,657	15.0%	58,012,387	0.10	
2016	604,690,405	51,878,565	7,321,199	14.1%	44,557,366	0.07	
2017	630,545,618	40,184,847	(689,681)	-1.7%	40,874,528	0.06	
2018	663,231,936	68,433,057	7,268,643	10.6%	61,164,414	0.09	
2019	694,922,388	72,106,315	8,527,740	11.8%	63,578,575	0.09	mean = 0.09
2020	713,911,542	70,008,743	8,703,425	12.4%	61,305,318	0.09	
2020*	717,405,908	73,503,109	11,394,638	15.5%	62,108,471	0.09	

Source: Author's calculations from Insurance Statutory Financials, S&P Global Market Intelligence data set.

*Estimated results for 2020 to maintain consistent net income/DPE while increasing the corporate income tax rate by one-third. Whole numbers in $1,000s.

Creating a Global Minimum Corporate Tax Rate

As part of the Made in America tax plan, U.S. Treasury officials have been working to negotiate a global minimum tax (GMT) with the countries within the Organization for Economic Co-operation and Development (OECD). In a GMT system, all countries subscribing to the GMT must charge a corporate income tax rate at least as high as the stated minimum tax rate. In the current discussions, proposed rates range from 15 percent to 28 percent. The stated purpose of the GMT is to "level the playing field" and prevent a "race to the bottom" in corporate tax rates.[9] It is not obvious how the GMT can increase U.S. tax receipts when applied to insurance, but, as described below, it will increase the cost of insurance for all U.S. consumers.

A GMT will increase the cost of insurance in the U.S. by increasing the cost of reinsurance. In 2019, U.S. insurance companies spent $128 billion, or approximately 18 percent of total premiums, on reinsurance coverage from unaffiliated and/or foreign reinsurers.[10] Bermuda is a primary example, where U.S. insurers buy 24 percent of their reinsurance and the corporate income tax rate is zero.[11]

Reinsurers in low-tax jurisdictions play an important competitive role in reinsurance markets. Though Bermudan companies provide 24 percent of U.S. reinsurance by premium volume, they participate in reinsurance programs representing 96 percent of U.S. premium ceded.[12] Therefore, almost all global reinsurance markets must compete with companies domiciled in low-tax countries. The competition from these companies decreases the cost of insurance in the United States.

If a GMT system increases the minimum corporate income tax rate, the price of all U.S. insurance will increase. There will be a direct effect and an indirect effect. The direct effect will be from reinsurers in countries like Bermuda, Ireland, the Cayman Islands, Turks and Caicos, Guernsey and Singapore increasing their prices to match increasing costs. The indirect effect will be from companies in other countries increasing their prices by the same amount because they no longer compete with lower-cost providers.

We estimate the effect of a GMT on the price of reinsurance in Bermuda using the same approach as for the increase in U.S. corporate income taxes above. In this case, we apply the proposed tax rates to income statements of the 10 largest property and casualty reinsurance companies headquartered in Bermuda over the most recent 10 years.

Table 2 presents the results. The first column shows the average net income before tax, net income after tax, premium earned and return on premium. The three subsequent columns show the required increases in premium to achieve the same return if the GMT is set at 15 percent, 21 percent and 28 percent. The sixth row gives the required premium increase as a percentage of the average premium earned. The last row presents the total increase in reinsurance premiums that will be passed on to U.S. insurance consumers. It is calculated as the percent increase multiplied by the total amount of reinsurance ceded in 2019 ($128 billion).[13] Therefore, this provision of the MATP would increase the cost of insurance in the United States by $7.3 billion to $16.8 billion, depending on the rate chosen by policymakers.

9. "General Explanations of the Administration's Fiscal Year 2022 Revenue Proposals," United States Department of the Treasury, May 2021. https://home.treasury.gov/system/files/131/General-Explanations-FY2022.pdf.

10. NAIC Annual Statement data from Schedule F, 2019.

11. Ibid.

12. Ibid.

13. Ibid.

TABLE 2: BERMUDA REINSURANCE ANALYSIS

	Average 2010-2019	GMT 15%	GMT 21%	GMT 28%
Net income before tax	5,006,887	6,282,554	6,951,837	7,938,472
Net income after tax	4,940,473	5,340,172	5,491,952	5,715,700
Premium earned	22,272,185	23,547,852	24,217,135	25,203,770
Return on premium	22.7%	22.7%	22.7%	22.7%
Premium increase		1,275,667	1,944,950	2,931,585
Increase %		5.7%	8.7%	13.2%
Increase % × total premium ($128 B)		$7.33 B	$11.2 B	$16.8 B

Source: Author's calculations using data from SEC 10-k reports for years 2010 through 2019.

Note: Whole numbers in $1,000s unless otherwise labeled. The appendix provides details of all calculations.

TABLE 3: RESIDUAL CATASTROPHE INSURANCE MARKETS IN 2020

State	Premium	# of Policies	Total Insured Value	Reinsurance purchased
Alabama	$22,724,979	16,833	$4,861,873,017	$11,294,078
California	845,164,654	1,111,664	527,602,015,888	426,722,911
Florida	1,182,124,690	638,263	184,732,102,843	239,081,542
Louisiana	59,195,541	35,849	7,100,000,000	24,155,266
Mississippi	27,800,000	17,250	2,822,631,505	20,850,000
North Carolina	343,072,848	204,725	78,198,588,915	78,716,555
South Carolina	36,090,137	17,582	5,672,153,112	28,511,208
Texas	369,600,488	185,298	55,500,000,000	107,605,102
Total	$2,885,773,337	2,227,464	$866,489,365,280	$936,936,662

Sources: "Home," Alabama Insurance Underwriting Association, last accessed Aug. 23, 2021. https://aiua.org; "Home," California Earthquake Authority, last accessed Aug. 23, 2021. https://www.earthquakeauthority.com; "Home," Florida Citizens Insurance, last accessed Aug. 23, 2021. https://www.citizensfla.com; "Home," Louisiana Citizens Insurance, last accessed Aug. 23, 2021. https://www.lacitizens.com; "Home," Mississippi Insurance Plans, last accessed Aug. 23, 2021. https://msplans.com; "Home," North Carolina Insurance Underwriting Association, last accessed Aug. 23, 2021. https://www.ncjua-nciua.org; "Home," South Carolina Wind Joint Underwriting Authority, last accessed Aug. 23, 2021. https://www.scwind.com; "Home," Texas Wind Insurance Association, last accessed Aug. 23, 2021. https://www.twia.org.

Notes: In California, the California Earthquake Authority (CEA) underwrites earthquake insurance. The other seven entities insure wind perils. Mississippi does not report the number of policies. The number of policies in Mississippi is estimated by dividing the total insured value by the average value per policy reported in a 2017 regulatory examination.

Effects on Special Catastrophe Insurance Markets

The analysis thus far has not considered an important group of risk-bearing entities that rely heavily on the global reinsurance market. Several states have created risk pooling entities to provide insurance for large natural catastrophes, such as hurricanes and earthquakes. Residual market mechanisms in Texas, Louisiana, Mississippi, Alabama, Florida, South Carolina and North Carolina insure coastal wind perils. The California Earthquake Authority underwrites earthquake risk for property owners in the Golden State.

Table 3 presents the activities of each state residual market. As demonstrated in Table 3, these entities collectively underwrite over 2.2 million policies, including total insured limits of $866 billion, for nearly $2.9 billion in annual premium. They cede more than 32 percent of premiums ($936 million) to reinsurance companies.

Applying the results from Table 2 to the reinsurance purchases in Table 3 yields price increases from $54 million (1.9 percent) to $123 million (4.3 percent), depending on the GMT rate (results from Table 1 are not relevant because residual markets are generally exempt from federal income taxes). This increase coincides with the average policyholder in a residual market experiencing a $24 to $55 annual increase.

These estimates are likely biased downward for two reasons. First, unlike the industry as a whole, these entities only buy excess-of-loss reinsurance for catastrophe exposures. Such coverage is the most sensitive to changes in the corporate income tax rate.[14] Also note that the estimates use 2020 data. Observed reinsurance renewal activity in 2021 shows substantial increases in price that will increase the cost of coverage and push more consumers into residual markets. With increasing volume of exposure and price of reinsurance, the premium spent on reinsurance—and its effect on the price of insurance—will follow.

14. Harrington and Niehaus. https://doi.org/10.1016/j.jfi.2003.07.001.

ALLOCATING PRICE INCREASES ACROSS STATES

In the previous sections, we derived a conservative estimate of the total effect of the MATP on the cost of insurance in the United States. However, these price increases will be concentrated in states where insurers bear the most risk and earn the most premium.

Figure 5 presents the allocation of price increases from the corporate tax rate increase (21 percent to 28 percent), and the Global Minimum Tax at three prospective levels (15 percent, 21 percent and 28 percent) across states by direct premium earned. The figure also includes the expected increase in residual markets where applicable.
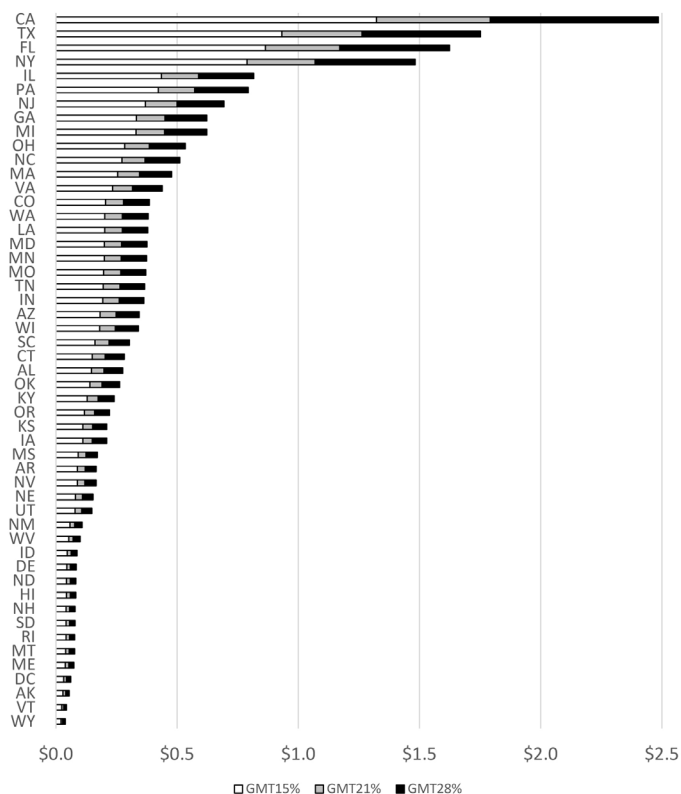
California tops the chart with total expected increases between $1.32 billion and $2.49 billion per year. California is followed by Texas ($932 million to 1.75 billion), Florida ($864 million to $1.62 billion) and New York ($788 million to $1.48 billion), with each state potentially seeing more than $1 billion in insurance premium increases caused by the MATP.

The data sets in Figure 5 are clearly influenced by the size of each state's population. However, it is also important to consider the economic effects on people in smaller states. Figure 6 shows the average increase in insurance premium per family in each state. This chart demonstrates that none of the states is unscathed by the MATP. Even in Ohio, the state with the smallest effect per family, the average family will experience an increase of $96 to $181 per year, regardless of their income.

States with smaller populations (Delaware, North Dakota and South Dakota) share the top of Figure 6 with Washington, D.C. The estimated increase in cost per family for these states ranges from $183 per year to more than $486 per year, depending on the GMT rate. However, even the largest states in the country rank in the top half of states for premium increases, including New York (7th, $170-$320), Florida (8th, $170-$319), California (17th, $147-$277) and Texas (25th, $136-$255).

Burdening U.S. families and firms with these new taxes will have harmful effects on the economy and our preparedness for natural disasters. The timing could not be worse, as the economy rebounds from the COVID-19 pandemic and the disaster insurance coverage gap persists.
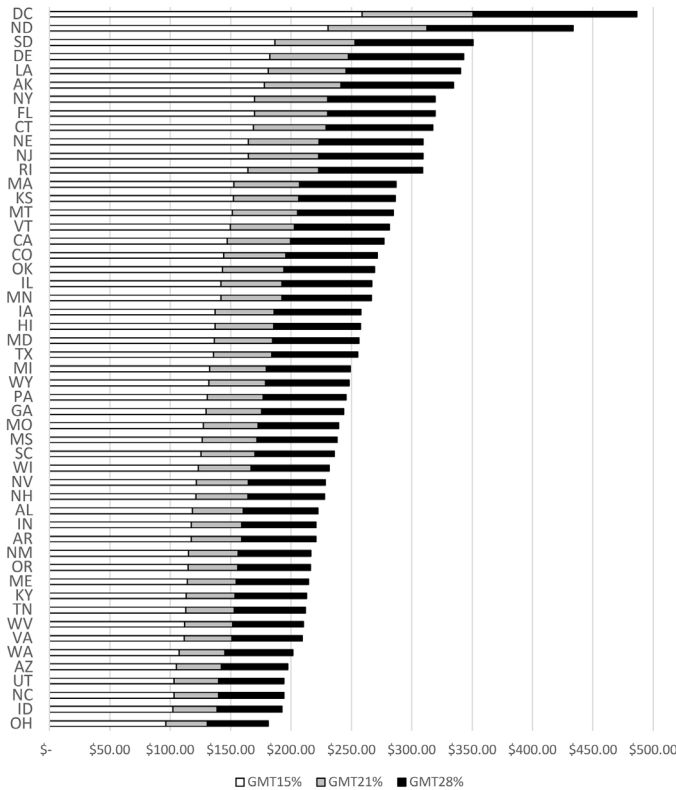
FIGURE 5: TOTAL ANNUAL PRICE INCREASES BY STATE (BILLIONS)

Note: Appendix C presents the numbers in this figure.

FIGURE 6: ANNUAL INSURANCE PRICE INCREASE PER FAMILY BY STATE

States (top to bottom): DC, ND, SD, DE, LA, AK, NY, FL, CT, NE, NJ, RI, MA, KS, MT, VT, CA, CO, OK, IL, MN, IA, HI, MD, TX, MI, WY, PA, GA, MO, MS, SC, WI, NV, NH, AL, IN, AR, NM, OR, ME, KY, TN, WV, VA, WA, AZ, UT, NC, ID, OH

X-axis: $-, $50.00, $100.00, $150.00, $200.00, $250.00, $300.00, $350.00, $400.00, $450.00, $500.00

Legend: ☐ GMT15% ▨ GMT21% ■ GMT28%

Source: Author's calculations from Insurance Statutory Financials, S&P Global Market Intelligence data set; "Population Data," U.S. Census Bureau, last accessed Aug. 23, 2021. https://api.census.gov/data/2019/acs/acs1/subject; "Home," Alabama Insurance Underwriting Association, last accessed Aug. 23, 2021. https://aiua.org; "Home," California Earthquake Authority, last accessed Aug. 23, 2021. https://www.earthquakeauthority.com; "Home," Florida Citizens Insurance, last accessed Aug. 23, 2021. https://www.citizensfla.com; "Home," Louisiana Citizens Insurance, last accessed Aug. 23, 2021. https://www.lacitizens.com; "Home," Mississippi Insurance Plans, last accessed Aug. 23, 2021. https://msplans.com; "Home," North Carolina Insurance Underwriting Association, last accessed Aug. 23, 2021. https://www.ncjua-nciua.org; "Home," South Carolina Wind Joint Underwriting Authority, last accessed Aug. 23, 2021. https://www.scwind.com; "Home," Texas Wind Insurance Association, last accessed Aug. 23, 2021. https://www.twia.org.

Note: Appendix D presents the numbers in this figure.

CONCLUSION

The MATP contains two provisions that will increase the cost of insurance in the United States. First, increasing the U.S. corporate tax rate will increase the tax costs for domestic insurers. Second, the proposed global minimum tax will increase the cost of reinsurance for U.S. insurers, who rely on global markets to diversify and transfer risk.

As these tax increases are passed through to consumers, they will effectively tax everyone who buys insurance, regardless of income. Though these changes will affect the cost of insurance for all U.S. consumers, the price increases will be largest

for those living in areas exposed to catastrophe losses (e.g., hurricanes, earthquakes, tornadoes, floods and wildfires).

We estimate the expected increase in annual insurance premiums to be $8.9 billion to $19 billion, depending on the tax rates chosen for each provision. We also allocate these costs across states based on exposure. Consumers in California will see the greatest increase insurance premiums between $1.32 billion and $2.49 billion, depending on the GMT rate. California is followed by Texas ($932 million to $1.75 billion), Florida ($864 million to $1.62 billion) and New York ($788 million to $1.48 billion).

As the cost increases, fewer people will buy insurance. This will further reduce our preparedness for natural disasters and increase the role of government disaster aid.

ABOUT THE AUTHOR

Lars Powell is a senior fellow of the R Street Institute and Director of the Alabama Center for Insurance Information and Research at the University of Alabama. He is a former Editor of the *Journal of Insurance Regulation*. He earned a Ph.D. in Risk Management and Insurance from the University of Georgia.

APPENDIX A: U.S. CORPORATE TAX RATE CALCULATIONS FOR ALL U.S. INSURANCE COMPANIES

	A	B	C	D=C/B	E=B-C	F=E/A	
Year	Direct Premium Earned	Net Income Before Tax	Federal Income Tax	Effective Tax Rate	Net Income	Net Income / DPE	
2011	496,917,911	22,564,485	3,025,674	13.4%	19,538,811	4%	
2012	514,990,875	43,840,212	6,267,311	14.3%	37,572,901	7%	mean = 0.09
2013	537,672,429	82,009,488	11,948,379	14.6%	70,061,109	13%	
2014	560,488,790	75,106,747	10,395,612	13.8%	64,711,135	12%	
2015	582,384,210	68,211,044	10,198,657	15.0%	58,012,387	10%	mean = 0.09
2016	604,690,405	51,878,565	7,321,199	14.1%	44,557,366	7%	
2017	630,545,618	40,184,847	(689,681)	-1.7%	40,874,528	6%	
2018	663,231,936	68,433,057	7,268,643	10.6%	61,164,414	9%	
2019	694,922,388	72,106,315	8,527,740	11.8%	63,578,575	9%	
2020	713,911,542	70,008,743	8,703,425	12.4%	61,305,318	9%	
2020*	717,405,908	73,503,109	11,394,638	15.5%	62,108,471	0.09	

Source: Author's calculations using NAIC data from S&P Global

*Estimated results for 2020 to maintain consistent net income / DPE while increasing the corporate income tax rate by one-third. Whole numbers in 1,000s.

The first 10 rows (2011-2020) of the first three data columns (A-C) in Table 1 are sums of all U.S. insurance companies that report data to the NAIC. This does not include the special wind and earthquake markets described in Table 3. The next three columns (D-F) are calculated from columns A-C as shown in the headings. Column D is C/B. Column E is B-C. Column F is E/A.

The means noted in the margin demonstrate that the average return on premium is consistent from 2011-2020, despite the change in tax rates observed in 2018.

Calculation steps for the last row, 2020*, are:

1. Multiply column D, row 2020 times 4/3 to get 15.5 percent.

2. Multiply 15.5 percent times column B, row 2020 to get initial forecast of corporate income tax.

3. Subtract income tax from net income before tax to get initial net income after tax.

4. Increase premium earned and net income before tax until net income divided by premium earned equals 9 percent.

	Average 2010-2019	GMT 15%	GMT 21%	GMT 28%
Net income before tax	5,006,887	6,282,554	6,951,837	7,938,472
Net income after tax	4,940,473	5,340,172	5,491,952	5,715,700
Premium earned	22,272,185	23,547,852	24,217,135	25,203,770
Return on premium	22.7%	22.7%	22.7%	22.7%
Premium increase		1,275,667	1,944,950	2,931,585
Increase %		5.7%	8.7%	13.2%
Increase % × total premium ($128 B)		$7.33 B	$11.2 B	$16.8 B

Source: Author's calculations using data from SEC 10-k reports for years 2010 through 2019.

Note: The appendix provides details of all calculations.

The financial statements are from S&P Global. We omit companies that are less than 50 percent reinsurance, subject to higher taxes from merging with a foreign company or that have less than 10 years of data.

The calculation steps are:

1. Calculate the average net income before tax, net income after tax, premium earned for all companies during the period 2010 to 2019.

2. Average return on premium is the average net income after tax divided by average premium earned.

3. For GMT 15 percent, multiply net income before tax times 15 percent.

4. Subtract the product from net income before tax to get net income after tax.

5. Increase the premium earned and net income before tax until return on premium (net income after tax divided by premium earned) equals 22.7 percent.

6. Premium increase is the amount of premium added to reach 22.7 percent return on premium.

7. Increase percentage is premium increase divided by average premium earned.

8. Increase percent × total premium ($128 B) is the increase percentage times the total amount of reinsurance premium ceded in 2019 ($128 B).

9. For GMT 21 percent repeat steps 3-8 using 21 percent as the GMT rate.

10. For GMT 28 percent repeat steps 3-8 using 28 percent as the GMT rate.

APPENDIX C: TOTAL PREMIUM INCREASE PER STATE (BILLIONS)

State	GMT 15%	GMT 21%	GMT 28%	State	GMT 15%	GMT 21%	GMT 28%
Alabama	0.146	0.199	0.275	Montana	0.041	0.055	0.077
Alaska	0.029	0.039	0.055	Nebraska	0.081	0.110	0.153
Arizona	0.183	0.248	0.344	Nevada	0.088	0.119	0.165
Arkansas	0.089	0.120	0.167	New Hampshire	0.042	0.057	0.079
California	1.322	1.792	2.486	New Jersey	0.369	0.500	0.693
Colorado	0.205	0.278	0.386	New Mexico	0.057	0.078	0.108
Connecticut	0.150	0.203	0.281	New York	0.788	1.068	1.481
Delaware	0.044	0.060	0.083	North Carolina	0.272	0.368	0.511
District of Columbia	0.032	0.044	0.061	North Dakota	0.044	0.059	0.082
Florida	0.864	1.171	1.624	Ohio	0.284	0.385	0.534
Georgia	0.331	0.449	0.623	Oklahoma	0.140	0.190	0.263
Hawaii	0.043	0.059	0.081	Oregon	0.117	0.159	0.221
Idaho	0.046	0.062	0.086	Pennsylvania	0.422	0.572	0.793
Illinois	0.434	0.589	0.816	Rhode Island	0.041	0.056	0.077
Indiana	0.193	0.261	0.362	South Carolina	0.161	0.219	0.303
Iowa	0.111	0.150	0.209	South Dakota	0.042	0.057	0.079
Kansas	0.112	0.151	0.210	Tennessee	0.195	0.264	0.366
Kentucky	0.128	0.174	0.241	Texas	0.932	1.263	1.752
Louisiana	0.202	0.274	0.379	Utah	0.079	0.106	0.148
Maine	0.039	0.053	0.074	Vermont	0.023	0.032	0.044
Maryland	0.199	0.270	0.375	Virginia	0.234	0.317	0.439
Massachusetts	0.254	0.345	0.478	Washington	0.202	0.274	0.380
Michigan	0.331	0.449	0.622	West Virginia	0.053	0.071	0.099
Minnesota	0.199	0.270	0.374	Wisconsin	0.181	0.245	0.340
Mississippi	0.091	0.123	0.171	Wyoming	0.020	0.027	0.038
Missouri	0.197	0.267	0.370				

APPENDIX D: ANNUAL PREMIUM INCREASE PER FAMILY BY STATE

State	GMT 15%	GMT 21%	GMT 28%	State	GMT 15%	GMT 21%	GMT 28%
Alabama	$118	$160	$222	Montana	$152	$205	$285
Alaska	178	241	335	Nebraska	165	223	309
Arizona	105	142	197	Nevada	122	165	228
Arkansas	117	159	221	New Hampshire	121	164	228
California	147	200	277	New Jersey	165	223	309
Colorado	144	196	271	New Mexico	115	156	216
Connecticut	169	229	317	New York	170	230	320
Delaware	183	247	343	North Carolina	103	140	194
District of Columbia	259	351	486	North Dakota	231	313	434
Florida	170	230	319	Ohio	96	131	181
Georgia	130	176	244	Oklahoma	143	194	269
Hawaii	137	186	258	Oregon	115	156	216
Idaho	102	139	192	Pennsylvania	131	177	246
Illinois	142	192	267	Rhode Island	164	223	309
Indiana	117	159	221	South Carolina	125	170	236
Iowa	137	186	258	South Dakota	187	253	351
Kansas	152	207	286	Tennessee	113	153	212
Kentucky	113	154	213	Texas	136	184	255
Louisiana	181	246	341	Utah	103	140	194
Maine	114	155	214	Vermont	150	203	281
Maryland	136	185	256	Virginia	111	151	210
Massachusetts	153	207	287	Washington	107	145	202
Michigan	133	180	249	West Virginia	112	152	210
Minnesota	142	192	267	Wisconsin	123	167	232
Mississippi	127	172	238	Wyoming	132	179	248
Missouri	127	173	240				