

COVID-19: The Insurability of Pandemic Risk & Market Implications for the P/C Insurance Industry

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Outline

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- **Severity Issues**
 - ◆ **Solvency-threatening magnitude of loss**
- **Correlation and Diversification Concerns**
 - ◆ **Impact on insurer investments**
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- **The Systemic Nature of Pandemic Risk**
- **A (Very) Brief History of Pandemic Insurance**
- **Reinsurance Market Issues**
 - ◆ **Communicable disease exclusions**
- **The Role of Government**
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Pandemic-Related Challenges to Insurability: *Severity*

- **Potential losses can easily exceed the industry's capital, surplus and premium resources by many orders of magnitude**
 - ◆ IMF estimates that the global economic cost of COVID-19 could reach \$9 trillion
 - ◆ Global pandemic-related economic losses over the next 30 years could potentially total \$23.5 trillion
 - ◆ In the United States alone, total business continuity losses are estimated at \$1.1 trillion per month for businesses of all sizes
 - ◆ For US small businesses (<100 employees), business continuity losses range from \$52B to \$431B/month—and up to \$668B/mo. for businesses with up to 500 employees
 - ◆ Only \$4.5B in premium is written each month, on average, in relevant lines of insurance by all P/C insurers in the US
 - ◆ Costs in individual states are high too. In Illinois, for example, business continuity losses for small businesses are estimated at \$1.8B - \$7.9B/month (vs. \$160M premium)

Viral Outbreaks Are Not An Insurable Risk

Pandemics are frequent, severe, and widespread (7 pandemics with multi-billion\$ economic losses in just the last 18 years)

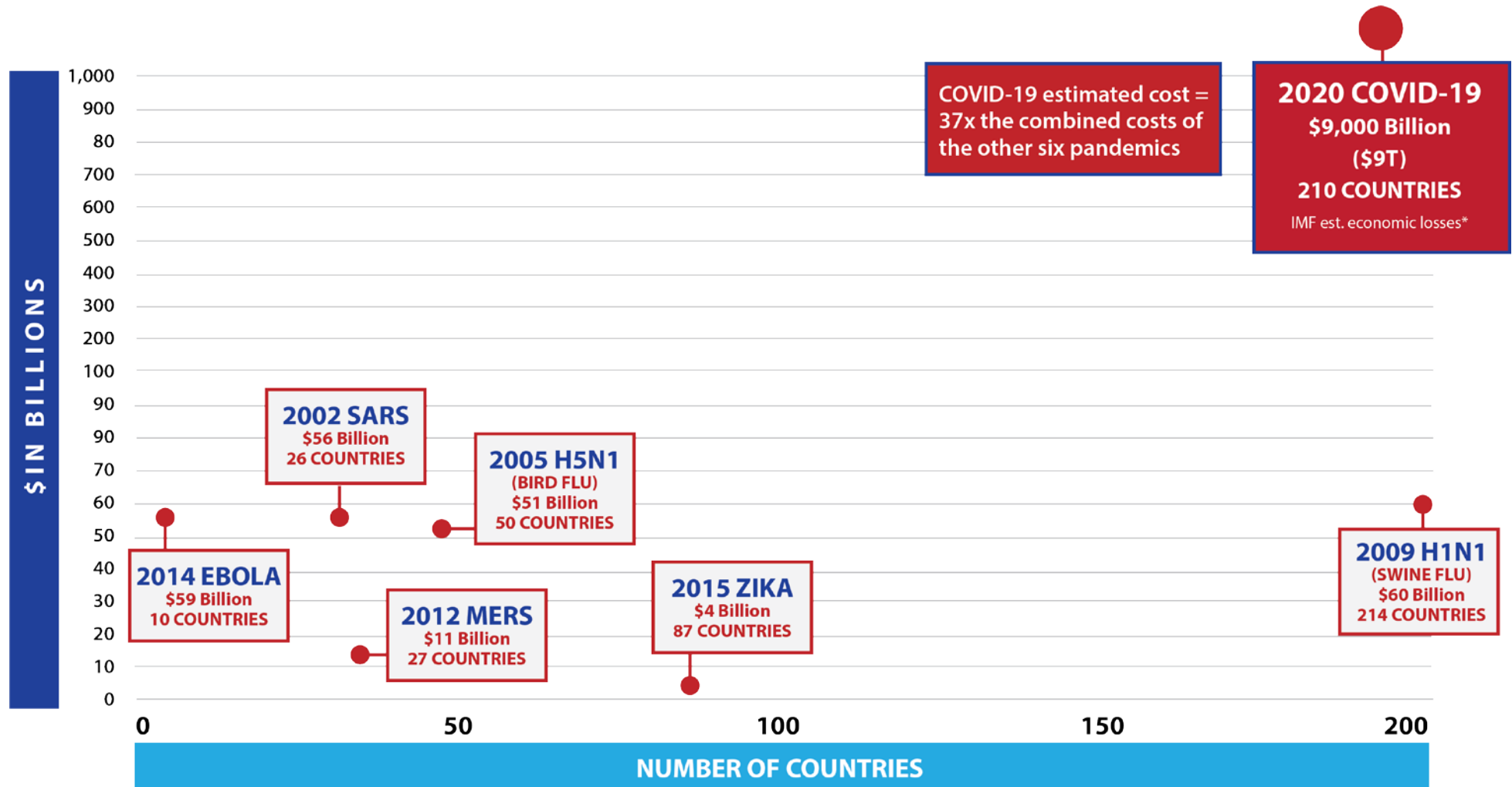
For Reference

2005 Katrina
\$58 Billion

2001 9/11
\$48 Billion

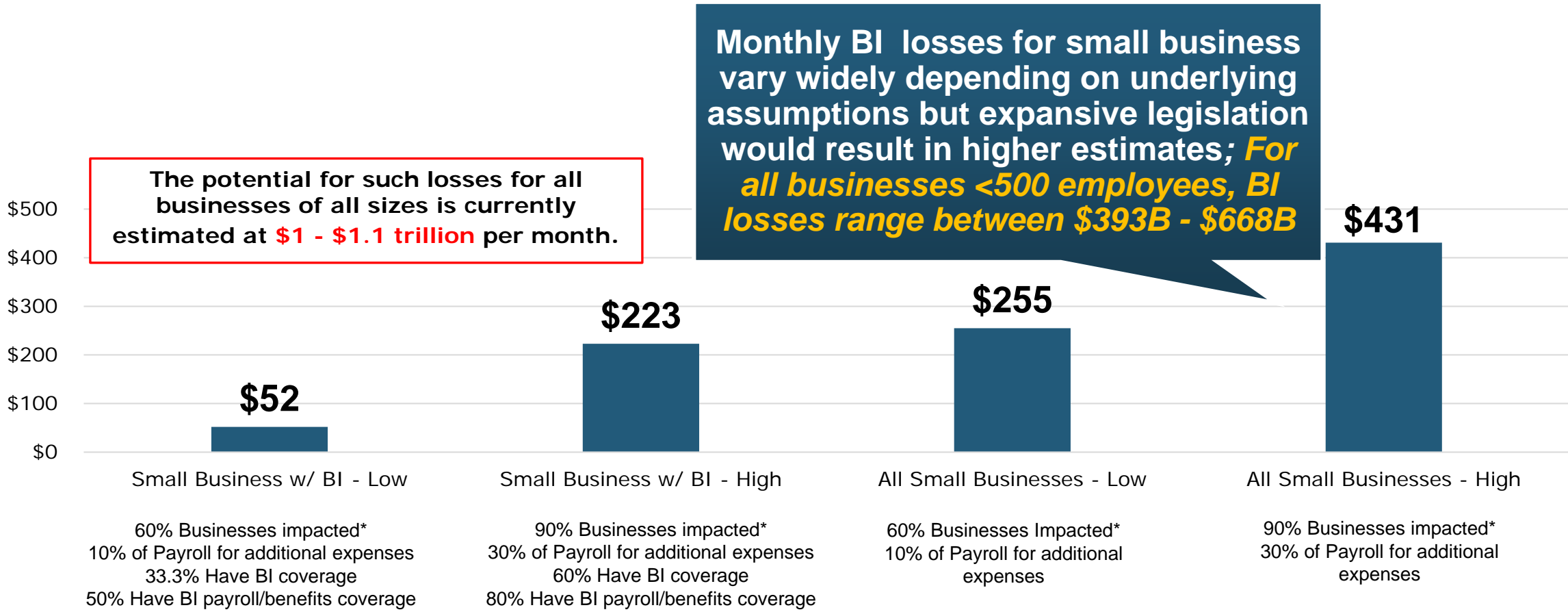
(insured losses)

Economic Losses from Pandemics



*Sources: APCIA using published reports, including IMF, World Bank, Learnbonds.com; APCIA adjustment to 2020 USD

Estimated Monthly U.S. Business Interruption Coronavirus Losses for Small Business—Potential Range (<100 Employees; \$Bill)

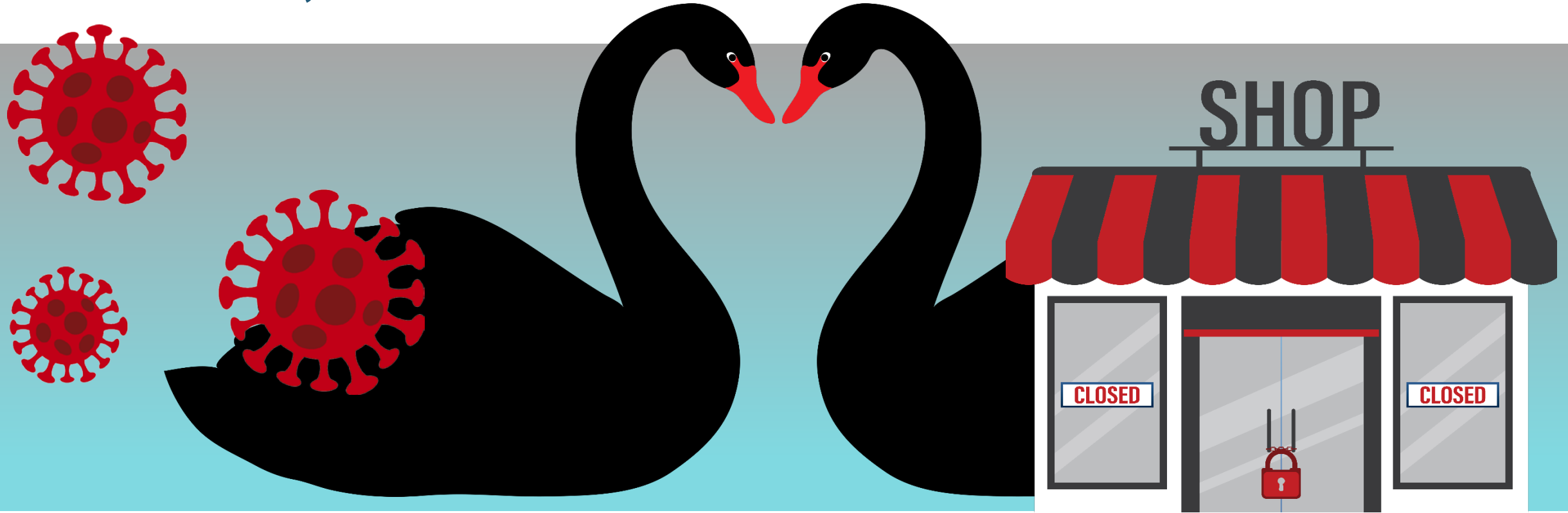


* Businesses impacted: Proportion of businesses completely or substantially closed related to coronavirus
 Assumptions: Losses if standard insurance policy exclusions for viruses/pandemics are voided and physical loss/damage requirement is stricken; three main coverages - profit lost, payroll/benefits, additional expenses; average annual \$2m revenue and 7% profit margin; non-wage benefits of small businesses are 25% less than that for average US businesses

Pandemic-Related Challenges to Insurability: *Data Issues*

- **Frequency and severity of loss cannot be precisely modeled because of a lack of historical data**
 - ◆ Pandemics have occurred throughout recorded history
 - ◆ But massive government ordered shutdowns ordered in response to the pandemic are unprecedented
 - ◆ The lack of precedent for the shutdowns and the fact that their timing, duration and breadth result from the uncoordinated decisions of thousands of government officials renders them impossible to model

Government Mandated Business Closures Were the Real Black Swan, Not the Coronavirus



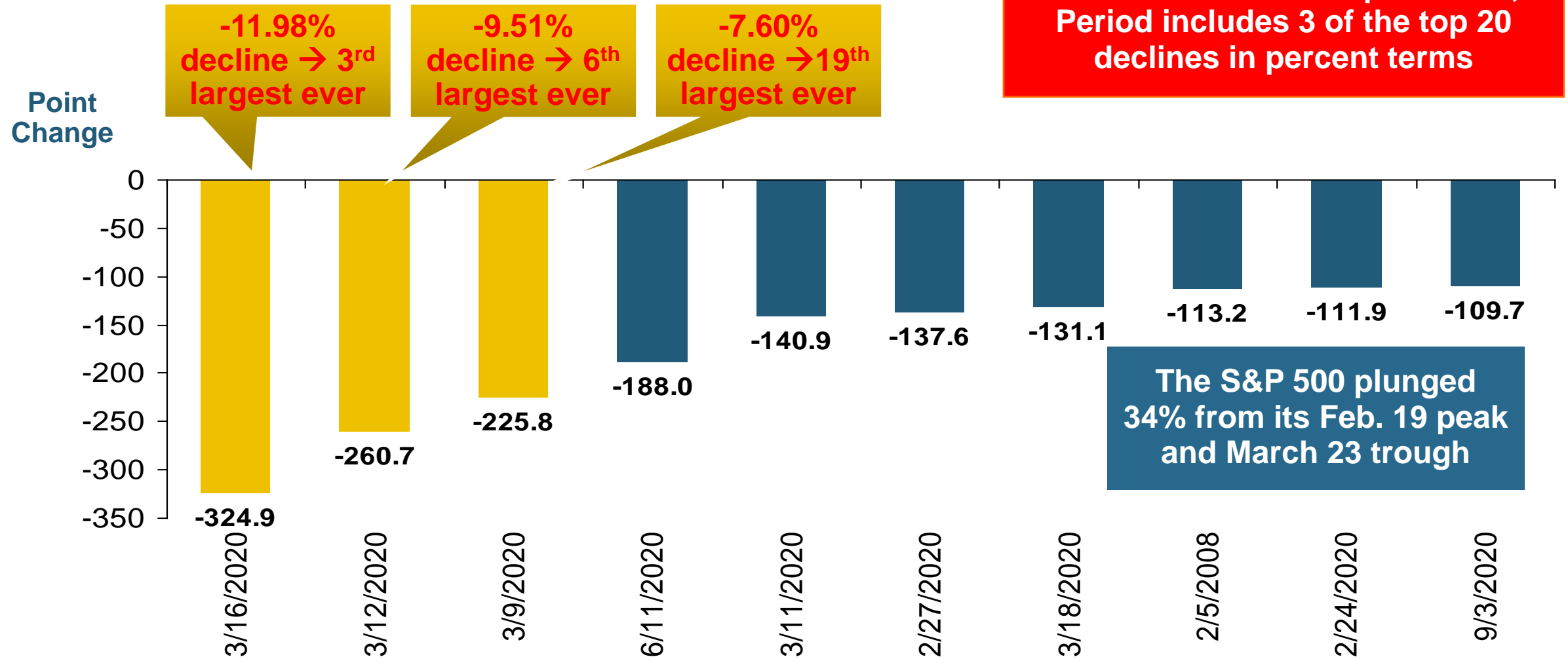
- The US (and world) has endured several other major infectious disease outbreaks killing 100,000+ Americans without shutting down the economy
 - Hong Kong Flu (1968-70)
 - Asian Flu (1957-58)

- It is the reaction to the virus that is unprecedented and represents the *true* Black Swan event
- Government-ordered shutdowns were unforeseeable and cannot be accurately modeled for insurance purposes

Pandemic-Related Challenges to Insurability: *Correlations*

- **Large-scale business income-related pandemic losses are correlated with both financial market losses and other insurance losses, impairing the ability to mitigate pandemic-related losses through diversification**
 - ◆ Global stock markets crashed as the coronavirus spread and countries locked down
 - ◆ The S&P 500 lost 34% of its value in just over a month (Feb.- March)
 - ◆ US stock market indices have experienced their largest point declines in history and some the largest declines in percent terms as well
 - ◆ Emergency measures by the Fed (rate cuts, QE) have caused many interest rates to plunge to their lowest levels in the post-WW II era
 - ◆ P/C insurer portfolio yields are falling and will remain depressed for years
 - ◆ The Fed has indicated it plans to keep rates low for years (e.g., at least 2023)
 - ◆ P/C industry surplus sustained a \$75B decline (9%) in Q1 2020 amid market volatility

Top 10 Largest Daily Point Drops in S&P 500 History*

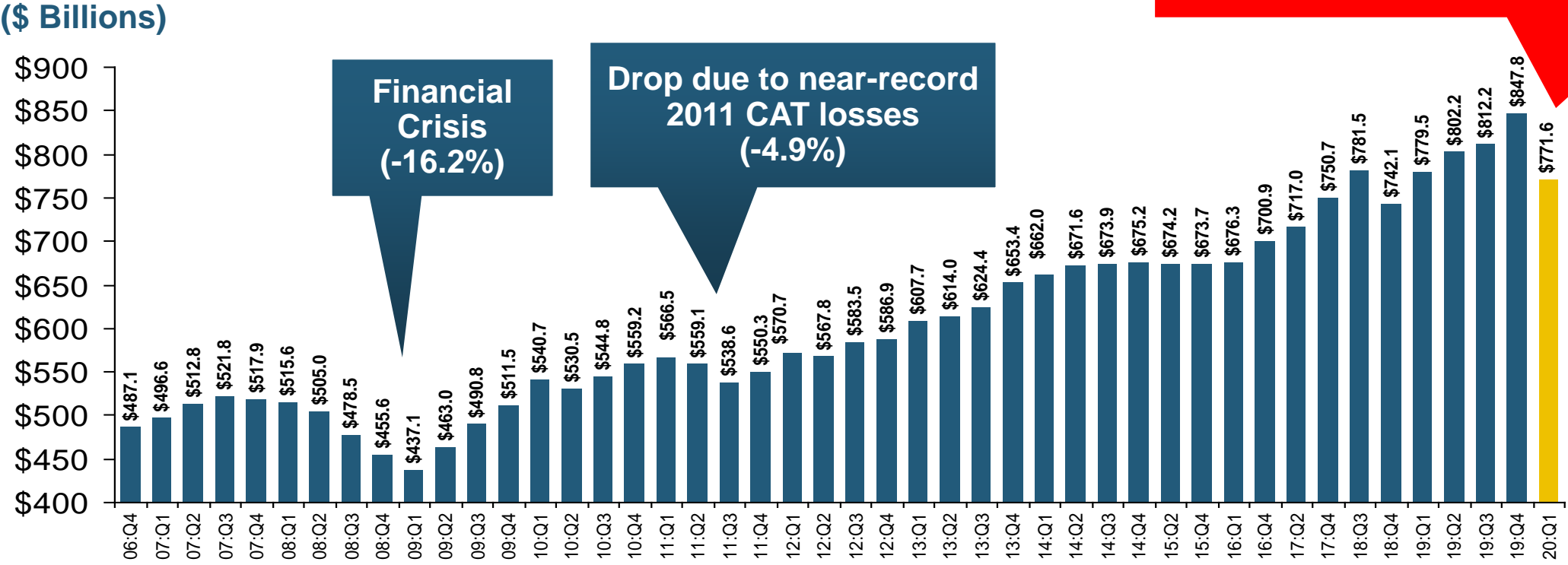


*Index began in 1923.

Source: Standard & Poor's; USC Center for Risk and Uncertainty Management.

Policyholder Surplus (Capacity), 2006:Q4–2020:Q1

The COVID-19 pandemic pushed down asset prices, resulting in a 9%--a decline of ~\$75B



Financial Crisis (-16.2%)

Drop due to near-record 2011 CAT losses (-4.9%)

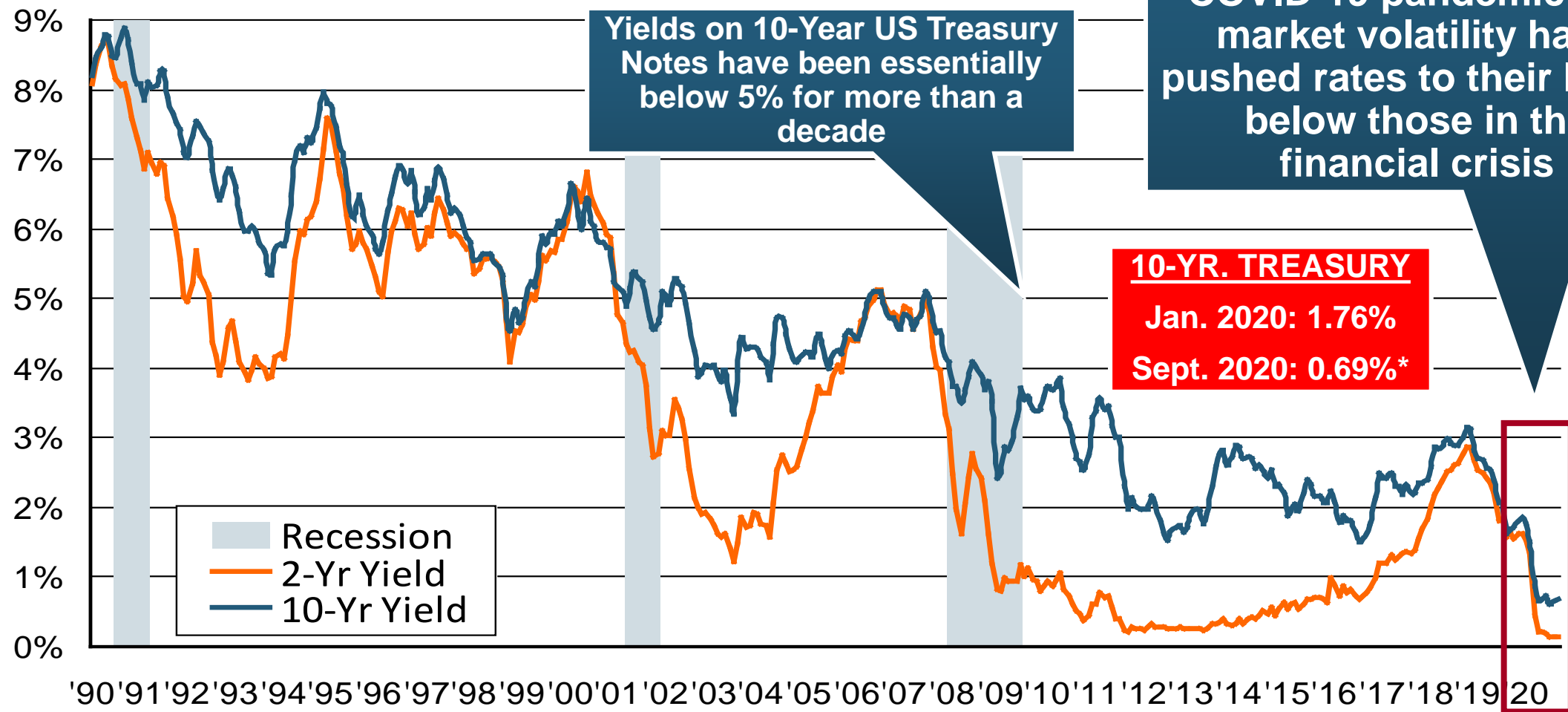
2010:Q1 data includes \$22.5B of paid-in capital from a holding company parent for one insurer's investment in a non-insurance business.

Policyholder Surplus is the industry's financial cushion against large insured events, periods of economic stress and financial market volatility. It is also a source of capital to underwrite new risks.

Sources: ISO, A.M .Best; Risk and Uncertainty Management Center, University of South Carolina.

US Treasury Security Yields: A Long Downward Trend, 1990–2020*

Fed emergency rate cuts and QE in response to the COVID-19 pandemic and market volatility have pushed rates to their levels below those in the financial crisis

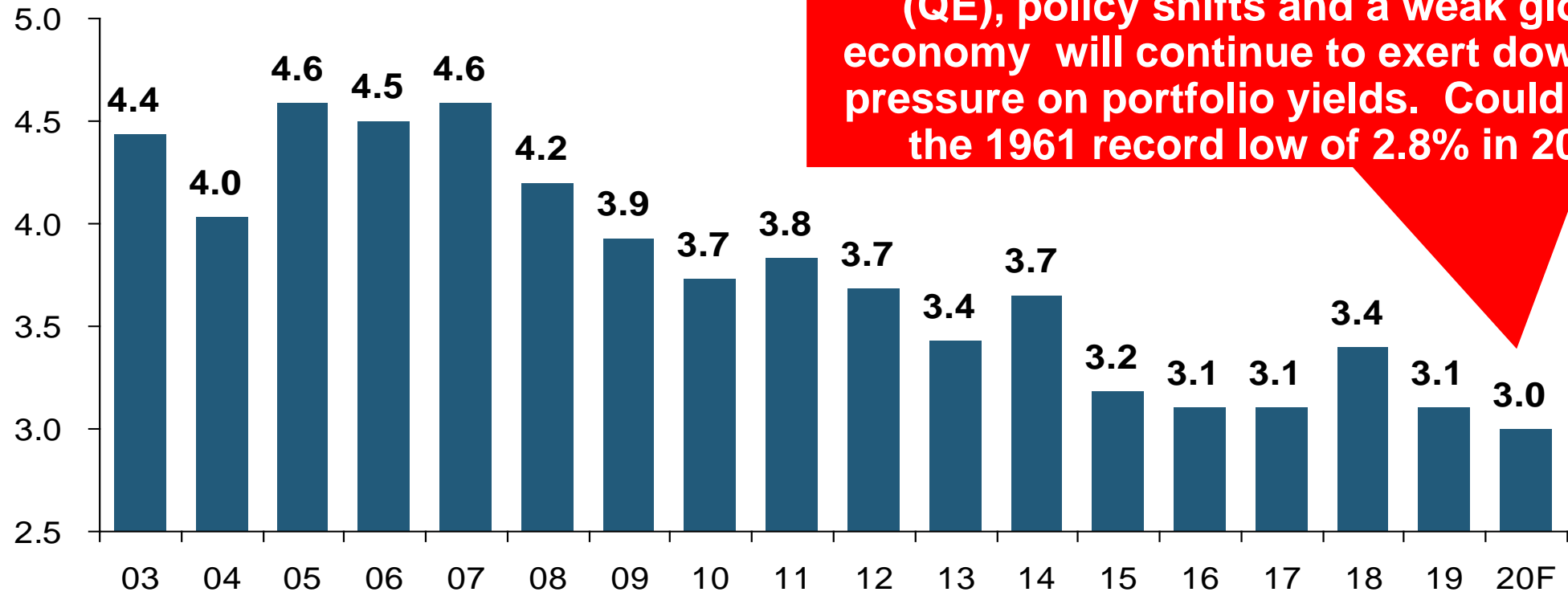


Since roughly 80% of P/C bond/cash investments are in 10-year or shorter durations, most P/C insurer portfolios will have low-yielding bonds for many years to come.

*Monthly, constant maturity, nominal rates, through Sept. 2020. Sept. 2020 figure is as of 9/13/20.
 Sources: Federal Reserve Bank at <http://www.federalreserve.gov/releases/h15/data.htm>. National Bureau of Economic Research (recession dates); Risk and Uncertainty Management Center, University of South Carolina.

Net Investment Yield on Property/Casualty Insurance Invested Assets, 2007–2020F*

(Percent)



COVID-19 Fed rate cuts, bond purchases (QE), policy shifts and a weak global economy will continue to exert downward pressure on portfolio yields. Could revisit the 1961 record low of 2.8% in 2021.

The yield on invested assets are at their lowest level in many decades

**Average: 1960-2018 = 5.0%
Low: 2.8% (1961)
High: 8.2% (1984/85)**

Potential Impacts of COVID-19 on LOSSES in 2020, by Key Line

| Line | Estimated Loss Impact |
|-------------------------------------|---|
| Workers Compensation | \$0.2B - \$92B (<i>depends on severity of pandemic and “presumption” determination</i>) |
| Business Interruption & Contingency | \$2B - \$22B (US) |
| General Liability* | \$0.7B to \$27B loss across US & Bermuda markets |
| Mortgage | \$0 - \$1.7B loss across US & Bermuda markets |
| D&O | \$0.6 - \$4.0 loss across US & Bermuda markets |

While BI and WC exposures loom large, many other lines are potentially impacted as well. This illustrates the correlation between pandemics, underwriting losses and adverse impacts on investments

*Includes nursing home professional liability.

Source: Derived from Willis Towers Watson, *Scenario Analysis of COVID-19 Pandemic* (Fig.11, 14), May 2020. and other sources; Risk and Uncertainty Management Center, University of South Carolina.

Pandemic-Related Challenges to Insurability: *Assessment*

■ Insurability traditionally rests upon 6 criteria:

- ◆ A risk must consist of a large number of exposure units so that the losses of the few can be distributed across the entire population of policyholders.
- ◆ Losses must be accidental/random and unintentional in nature (i.e., fortuitous).
- ◆ Losses must be determinable and measurable, enabling accurate and timely adjustment.
- ◆ Losses cannot be exceedingly catastrophic or financially ruinous to the risk pool as a whole.
- ◆ The probability of loss must be calculable, necessary for the proper modeling and pricing of risk.
- ◆ The premium charged by insurers to transfer the risk of loss must be economically affordable.

Figure 1. Pandemic - An Insurable Risk?

| Requirements of an Insurable Risk | Requirement Met? Yes/No |
|---|---|
| 1. Large number of exposure units | No. While millions of individual businesses suffered business continuity losses arising from the COVID-19 pandemic, the pandemic's effects were global in scale and nearly simultaneous in scope, effectively reducing the number of exposure units to one—the business sector collectively. |
| 2. Accidental/Random and unintentional loss | No. Pandemics are natural phenomena but the decisions by thousands of policymakers at all levels of government to close millions of businesses and restrict the movement of people was intentional. |
| 3. Determinable and measurable loss | No. For insurers to determine losses, the scale and scope of losses for any given risk must be estimable. Business continuity losses from COVID-19, estimates for which remain highly uncertain and range into the trillions of dollars, are indeterminable due to their dependence on decisions made by thousands of policymakers at all levels of government, the pace at which consumers and businesses reengage in the economy and epidemiological developments. |
| 4. No (ruinous) catastrophic loss | No. Unlike traditional catastrophe risks, pandemics by definition threaten all or most or the members of the risk pool simultaneously. The rapid aggregation of losses is destabilizing and potentially ruinous, threatening the solvency of individual insurers and the industry as a whole. |
| 5. Calculable chance of loss | No. Pandemics have occurred throughout history but the policy response to COVID-19 is without precedent. Insurers traditionally rely on historical loss information and trends to estimate the frequency and severity (cost) for risks they insure. No such historical data exists for the policy response associated with the COVID-19 pandemic, hence premiums cannot be determined. |
| 6. Economically feasible premium | No. Because pandemics by definition threaten all or most or the members of the risk pool simultaneously, the probability of loss is close to certainty. The high probability of loss combined with high claim severities necessarily lead to premiums that can approach or even exceed the cost of the claim itself. |

A (Very) Brief History of Pandemic Insurance

- **Very little insurance for “pure” pandemic risk has ever been brought to market by (re)insurers due largely to insurmountable insurability issues**
- **PathogenRX** is arguably the best-known recent example of a P/C insurance product designed to address pure pandemic risk. Marketed by the global commercial insurance broker Marsh LLC, PathogenRX was jointly developed by Munich Re, one of the world’s largest reinsurers, and Metabiotica, a start-up focused on helping governments and industry estimate, mitigate and manage epidemic risk. PathogenRX was introduced in 2018, approximately 18 months before the first confirmed cases of COVID-19 were reported. Only one policy was ever sold in the pre-COVID era
- **World Bank Pandemic Emergency Financing Facility (PEF)** was essentially a catastrophe bond with multiple parametric triggers. The PEF was heavily criticized for being slow to pay and for being too generous to investors. Plans for a PEF 2.0 were abandoned.

A (Very) Brief History of Pandemic Insurance

- **Limited pandemic risk exposure exists in a variety of other lines, most of it incidental:**
 - ◆ **Event cancellation (e.g., Wimbledon policy)**
 - ◆ **Workers compensation**
 - ◆ **Travel**
 - ◆ **Directors and officers**
 - ◆ **Mortgage guaranty**
 - ◆ **Trade credit**
 - ◆ **Employment practices liability**
 - ◆ **General liability**
 - ◆ **Medical professional liability**

Additional Challenges to Insurability: *Systemic Risk*

■ Pandemic risk is by its nature systemic

- ◆ The destabilizing impacts of pandemic risk extend throughout the entire economy
- ◆ Such risks cannot be diversified away through private insurance markets
- ◆ The magnitude of COVID-19 losses is so large that any meaningful commitment of capital would be solvency-threatening to insurers
- ◆ Only governments—which uniquely possess both taxing and borrowing authority—can manage such risks
- ◆ Litigation and legislation that would seek to compel insurers to pay trillions in business continuity claims is solvency threatening to insurers, given and industry capital base of approximately \$800 billion
- ◆ P/C insurers currently underwrite and estimate \$100 trillion in potential loss exposure in the US (equal to 4.5 times GDP)
- ◆ **Implication:** Events that threaten the solvency of the P/C insurance industry threaten to amplify the multi-trillion dollar systemic shocks already roiling the US economy.

Additional Challenges to Insurability: *Reinsurance Availability*

- **Reinsurance markets also view large-scale pandemic risk as uninsurable**
- **This has resulted in the adoption of near-absolute communicable disease exclusions in most property and increasingly casualty reinsurance treaties**
- **Primary insurers, in order to maintain consistency between the coverage they offer and the reinsurance available, must file similar exclusions**
- **Many of those filings are not being approved by regulators**
- **Regulator rejection of CD exclusions combined with widespread reinsurer adoption of CD exclusions threatens to compromise the relationship between insurers and reinsurers that is critical to maintaining market stability**

Major and Rapid Changes in the Reinsurance Markets

■ Property: COVID-19 and Concerns Over BI Are Driving Reinsurers to Exclude Communicable Disease (CD) Globally in Virtually All Property Treaties

- ◆ Primary insurers are running into DOI resistance to gain approvals for exclusions
- ◆ Commercial and personal lines
- ◆ Exclusion is all CDs, not just pandemic or epidemic

■ Casualty: Some Reinsurers Starting to Exclude CD

- ◆ Exclusions being driven by London market
 - GL, WC (esp. WC CAT)
- ◆ No universal exclusion push in non-London markets (yet)
- ◆ Not affecting financial lines yet (D&O, E&O, Fiduciary, Fidelity) or Cyber

■ Reinsurers Try to Manage Global Aggregation Risk

Additional Challenges to Insurability: *Reinsurance Availability*

- **Adoption of CD exclusions in reinsurance treaties leaves primary insurers with only three options:**
 1. file for parallel communicable exclusions with state insurance regulators
 2. non-renew policies in their entirety—leaving policyholders with no coverage at all
 3. allow potential exposure to communicable disease, which may not be reinsured, to accumulate on their balance sheets, threatening the insurers' stability and solvency, and necessitating rate adjustments to account for the risk (that could similarly leave most policyholders with no coverage).

- **Of these 3 options, seeking regulatory approval for CD exclusions is indisputably the least disruptive, with policies renewing seamlessly**

- **Allowing insurers to align their policies with available reinsurance is essential to maintaining coverage availability, affordability and insurer solvency in the marketplace**

A Role for Government

- **Economic losses from large-scale pandemics exceed the claims paying capability of global insurance markets**
- **Private insurer involvement in this market has historically been very limited**
- **Losses of such a magnitude require the involvement of government, which uniquely possesses the authority to both borrow and tax, allowing the economic losses from pandemics to be spread (diversified) over time**
- **There are numerous potential approaches to government involvement the management of pandemic risk**
 - ◆ Insurers can play a supporting role
 - ◆ Insurers can develop products/services to help manage certain risks on a limited scale, but those efforts will always be limited by the limits to insurability

Summary

- Business continuity losses arising from widespread viral risks represent an uninsurable risk for the private property casualty insurance industry.
- The magnitude of potential losses exceeds the claims paying resources of the industry while a lack of historical data impairs the ability of insurers to precisely model the frequency and severity of losses and determine premiums.
- Large-scale pandemic risk fails to meet any of the traditional criteria for insurability
- The experience of COVID-19 suggests that apart from highly specialized, niche products, it is unlikely that broad coverage for pandemic risks can be provided to the mass market by private insurers
- Any solution involving the financing of large-scale pandemic-driven economic losses will necessarily require widespread government protection, which could, in turn, encourage increased innovation of specialized products by private insurers and reinsurers.



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and your attention!***

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For additional details, see three recently co-authored papers: *Uninsurability of Mass Market Business Continuity Risks from Viral Pandemics*; *Communicable Disease Exclusions: Maintaining Stability in Property Casualty Insurance Markets Amid a Global Pandemic*, and *Insurance for Economic Losses Caused by Pandemics*. All are available at www.uscriskcenter.com.