



Intelligent financial system: How AI is transforming finance*

I Aldasoro (BIS), L Gambacorta (BIS), A Korinek (U of Virginia), **V Shreeti (BIS)** and M Stein (U of Oxford)
20 June 2024, SUERF-Unicredit workshop, Vienna

*Views are the authors' and not necessarily of the BIS

Overview

- ❖ Finance through the lens of information processing.
- ❖ Opportunities & challenges of AI in finance.
- ❖ Financial stability and the real economy.
- ❖ Implications for regulation.

The role of the financial sector



Financial sector

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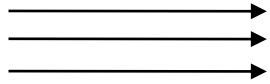
Dispersed
information



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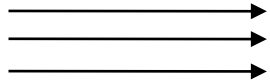
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Price signals

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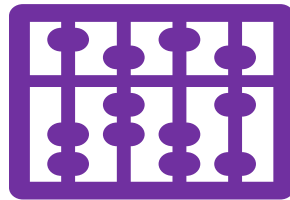


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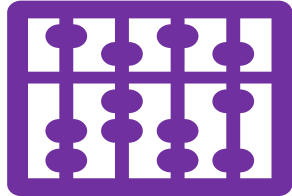
Finance as the **brain** of the economy: enables efficient flow of capital, manages risk, maintains liquidity.

Finance and the evolution of information processing technology



Ancient Sumerians developed the abacus to address financial needs.

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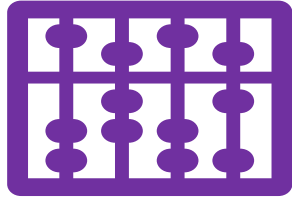


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Code of Hammurabi laid out laws to govern financial transactions.

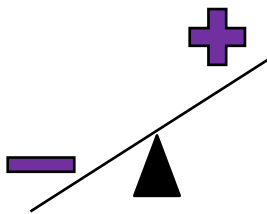
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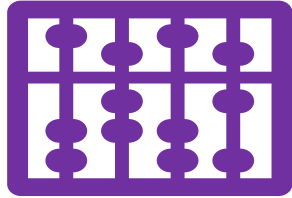


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Double-entry book keeping expanded commerce and finance.

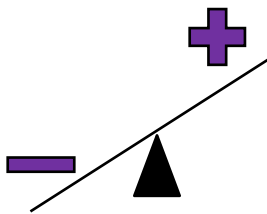
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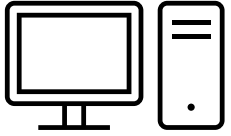
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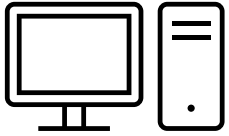
History of computation and information processing intertwined with history of commerce and finance.

The journey to modern AI



Financial sector among the first to adopt and use the earliest **computers** (e.g. IBM 650).

The journey to modern AI

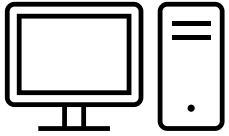


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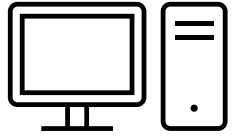


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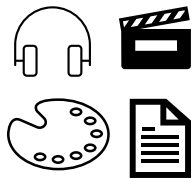
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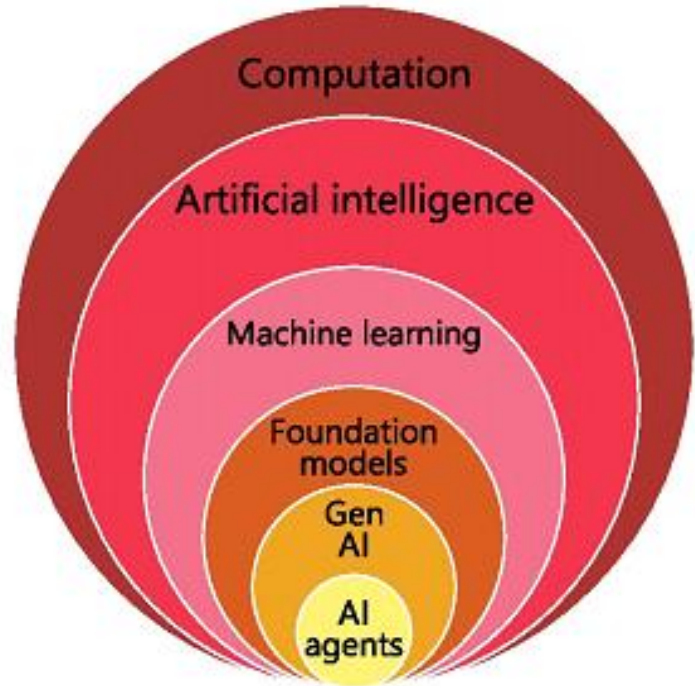


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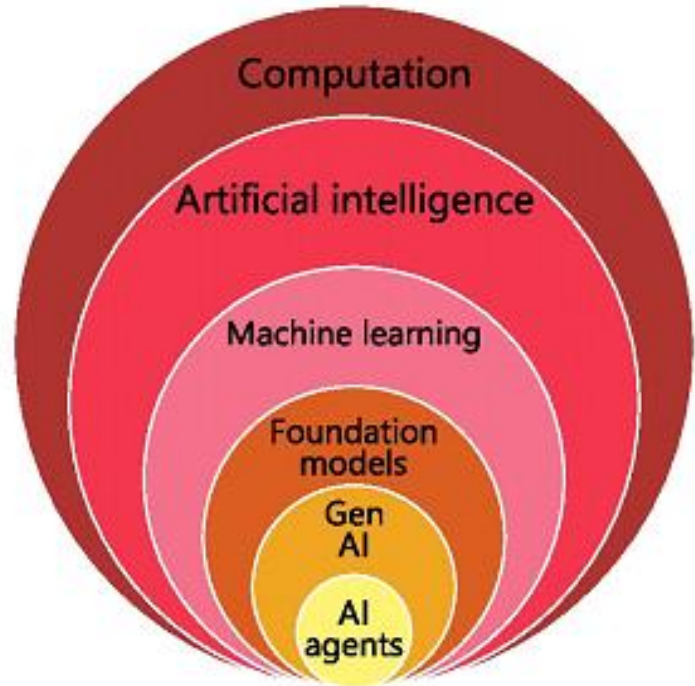
New frontier for finance is **generative AI**. Vast potential, new risks?

Decoding AI: what's new for the financial sector?



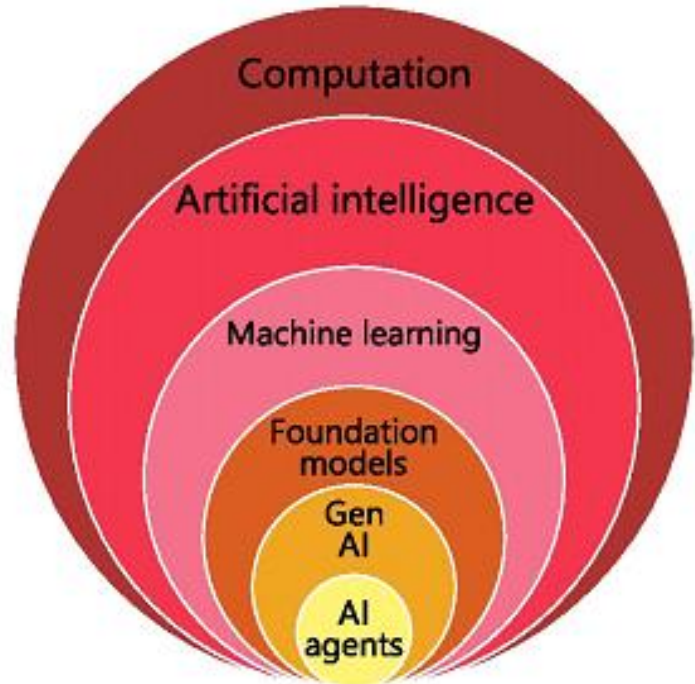
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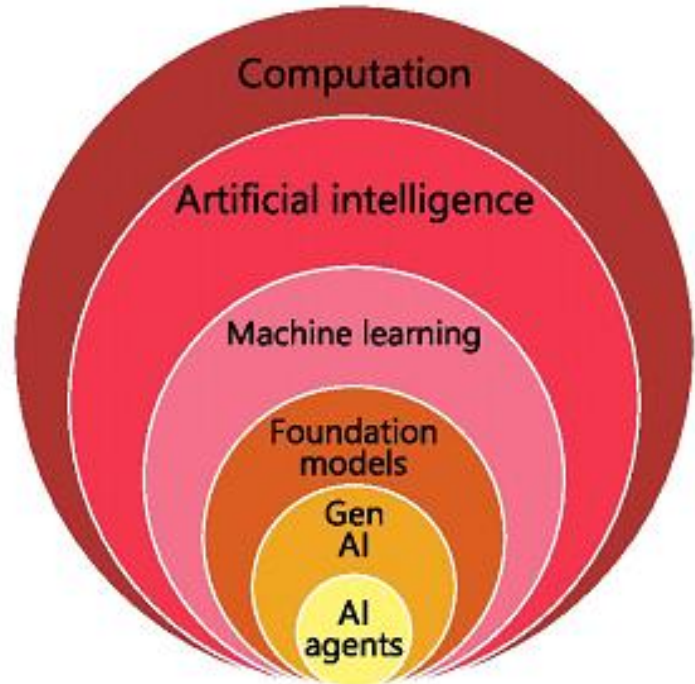
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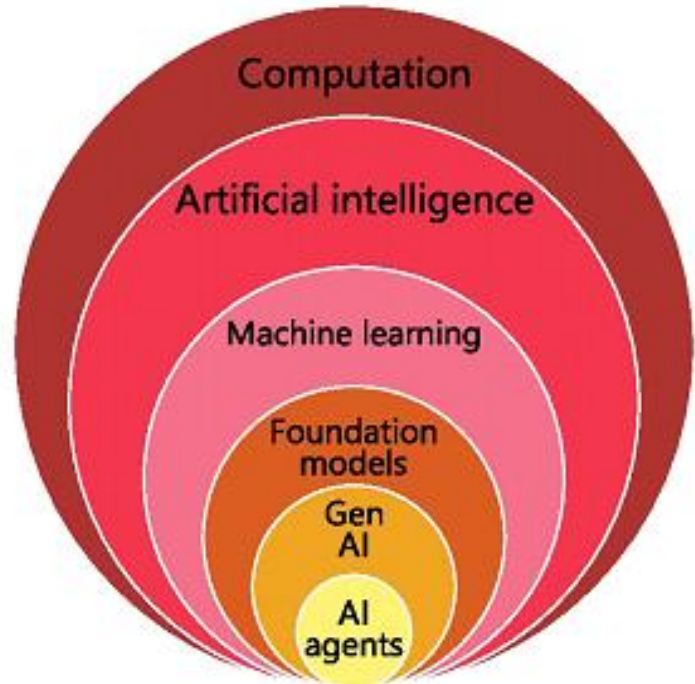
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Opportunities of AI in finance

	Financial intermediation	Insurance	Asset management	Payments
Traditional analytics	Rule-based risk analysis, greater competition		Risk management, portfolio optimization, HF trading	Fraud detection
Machine learning	Credit risk analysis, lower underwriting costs, financial inclusion	Insurance risk analysis, lower processing costs, fraud detection	Analysis of new data sources, HF trading	New liquidity management tools, fraud detection and AML
Generative AI	Enhanced credit scoring (unstructured data), easier back-end processing, better customer support	Better risk analysis with newly legible data, easier compliance	Robo-advising, asset embedding, new products, customer service	Enhanced KYC and AML processes

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Challenges arising from AI use in finance

	Financial intermediation	Insurance	Asset management	Payments
Traditional analytics	Rigid, requires extensive human supervision, small number of parameters		Zero-sum arms race for private gains, flash crashes	Technical vulnerabilities
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Financial stability and AI



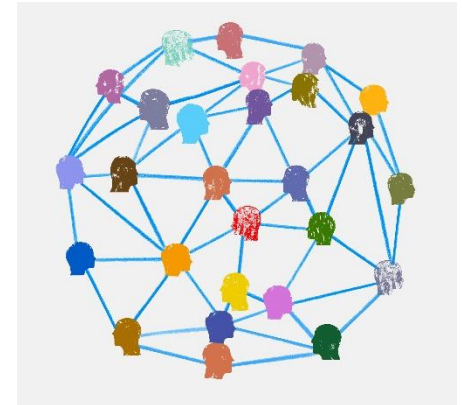
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Financial stability and AI



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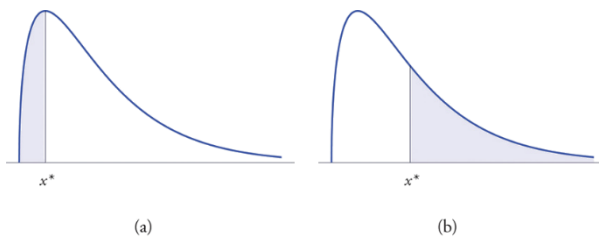
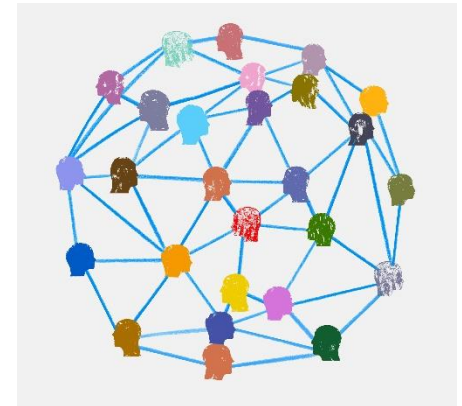


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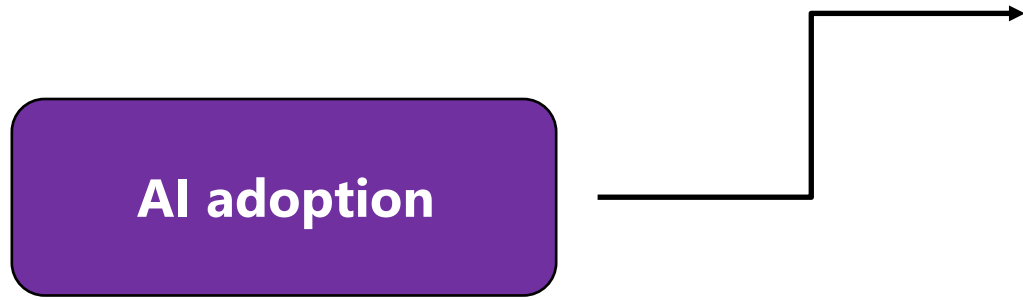
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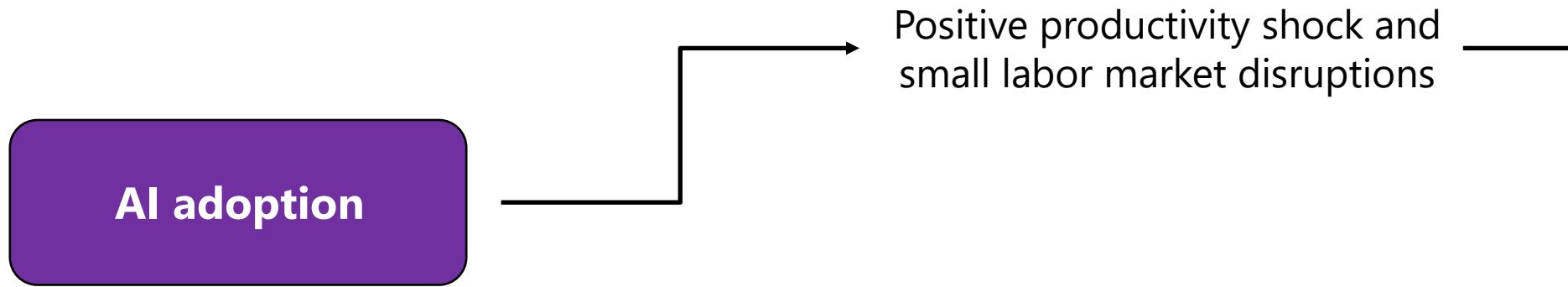
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Gen AI leads to the fat tail problem, third party dependencies, model herding and uniformity,

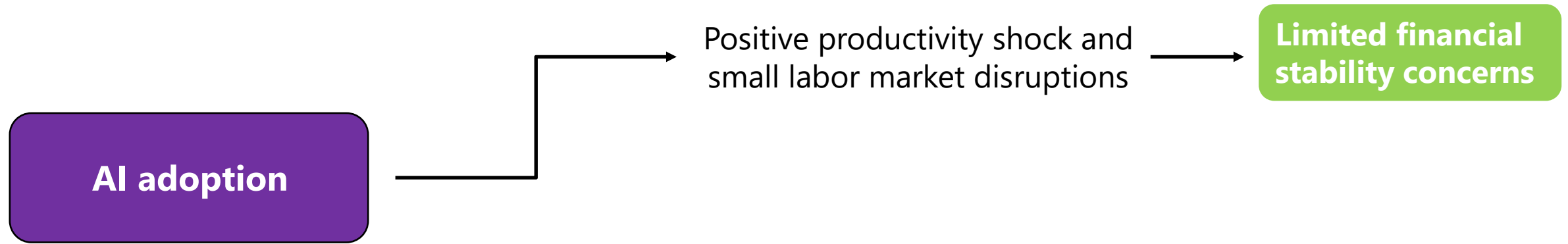
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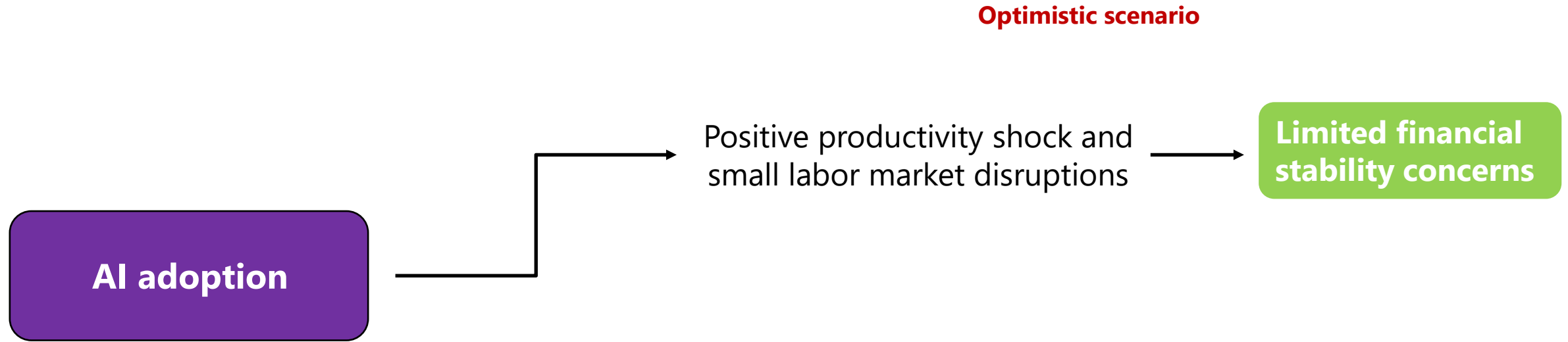
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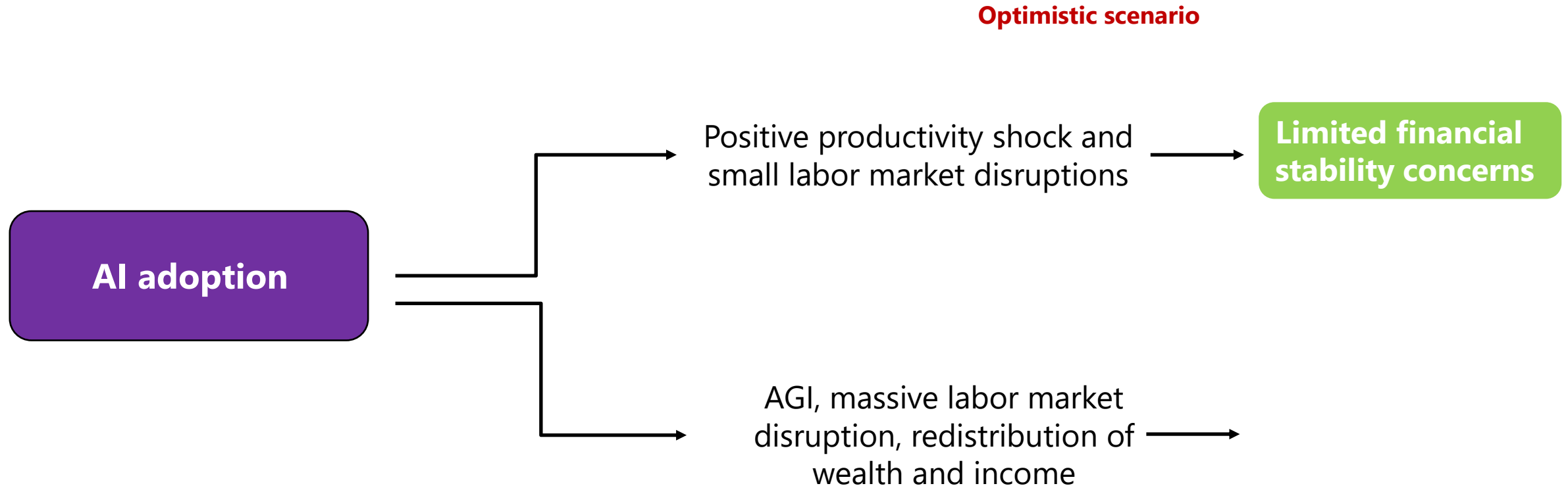
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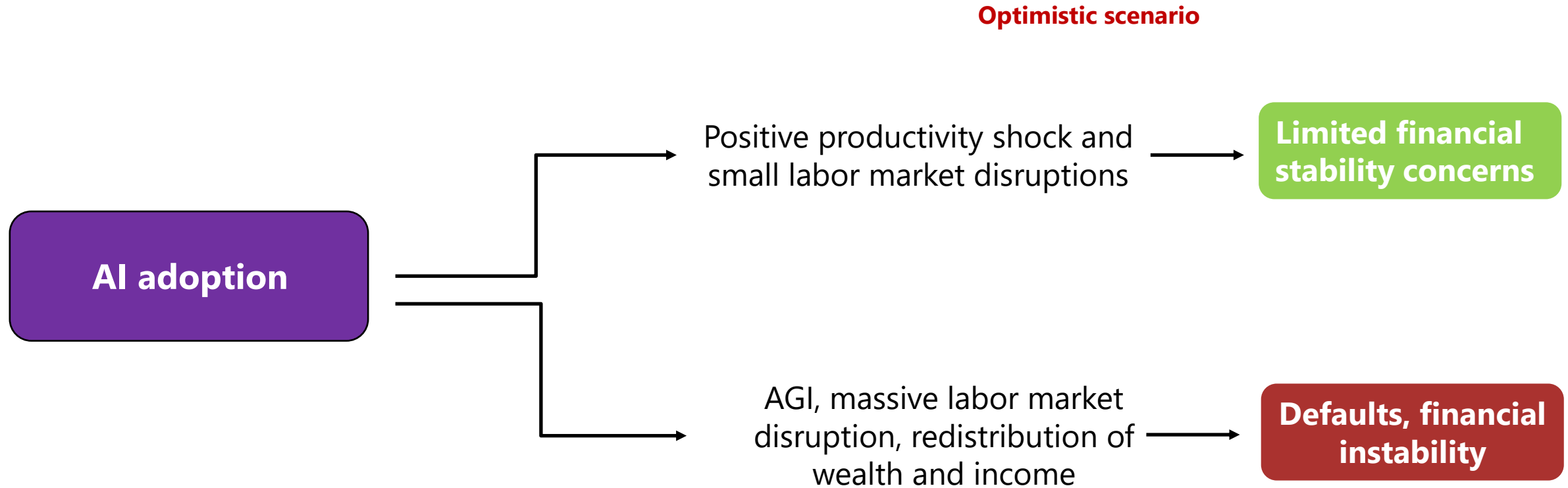
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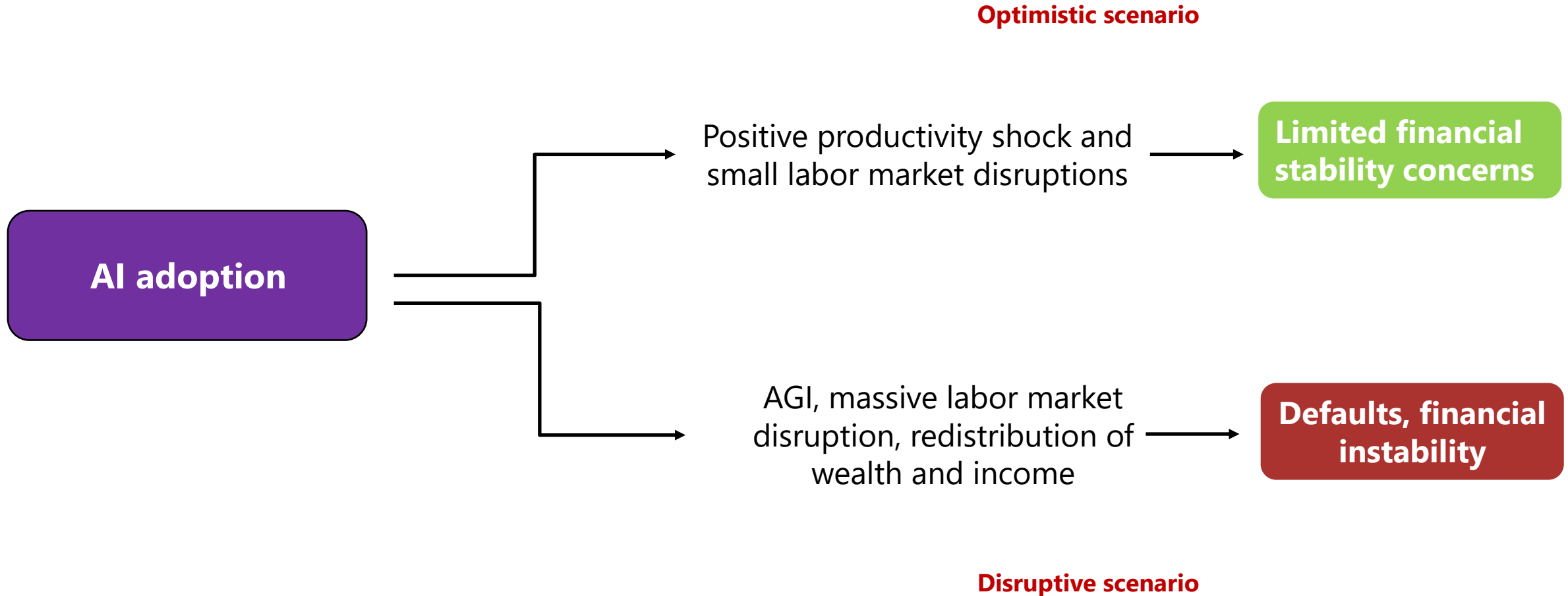
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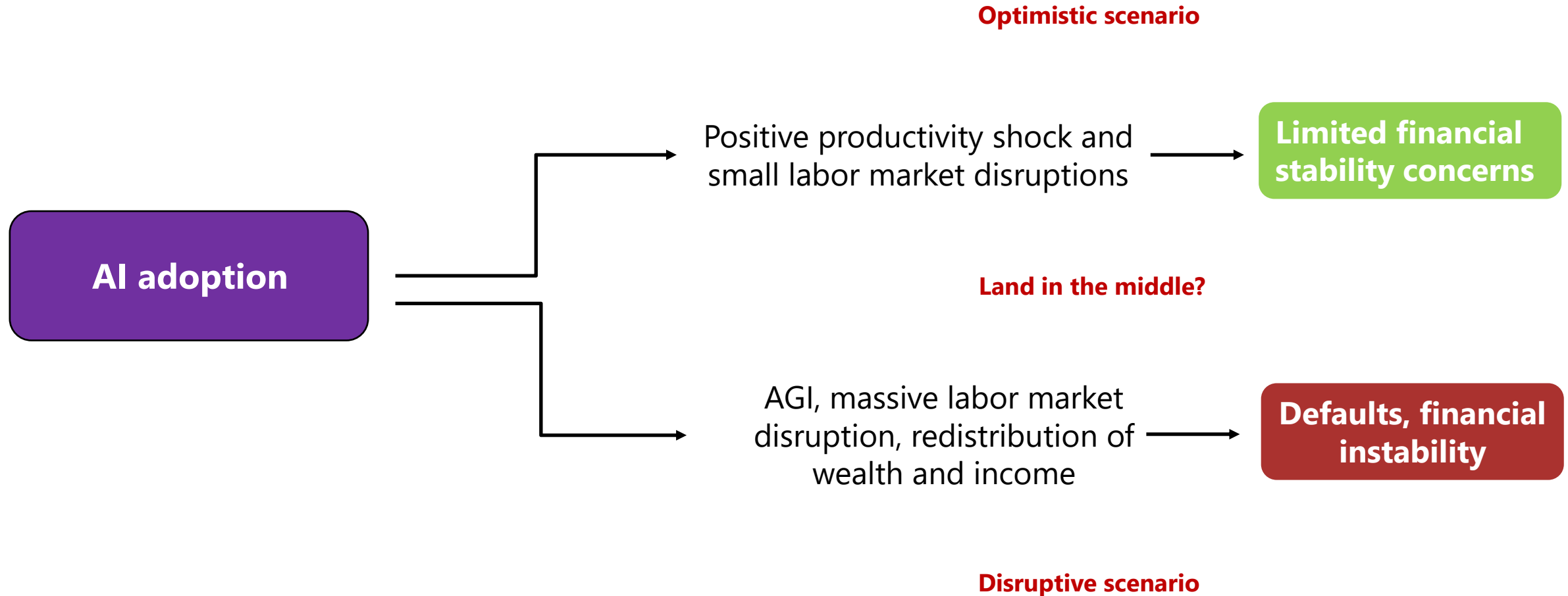
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Upgrading financial regulation for AI

Principles for AI regulation

- Social and environmental well-being

Regulatory models for AI*

International cooperation

*Based on Bradford (2023)

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- Transfer of knowledge and uniform risk assessment
- Prevent regulatory arbitrage

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Thank you! Questions?
Vatsala.Shreeti@bis.org

Using AI for prudential policy

Microprudential policy

- Supervision of individual financial institutions.
- AI powerful for recognizing patterns in large volumes of cross-sectional data.
- Better risk assessment, spotting market manipulation.
- Easier regulatory reporting and compliance for firms.
- Risks: explainability, bias, privacy

Macroprudential policy

- Supervision of the financial system as a whole.
- AI less effective to spot and measure systemic risk without human judgement.
- Financial crises are unique and rare – data availability is limited.
- The problem of “unknown-unknowns.”
- Future advances in AI may open up new avenues.

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