Parametric Insurance: An Overview

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How are parametric policies different from traditional policies?

Traditional (Indemnity) Policy

- Choose peril covered (e.g., earthquake)
- Choose deductible and policy limit
- Pay premium

Loss incurred due to an incident

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Claim adjustment

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Claim payment based on loss (typically over time and tied to repair)

Parametric Policy

- Choose or negotiate trigger thresholds (e.g. ground velocity or heat measure)
- Choose amount paid when policy triggered
- Pay premium

Event

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Independent party determines whether trigger threshold met

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Policyholder **may** need to provide proof of loss*

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Pre-determined policy payout

*Proof of loss may be required so that policy will not be regulated as a financial derivative and may not be required until after payment received.

Parametric policies have a wide range of potential uses

Policyholder	Peril	Trigger	Disposition of funds
City or county	Heat	Temperature exceeds 105 for 4 days	Pay for bus service to cooling centers
Local govt./non-profit	Flood	Water depth exceed 2 feet	Provide $1,000 to vulnerable residents after a disaster
County	Wildfire	Wildfire burns more than 25,000 acres in county boundaries	Pay for shelters and emergency response not covered by FEMA
Resource agency or environmental group	Flood	Water flow into estuary exceeds certain threshold	Restore wetlands
Homeowner	Earthquake	Ground velocity over 30 cm/sec	Cover part of a large earthquake policy deductible

Parametric policies have received increasing attention over the last 10 to 15 years

- 2007: The Caribbean Catastrophic Risk Insurance Facility was created and uses parametric policies
- 2010: Alabama became the first state to purchase parametric coverage with a policy for state properties, including universities and schools (for hurricane risk)
- 2017: A parametric policy first purchased in Quintana Roo, Mexico funds restoration of coral reef once windspeeds exceed certain levels
- Today: Jumpstart, a CA insuretech firm, offers a $10,000 or $20,000 payment to policyholders in California when ground movement exceeds 30 cm/second

While there are numerous examples of parametric policies, the pace of adoption has been slow

Advantages of parametric policies

Advantage	Description
1. Payout speed	Payments can be made 3 or 4 weeks after an event (or more quickly)
2. Efficiency	Lower loss adjustment costs (loss adjustment is typically 10 to 15% of loss for indemnity policies in personal lines)
3. Flexibility in how payments can be used	Parametric payments are not tied to a particular use. In contrast, indemnity payments usually tied to reconstruction
4. Increased scope of what can be insured	Allows coverage of losses that can not be easily measured (e.g., non property losses such as loss of wetland services)

Advantages of parametric policies (continued)

Advantage	Description
5. Allows large number of claims to be processed simultaneously	Avoids limitations on number of claims adjusters (e.g. for business closures due to a pandemic)
6. Can reduce loss escalation	Rapid payment and flexibility in how payments may limit downward economic spiral
7. Enables micro insurance	Lower claim adjusting costs make small payments to vulnerable populations possible

Challenges for parametric policies

- Requires sophistication and modeling to understand link between trigger thresholds and likelihood of loss
  - E.g. How likely is a quake to produce ground velocity that exceeds the trigger thresholds where the policyholder is located?
  - Parametric policies more commonly bought by organizations, not individuals
- Parametric approaches can be agnostic to the amount of mitigation that has been done
- Potential for mismatch between policy payout and amount of damage (basis risk)

Mismatch between loss and payments can occur in parametric and indemnity policies

Type of Mismatch	Indemnity Policy	Parametric Policy
Loss but no payment to policyholder	Possible with high deductible; underpayment also possible due to limits, sublimits and exclusions	Can occur if event is under trigger threshold but loss occurs
Payment to policyholder but no loss	Not possible (assuming accurate adjustment)	Can occur if trigger exceeded but structure happens to incur no loss*

*Requirement that policyholder submit a proof of loss would limit this possibility.

The basis risk is not a deal breaker, but parametric policies better suited to some circumstances than others

Parametric Policies Less Well Suited to Situations where	Parametric Policies Better Suited to Situations where
• Policyholder sensitive to the possibility that a large loss might occur but payout will not be made • There is possibility that payout will be substantially larger than the loss	• Small or modest payouts to individuals when benefits of speed and efficiency outweigh targeting errors • There is good information on post event needs, or the overall damage will clearly be larger than the policy payout

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Parametric policies themselves are not a silver bullet for the challenges currently facing the California residential insurance market.

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