

Tech Debt Funding

*Systemic Effects of the Availability of
Venture Debt on the Distribution of
Early- and Late-Stage Funds in Tech
Ecosystems*

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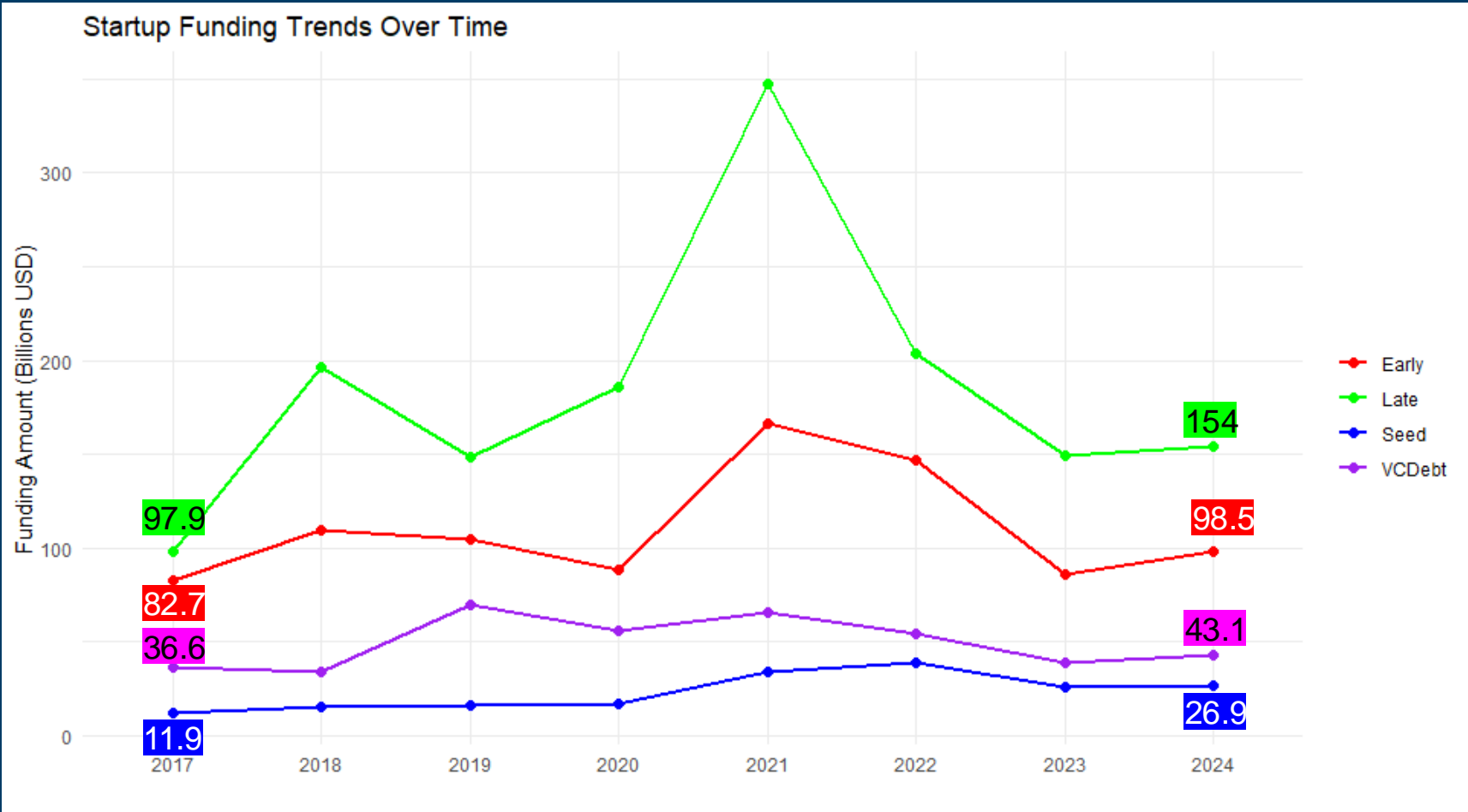
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How Relevant is Venture Debt compared to Venture Equity?

Total funds traded





Startups' finance through the life cycle

Early-stage startups:

- Negative cash flow.
- Lack of experience
- Inadequate partner network

So,

- High need for scouting
- Extensive coaching.
- Stakes

Suitable funding:

Equity sources: Accelerator / Incubator / Angel investor, Venture Capital

Debt sources: *VC debt*, Crowd loan, ICO

Late-stage startups:

- Significant amount of experience.
- Diminished need for guidance

So,

- Low need for coaching
- Increasing pursuit of autonomy.

Suitable funding:

Equity sources: Angel investor, corporate venture capital, family office, Government Venture Capital, Venture capital

Debt sources: *VC Debt*, Bank Loan



- Finance mechanism for early-stage growth-oriented startups that already have some form of professional equity investment (Morse, 2024).
- Short-term tenure nature, small amount, and non-convertible. “New” lenders provide **bridge loans for startups**.
- **Cost of capital:** higher than traditional loans, but lower than equity in the long-term. Accessible to startups’ at different life-stages.



Research Question

RQ

What benefits does the availability of Venture Debt bring to a tech startup ecosystem?

Does Venture Debt **complement** or **substitute** other forms of finance?

Over time **both effects** may occur as early and late-stage funding are interdependent over time.

*Note: **The exit multiple is about 4 to 5 on average.***

Multiplier effects on venture capital are found to be much higher than on other entrepreneurial investments.

Economies may be deemed stronger when they hold more late-stage funding reflecting value accumulation over longer times.

Hypotheses:

- Venture Debt **complements** equity financing: the amount of **Early-** and/or **Late-stage** equity funding will grow when more Venture Debt is available.
- Venture Debt **substitutes** equity financing: crowding-out of **Early-** and/or **Late-stage** equity will occur when more Venture Debt is available.

Methodology

Country – level analysis. T=10 (2015-2024). N = 59. Tech startups finance.

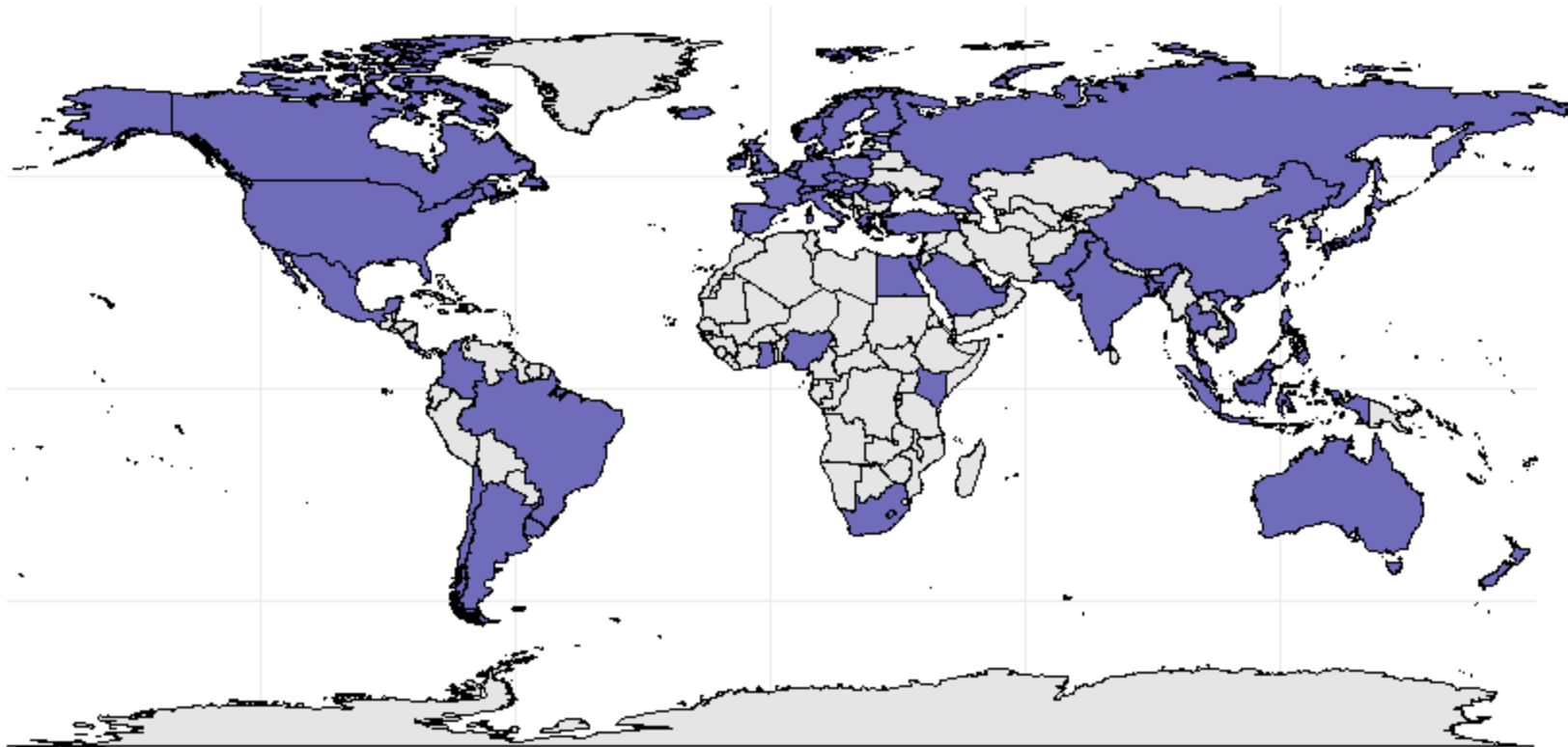
Panelvar estimation with predetermine and exogeneous vars: GMM (Sigmund and Frestl, 2021).

Variable Name	Definition	Scale of Measurement	Source
Early	Startup funding at the early stage	Millions (USD)	Traxn
Late	Startup funding at the late stage	Millions (USD)	Traxn
Grant	Non-equity funding received by startups	Millions (USD)	Traxn
Seed	Initial funding received by startups	Millions (USD)	Traxn
VCDebt	Venture capital debt financing	Millions (USD)	Traxn
Pol_est	Political stability estimate	Index Score (Scale: -3:3)	Freedom House
pat_inventor	Number of patents granted per total patent inventor	Count	Lens.org
GDP	Gross Domestic Product	Millions (USD)	IMF

Selected countries: N=59



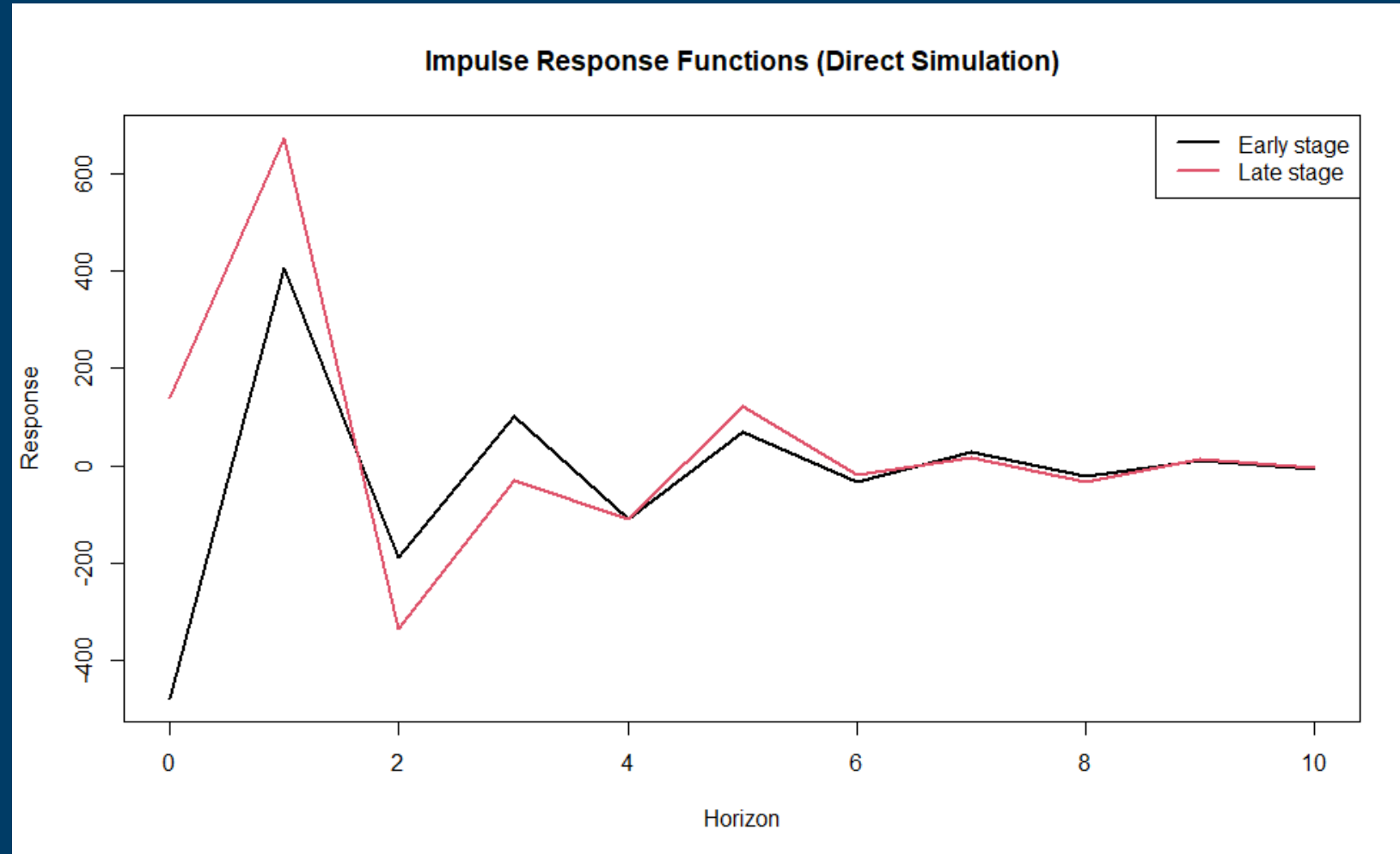
Map of Selected Countries



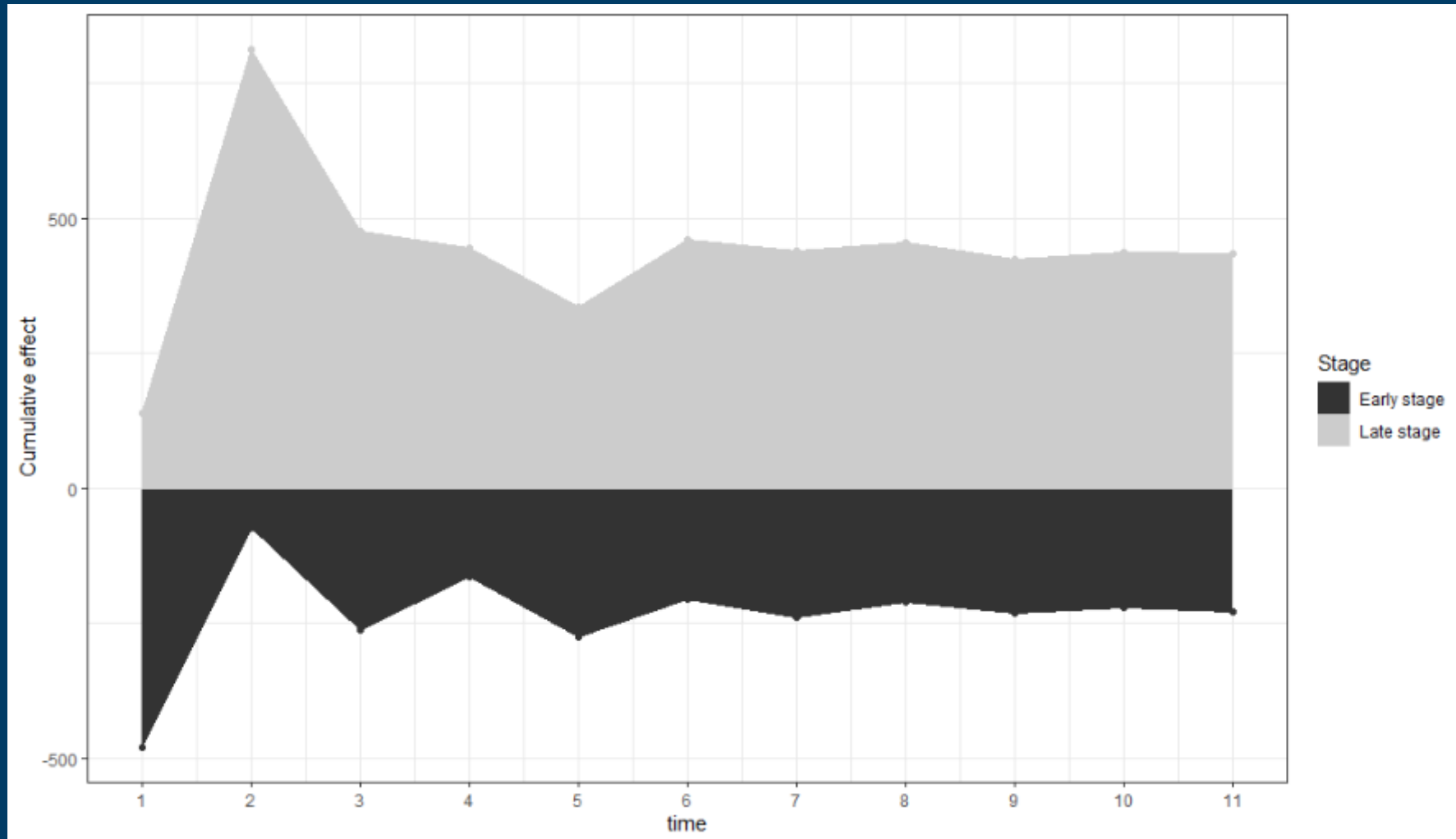
Model estimations

		Early _t	Late _t
Endogenous	Early_{t-1}	-0.7589 (0.3480) **	-1.2260 (0.7760)
	Late_{t-1}	0.3022 (0.1097) ***	0.6214 (0.2957) **
	Early_{t-2}	0.1723 (0.0468) ***	0.4405 (0.3984)
	Late_{t-2}	-0.0175 (0.0399)	-0.3426 (0.1976) *
Predetermined	Grant_t	-8.1751 (2.9852) ***	0.0976 (0.6086)
	Grant_{t-1}	1.8133 (0.3414) ***	6.3667 (0.3664) ***
	Seed_t	5.6140 (1.3626) ***	3.4248 (1.2816) ***
	Seed_{t-1}	1.8884 (1.0881) *	-0.4196 (0.4436)
Exogenous	Venture Debt_t	-3.6904 (2.0242) *	1.0660 (0.4514) **
	Patents / Inv._t	-0.0175 (0.0068) **	0.0052 (0.0021) **
	Political Stability_t	-0.0011 (0.0004) ***	-0.0032 (0.0011) ***
	GDP_t	0.9502 (0.3457) ***	0.1451 (0.0404) ***
Statistics			
Note: <i>In a comparison with four other similar models, this model performs best on these statistics.</i>	Hansen J-Test	26.5552 (p=0.0877)	
	Numb. Instruments	42	
	MMSC BIC	-143.64	
	MMSC AIC	-33.44	
	MMSC HQIC	-82.80	

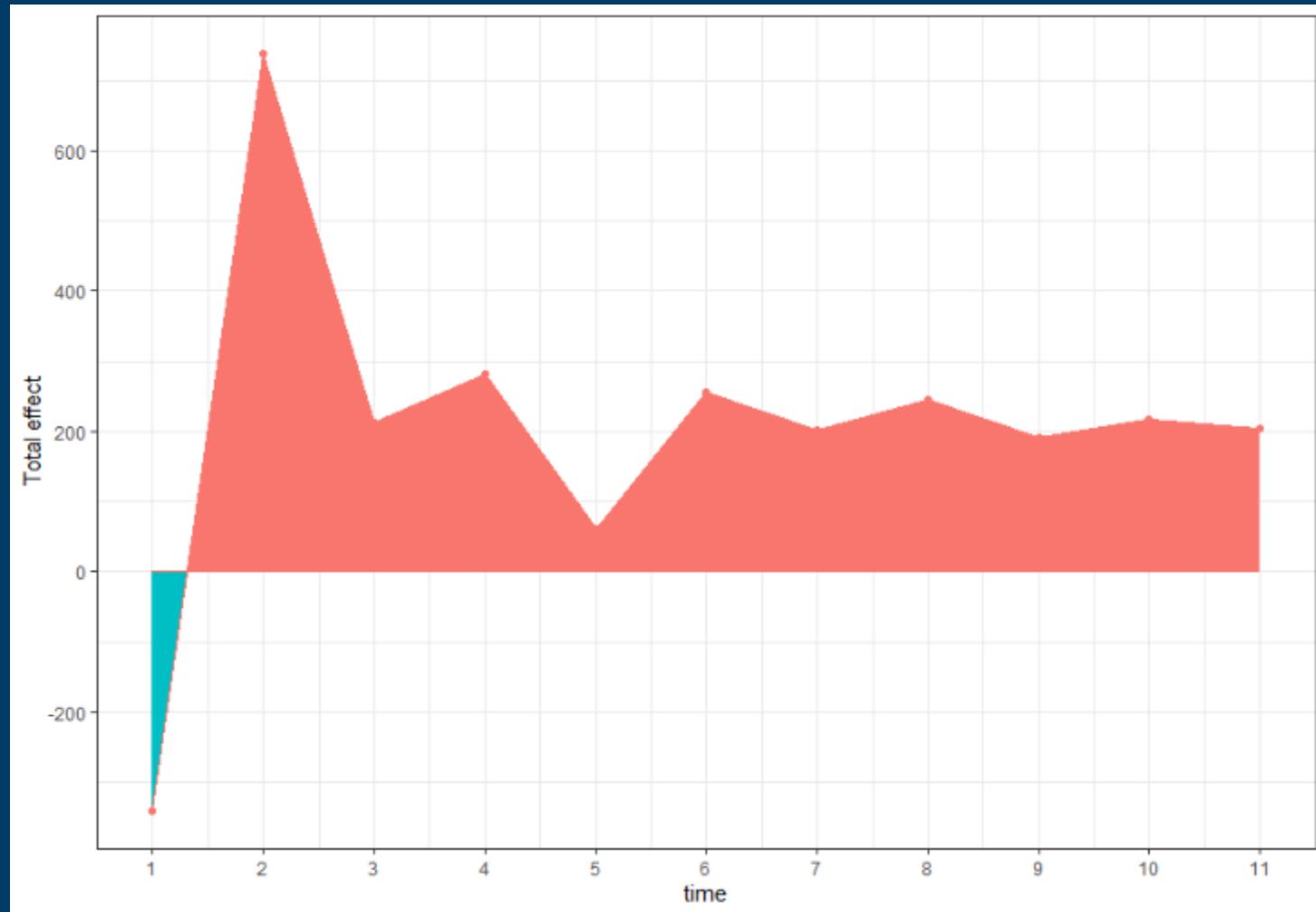
IRF: Shock of 1 S.D. in Venture Debt on Early and Late-stage funding



Cumulative effects on Early and Late-stage funding of a 1 S.D. shock in Venture Debt



Total net effect on Early and Late-stage funding of a 1 S.D. shock in Venture Debt





Key findings

Venture Debt Reshapes and Enhance Startup Financing

The existence of Venture Debt is not only an option for startups but a finance market enhancer triggering larger overall available funds.

- Shifts capital availability from **early-stage to late-stage** startups.
 - Exhibits a **crowding-out effect** on early-stage equity funding.
 - Less early-stage funding is needed or available?
 - Venture debt is **cheaper** than venture equity in the long run.
 - Should we maintain the view of venture debt as a **last resort** for firms under **financial stress** or **is it a more efficient way of financing innovation?**
- Late-Stage Impact: A Liquidity Transfer
 - Venture debt at this stage exhibits a **complementary effect**, attracting more capital (away from early-stage) due to lower perceived risk.
 - This reflects adaptative investor behaviour moving resources to potentially more successful (in terms of longevity) firms.
- The results reveal that Venture Debt enhances the financing efficiency of tech ecosystems.

Thanks!

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