Parametric Insurance

Understanding new solutions for public-sector risk management

BY JACLYN DE MEDICCI BRUNEAU

As the frequency and severity of climate-related disasters increases, governments face mounting challenges in managing and financing climate-related risks. Traditional insurance markets are responding to these escalating risks with higher premiums and reduced coverage, leaving many governments searching for innovative risk transfer solutions. It is in this context that parametric insurance has emerged as a potential tool for strengthening community resilience to climate risks.

For more information on parametric insurance and to understand how finance professionals can use this tool, please see the article "Damage Control: Parametric Insurance—An Emerging Tool for Financial Risk Management," published in the August 2020 issue of *GFR*.

gfoa.org/materials/damage-control-parametric-insurance

A recent survey conducted jointly by Ceres and GFOA provides critical insights into how government finance professionals view and understand parametric insurance. The survey, which was conducted before the recent devastating California wildfires, gathered responses from public-sector finance professionals representing municipal and county governments, special districts, school districts, transit authorities, and other public entities. The timing is relevant as local governments grapple with both increasing climate risks and a hardening traditional insurance market that is making coverage more difficult and expensive to obtain.

While parametric insurance, which provides pre-agreed payouts based on specific triggering events rather than assessed damages, could offer new ways of addressing climate-related risks, the survey finds that 70.9 percent of respondents are unfamiliar with these products. Organizations in disaster-prone regions show increasing interest in learning about these solutions, however, suggesting a growing recognition of the need for alternative risk transfer mechanisms.

The survey findings on parametric insurance adoption should be viewed within the broader context of necessary transformations needed in the insurance industry to address mounting climate risks and financial impacts. As outlined in Ceres' 10 Point Plan for the Insurance Industry,[1] innovative products like parametric insurance represent just one component of a more comprehensive reimagining of ways in which insurance markets can adapt to climate risk. The plan emphasizes that parametric and other innovative insurance products can help address specific challenges around claims processing speeds and coverage accessibility, particularly in regions where traditional

insurance is hard to implement. But these products need to be part of a larger transformation that includes improved risk assessment and modeling, climate-adjusted pricing strategies, updated building codes, and enhanced regulatory frameworks with greater focus on equity and accessibility. The relatively low level of familiarity with parametric insurance revealed in this survey underscores the broader challenge outlined in the 10 Point Plan—the need for better education, awareness, and capacity building across the industry to drive adoption of climate-resilient insurance solutions.

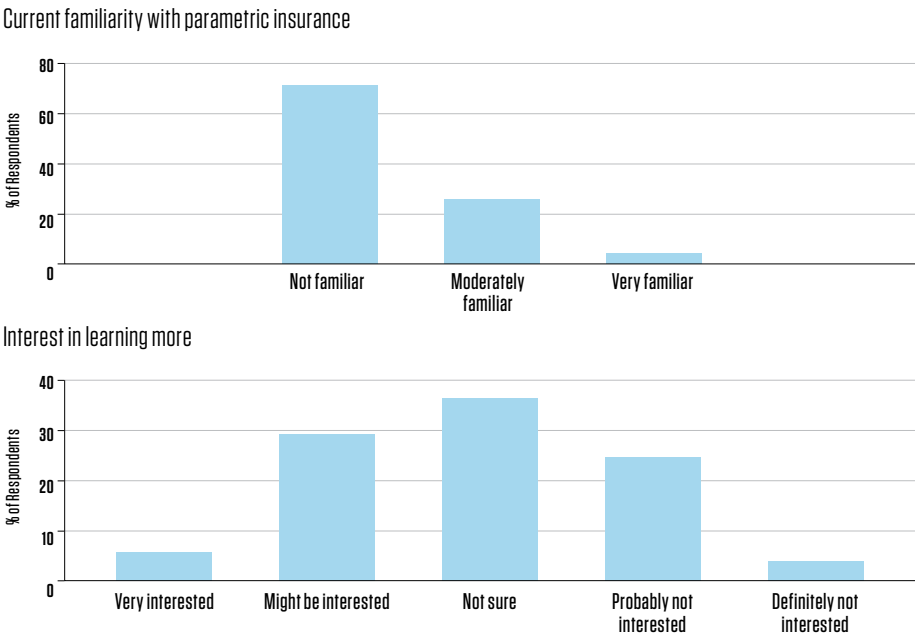
Combining innovative products with systemic changes to the ways in which insurance is designed, priced, regulated, and delivered will create a more resilient and sustainable insurance sector and strengthen communities.

State of awareness and understanding of parametric insurance

Despite the potential benefits of parametric insurance for public-sector risk management, survey results reveal a significant knowledge gap among government finance professionals (see Exhibit 1). While nearly 71 percent of respondents report being unfamiliar with parametric insurance, there is a notable subset (25.2 percent) who are moderately familiar with the concept, suggesting some penetration of awareness.

What is particularly interesting is the potential interest among respondents. While only 3.9 percent of respondents consider themselves very familiar with parametric insurance, 35 percent express interest in learning more (5.7 percent are very interested, and 29.3 percent might be interested). This gap between current knowledge and potential interest highlights an opportunity for education and outreach in the public finance sector.

EXHIBIT 1 | Familiarity with and interest in parametric insurance



Natural catastrophe risks and regional variations

The survey also reveals that communities face a diverse range of natural catastrophe risks (see Exhibit 2). Excess rainfall and flooding emerge as the most common concern, with 19.1 percent of respondents identifying it as a serious risk. Winter storms (17.1 percent) and severe weather events like tornadoes and hailstorms (13.2 percent each) follow as a primary concern.

Interestingly, the data shows a correlation between disaster exposure and interest in parametric insurance. Organizations in states with higher frequencies of Federal Emergency Management Agency (FEMA) disaster declarations show significantly greater familiarity with parametric insurance concepts. In the most disaster-prone states, 50 percent of respondents reported moderate familiarity with parametric insurance, compared to just 25 percent in less-affected states.

Parametric insurance provides pre-agreed payouts based on specific triggering events, rather than assessed damages.

DAVID SWANSON/AFP VIA GETTY IMAGES

EXHIBIT 2 | **Natural catastrophe risk assessment**

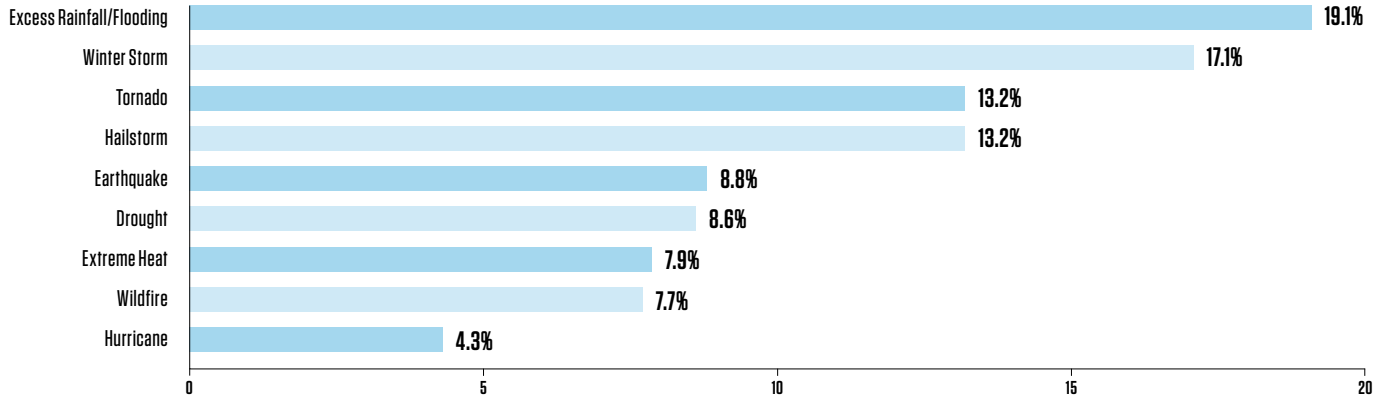
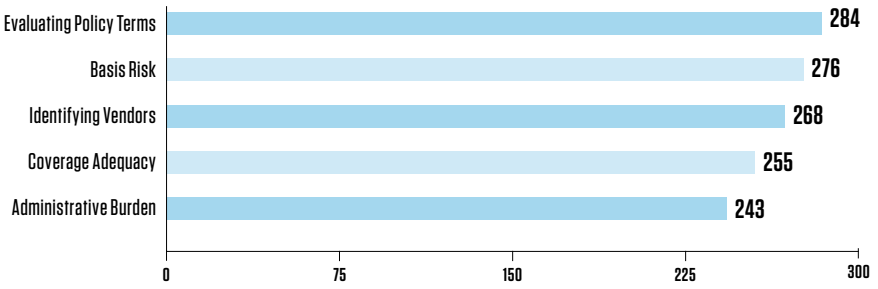


EXHIBIT 3 | Key concerns with parametric insurance



Implementation barriers and key concerns

When considering the possibility of adopting parametric insurance, finance professionals express several significant concerns that need addressing (see Exhibit 3).[2] The survey reveals that evaluating and comparing policy terms ranks as the top concern among respondents, highlighting the complexity of these innovative financial instruments. This challenge is particularly acute for local and state governments, where transparency and clear understanding of financial commitments is paramount.

Basis risk emerges as the second most significant concern. This refers to the possibility that the parametric insurance payout might not match the actual losses experienced, a particular concern for governments with fiduciary responsibilities to taxpayers. For example, a parametric policy triggered by earthquake magnitude might pay out the same amount regardless of whether a community experiences minimal or severe damage.

The challenge of identifying qualified vendors for customized parametric products ranks third among concerns, reflecting the relatively nascent state of the parametric insurance market for public-sector entities and suggesting a need for more developed procurement guidelines and vendor evaluation frameworks.

Practical considerations for finance professionals

For finance professionals considering parametric insurance, the survey findings suggest several key action steps:

Education and assessment

- Evaluate your organization's specific risk profile, particularly focusing on the most common threats identified in this survey.
- Engage with peer organizations, specifically those in similar risk environments, to learn from their experiences.
- Consider working with risk management consultants who have expertise in parametric solutions.

Policy development

- Create clear criteria for evaluating parametric insurance options.
- Develop frameworks for comparing parametric and traditional insurance costs.
- Establish guidelines for assessing basis risk in the context of your organization's risk tolerance.

Vendor engagement

- Develop specific requirements for parametric insurance providers.
- Request detailed explanations of triggering events and payout structures.
- Consider pilot programs or smaller initial implementations to gain experience.

Moving forward: opportunities and recommendations

The survey results suggest that parametric insurance represents both an opportunity and a challenge for government finance professionals. While current familiarity remains low, there is clear evidence that organizations in disaster-prone regions are increasingly interested in these innovative solutions. This growing interest, coupled with the diverse range of natural catastrophe risks facing public-sector jurisdictions, points to several key recommendations:

Building internal capacity

For the 70.9 percent of organizations that are currently unfamiliar with parametric insurance, the first step is building internal knowledge and capacity. This does not necessarily mean immediate adoption, but rather developing the expertise needed to evaluate whether parametric solutions could benefit their risk management strategy. Finance professionals should consider:

- Participating in educational programs focused on innovative risk transfer mechanisms.
- Engaging with insurance brokers and consultants who can provide detailed comparisons between traditional and parametric solutions.
- Documenting and analyzing natural catastrophe exposures to better understand where parametric solutions might be most applicable.

Regional collaboration

The survey reveals that organizations in disaster-prone regions show higher levels of familiarity with parametric insurance, which suggests an opportunity for regional collaboration and knowledge sharing. Finance professionals might consider:

- Forming regional working groups to share experiences and best practices.
- Exploring joint procurement opportunities to achieve better pricing and terms.
- Developing shared resources for evaluating parametric insurance providers.

Combining innovative products with systemic changes to the ways in which insurance is designed, priced, regulated, and delivered will create a more resilient and sustainable insurance sector and strengthen communities.

Risk management integration

Rather than considering parametric insurance as a replacement for traditional insurance, the survey suggests treating it as a complementary tool within a comprehensive risk management strategy. Finance professionals could:

- Review their current insurance portfolio to identify potential coverage gaps.
- Assess whether parametric solutions could provide faster access to post-disaster funding.
- Consider pilot programs for specific risks where traditional insurance has proven insufficient.

The GFOA survey reveals a public sector that is beginning to explore innovative risk transfer solutions, albeit cautiously. While parametric insurance presents certain challenges—particularly around policy evaluation and basis risk—it also offers potential advantages in terms of speed and certainty of payment that could be valuable for municipalities, counties, and special districts.

For finance professionals, the key is to approach parametric insurance not as an all-or-nothing proposition, but as one tool in an expanding risk management tool kit. As climate-related risks continue to evolve and traditional markets respond, having a thorough understanding of parametric solutions will become increasingly important for public-sector financial management.[3]

Looking beyond: the future of public sector risk management

As communities face escalating climate risks, the findings from this survey highlight a critical juncture in public-sector risk management. The survey's insights extend beyond just adopting parametric insurance. They point to broader questions about how governments can innovate in their approach to risk management as transitional insurance becomes more costly and less available. Several key considerations emerge for the future:

Market evolution and innovation

The insurance market's response to climate risk is likely to continue evolving, with traditional coverage becoming more costly or limited in high-risk areas. This trend may accelerate the need for innovative solutions like parametric insurance, but it also raises questions about market capacity and the role of public-private partnerships in developing new risk transfer solutions.

Risk management integration

As governments develop comprehensive climate adaptation strategies, risk transfer mechanisms like parametric insurance need to be considered as part of the broader toolkit. This includes integration with infrastructure resilience planning, emergency management procedures, long-term financial planning, and intergovernmental cooperation frameworks.

Capacity building needs

The survey reveals a clear need for building technical capacity within government finance departments. Beyond just understanding parametric insurance, finance professionals need expertise in climate risk assessment and modeling, financial instrument evaluation, cost-benefit analysis of resilience investments, and risk transfer strategy development.

Policy implications

The findings also have implications for policy development at all levels of government, with considerations including the role of state insurance regulators in overseeing new risk transfer products; federal government support for local climate resilience; development of standardized approaches to risk assessment and transfer; and the potential for regional cooperation in risk management.

Conclusion

As the public sector continues to adapt to climate risks, the evolution of risk transfer mechanisms will play a crucial role in financial resilience. The journey from traditional insurance to more innovative solutions like parametric insurance represents not just a change in financial instruments, but a fundamental shift in how governments approach climate risk management. Success will require continued education, collaboration between public and private sectors, and careful integration with broader resilience strategies.

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[1] Jaclyn de Medicci Bruneau, "Ceres 10-Point Plan for the Insurance Industry," November 20, 2024 (ceres.org/resources/reports/ceres-10-point-plan-for-the-insurance-industry).

[2] The weighted importance scores were calculated using a point system where rank one was assigned ten points, rank two received nine points, and so on down to rank ten receiving one point. The points total for each concern category were then calculated by summing the products of response frequency and point values for each rank.

[3] The survey was conducted in 2024 and included responses from 192 public-sector finance professionals, with 105 complete responses and 87 partial responses. The respondents represented a diverse range of organization sizes and types, with 50.4 percent from municipal governments and significant representation from special districts, county governments, and other public-sector entities.