International Monetary Monitor

A Study of Income Velocity in 89 Economies

John Greenwood, International Monetary Monitor

and

Steve Hanke, Johns Hopkins University

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"The natural experiments that come up over a wide range provide a source of evidence that is stronger and more reliable than any single very limited body of data." **Milton Friedman, interviewed by John B Taylor, *Inside the Economist's Mind* 2007.**

Outline of the Paper

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- **Reasons to study demand for money across many countries**
- **The failure of conventional economics to forecast inflation during Covid**
- **The neglect of monetary analysis, specifically broad money monetarism**
- **Why broad money?**
- **Evidence for money driving spending. The model/concept and a few examples.**
- **M2 & M3 Income Velocity in 25 Developed Economies.**
- **M2 & M3 Velocity in 64 EM Economies.**
- **Summary of Results**
- **Appendix 1 – Common Errors in Understanding Velocity**
- **Appendix 2 – US Income Velocity as an Anomaly**

On the Desirability of Studying a Wide Range of Data

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On modern methods of statistics and time series:

"I believe that you have a more secure basis if, instead of relying on extremely sophisticated analysis of a small, fixed body of data, you rely on cruder analysis of a much broader and wider body of data, which will include widely different circumstances.

"The natural experiments that come up over a wide range provide a source of evidence that is stronger and more reliable than any single very limited body of data."

Milton Friedman, interviewed by John B Taylor (p. 133), *Inside the Economist's Mind*, published 2007.

Why Broad Money?

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1. Less Distortions

Broad money overcomes the problem of transfers into or out of demand or current account deposits due to (a) changes in interest rates or (b) regulatory changes.

2. Portfolio Preferences

Broad money is unaffected by shifts in liquidity preference. Higher risk portfolios may require larger narrow money balances; lower risk portfolios may require smaller narrow money balances.

3. Banks versus Non-Banks

Transfers between bank-created money and holdings of non-bank liabilities (Mortgage Finance Companies, MMMFs, etc) affect leverage in an economy but do not change the quantity of bank-created money.

Money Drives Spending Model

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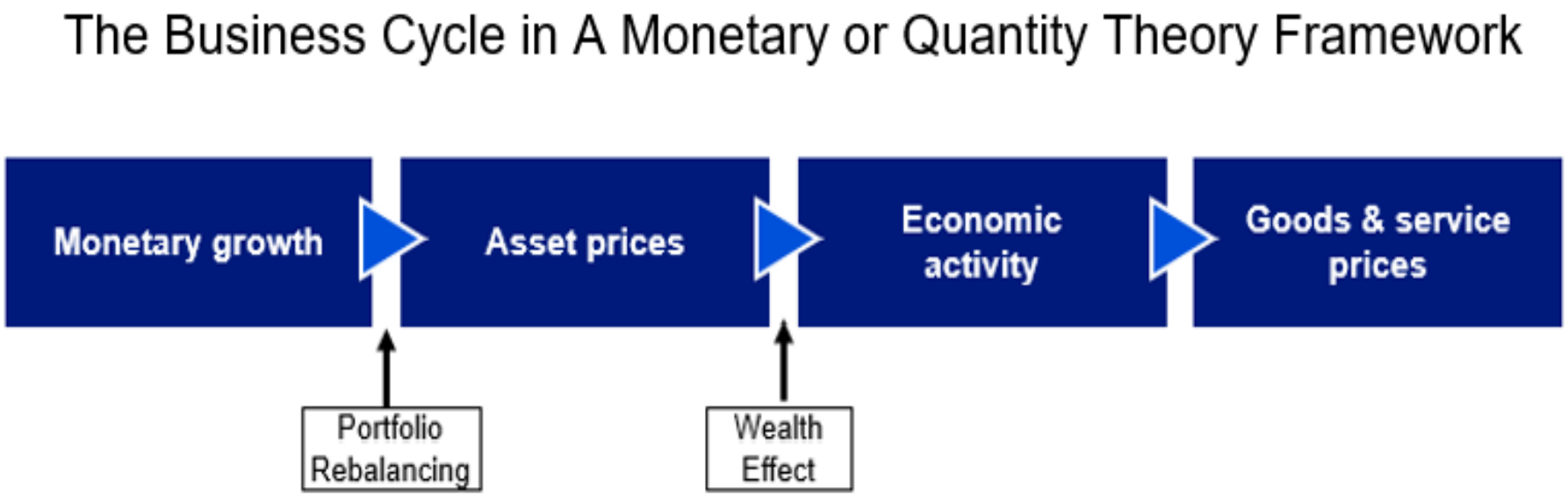
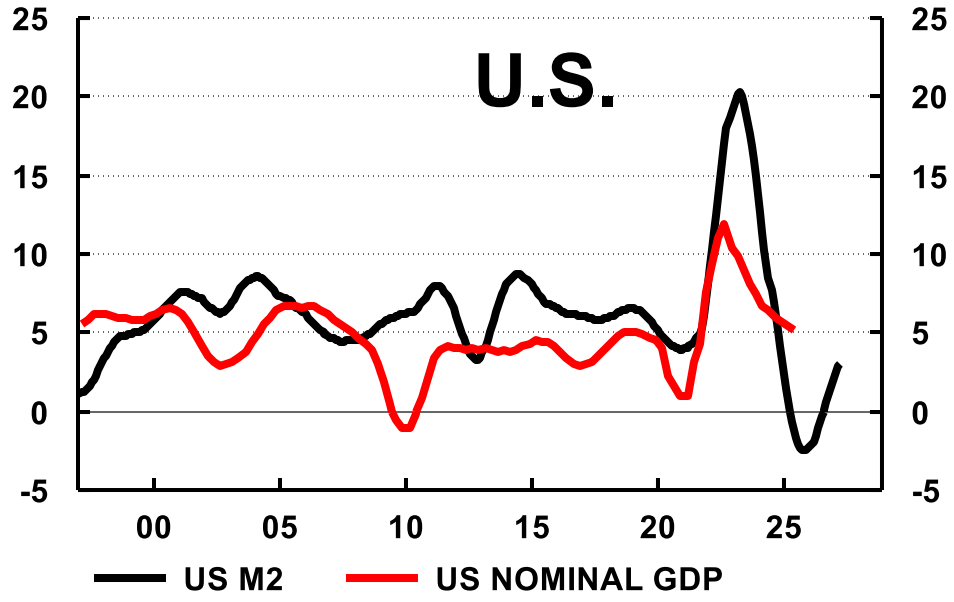
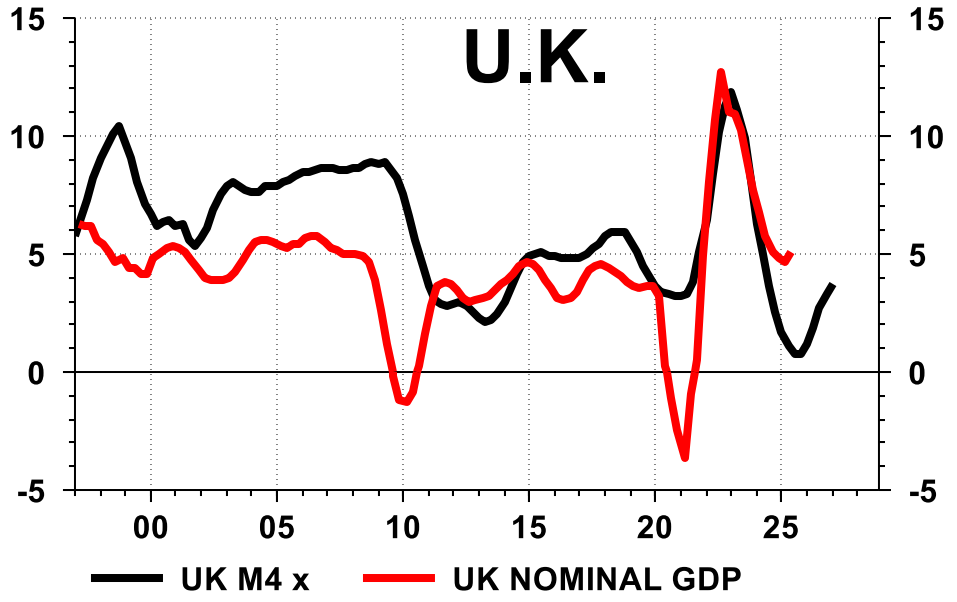


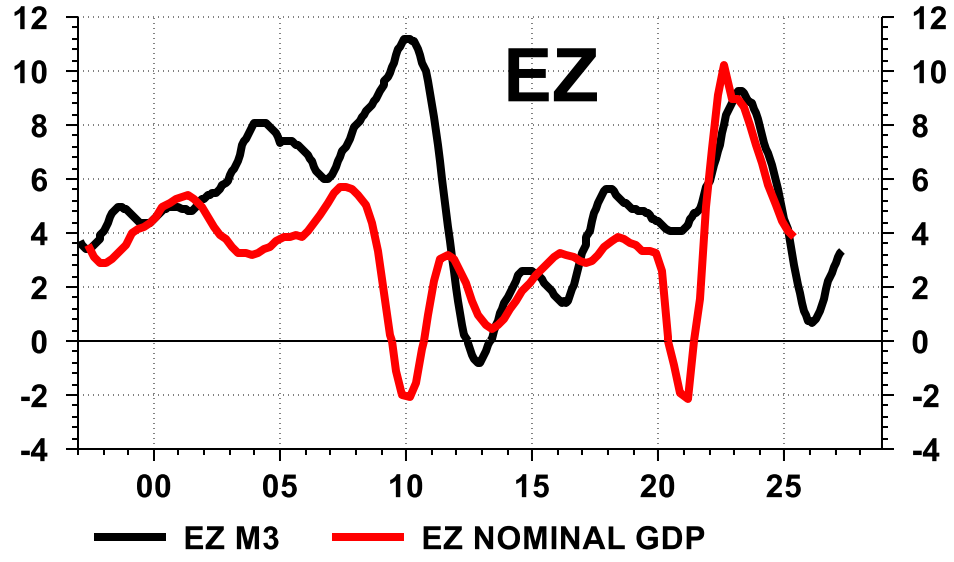
The business cycle consists of expansion and contraction (or slowdown) phases in economic activity. These phases are initiated by substantial and sustained changes in the rate of growth of broad money. Expansionary or contractionary monetary impulses are transmitted first to asset prices, then later to economic activity, and only finally to inflation. This process is known as the *transmission mechanism*.

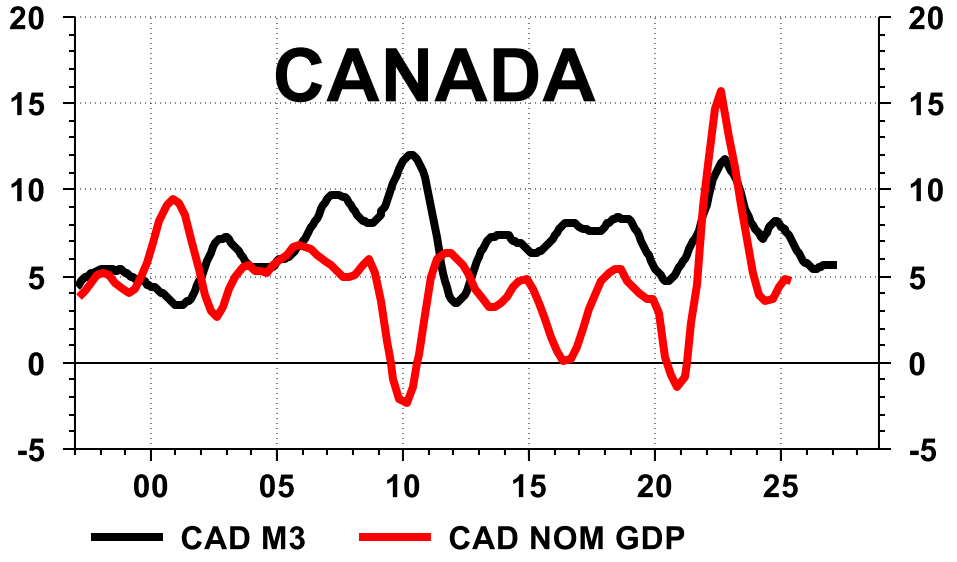
MONEY & NOMINAL GDP OF US, UK, EZ & CANADA

(%YOY, 6Q MAV, MONEY SHIFTED 18M FWD)





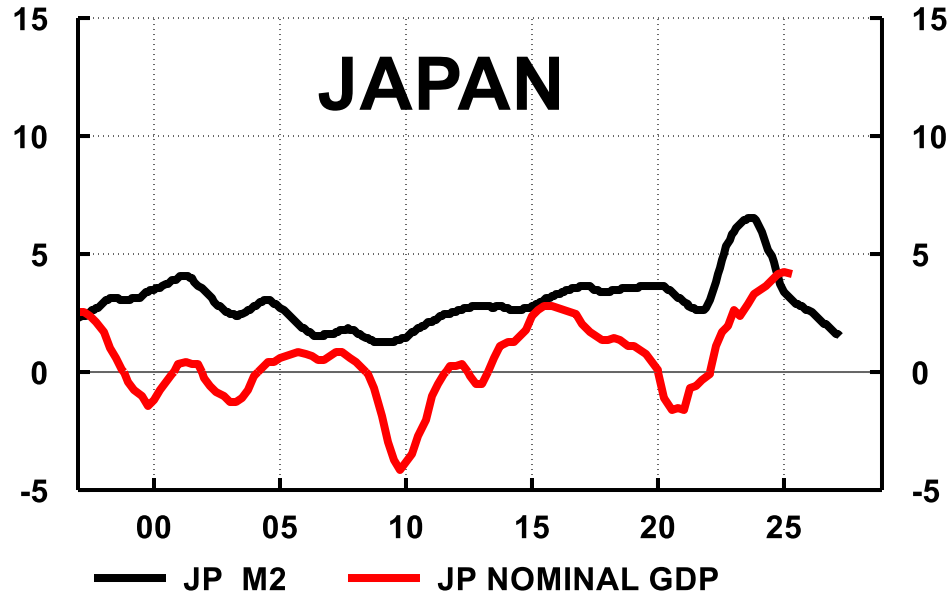


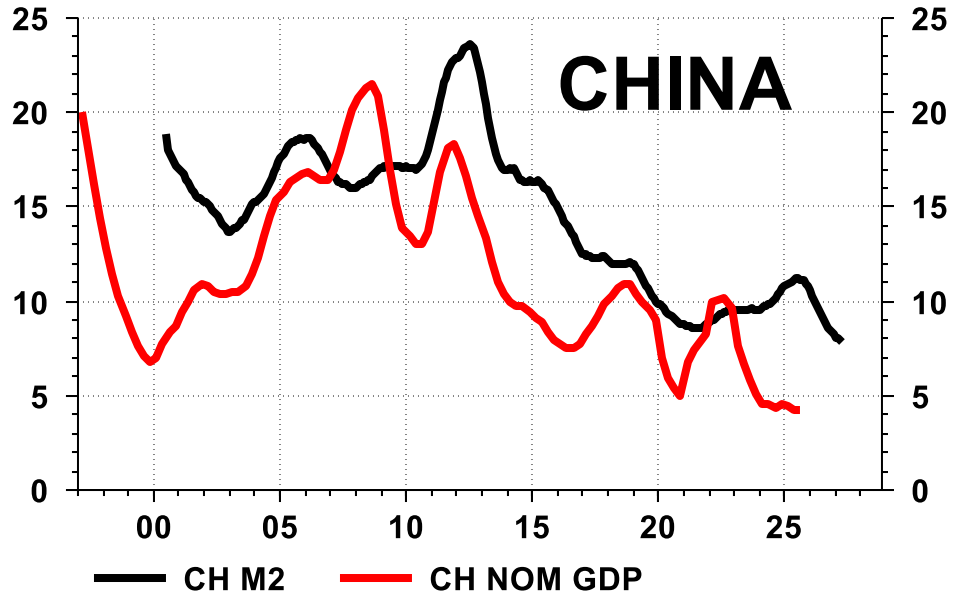


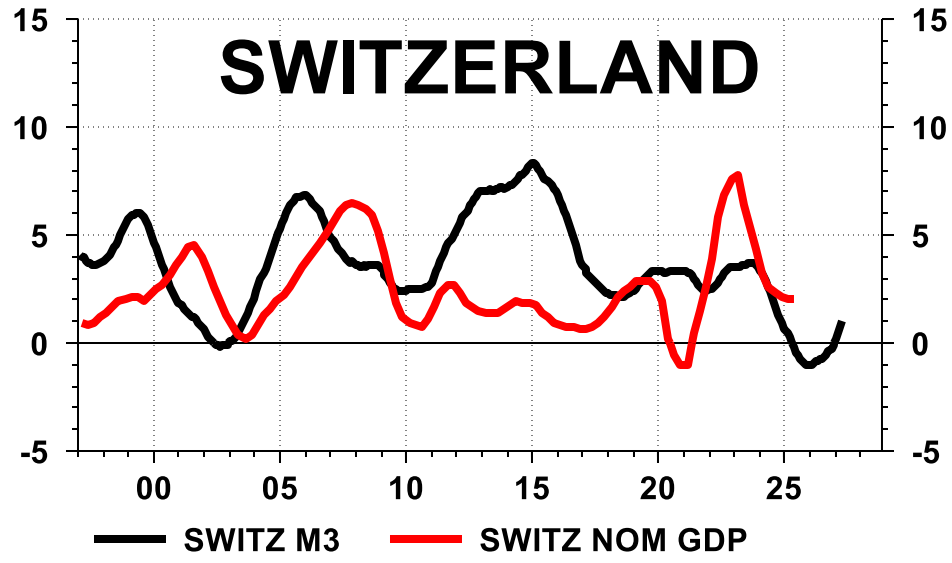
Source: LSEG Datastream

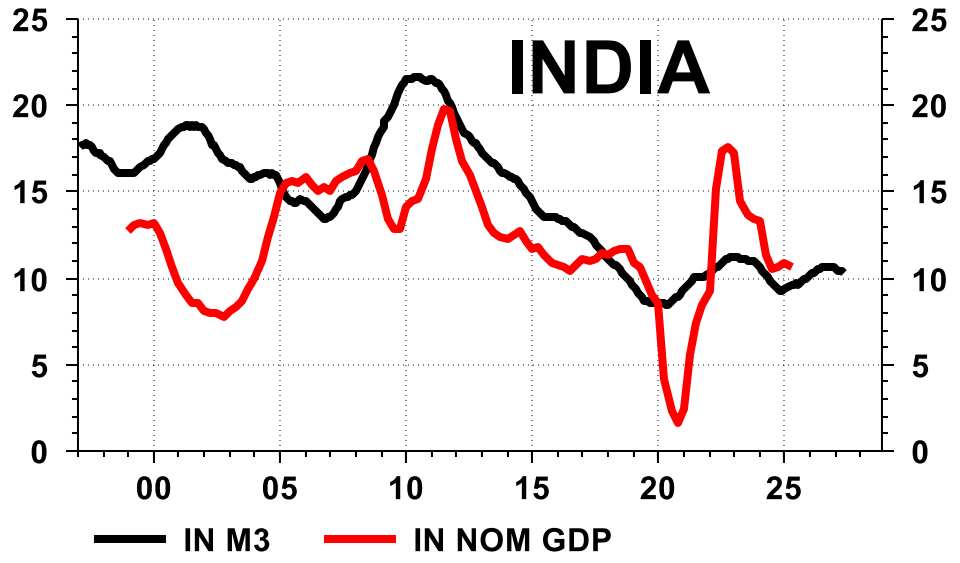
MONEY & NOMINAL GDP: JAPAN, CHINA, SWITZERLAND & INDIA

(%YOY, 8Q MAV, MONEY SHIFTED 18M FWD)









Source: LSEG Datastream

The Stella, Singh, and Bhargava (SSB) Critique of monetary analysis

(IMF WP/21/6, Some Alternative Monetary Facts)

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Table 1. Use of Money as Demand Deposits

Bank Debits and Deposit Turnover Excluding Interbank Deposits and Collection Items, at all commercial banks, (annual data, 1919-1941)

Year	GDP/M1	GDP/DD	ALL DEBITS/GDP	GDP	Turnover Ratio/annual	Value In $ billions	
						All Banks	
					DD	DD	Debits
1927	4	5	9	104.6	41	22.3	915
1937	3	4	7	93.0	25	25.7	635
1947	3	4	4	249.6	19	59.0	1104
1957	4	6	5	474.0	31	76.5	2357
1967	5	7	8	860.0	57	123.2	6666
1977	5	**7**	21	2081.8	146	292.2	42722
1987	9	**14**	46	4855.2	623	355.7	221729
1996	9	17	58	8073.1	922	472.2	468571

Source: Federal Reserve and IMF Staff estimates

Errors in the SSB Critique of Monetary Analysis

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1. **Focus on narrow money analysts**
2. **"Money is endogenous" – which is irrelevant to money holdings per unit of nominal GDP**
3. **Failure to understand why inflation was low in 2010-2020**
4. **Failure to distinguish between two types of QE**
5. **The authors conflate two concepts – (1) transactions per unit of time *and* (2) dollars of income generated per unit of money (or its inverse, money holdings per unit of income)**

Until 1946, US Income Velocity for M2 was Downward-Sloping

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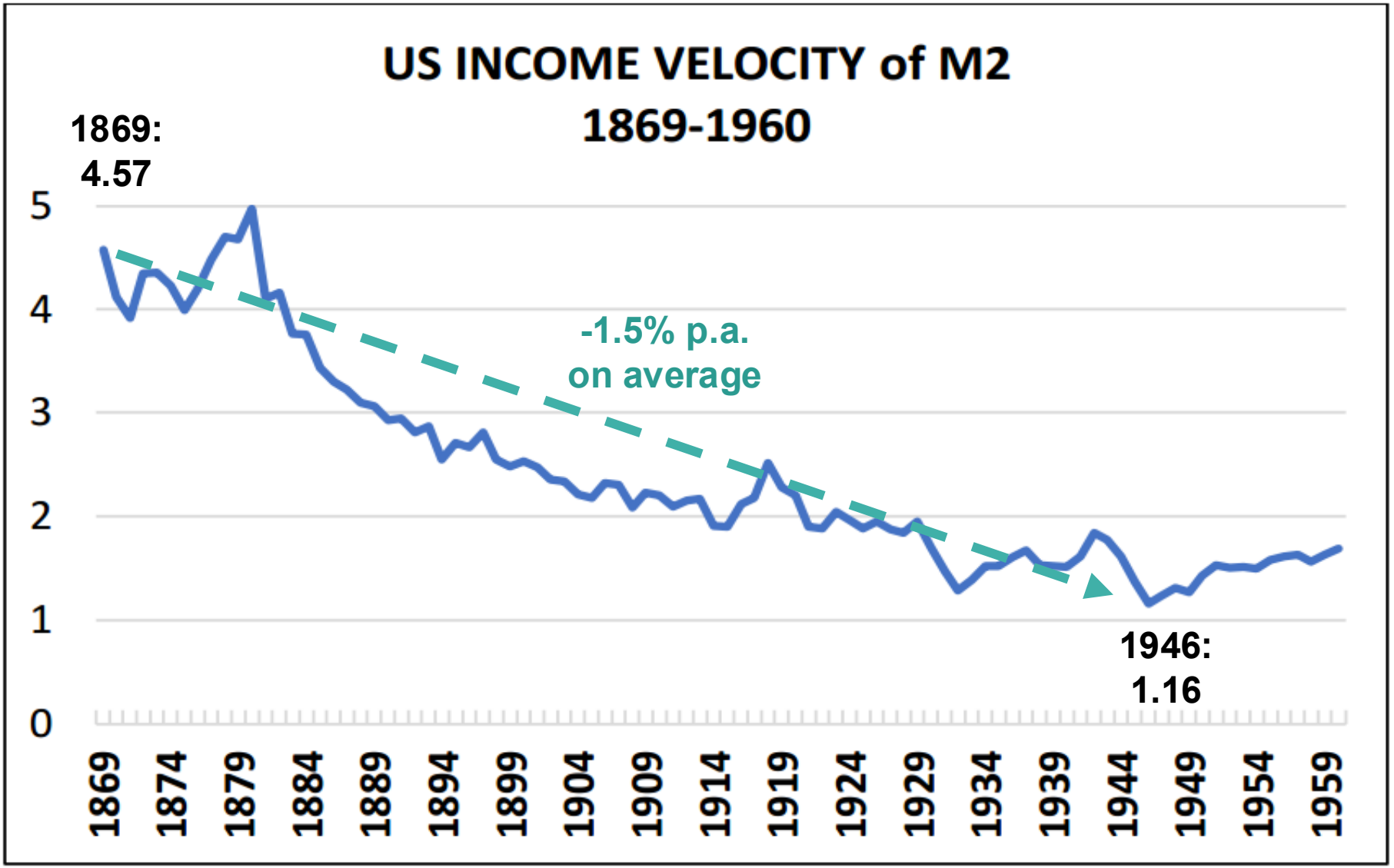

US Post-War Income Velocity an Anomaly

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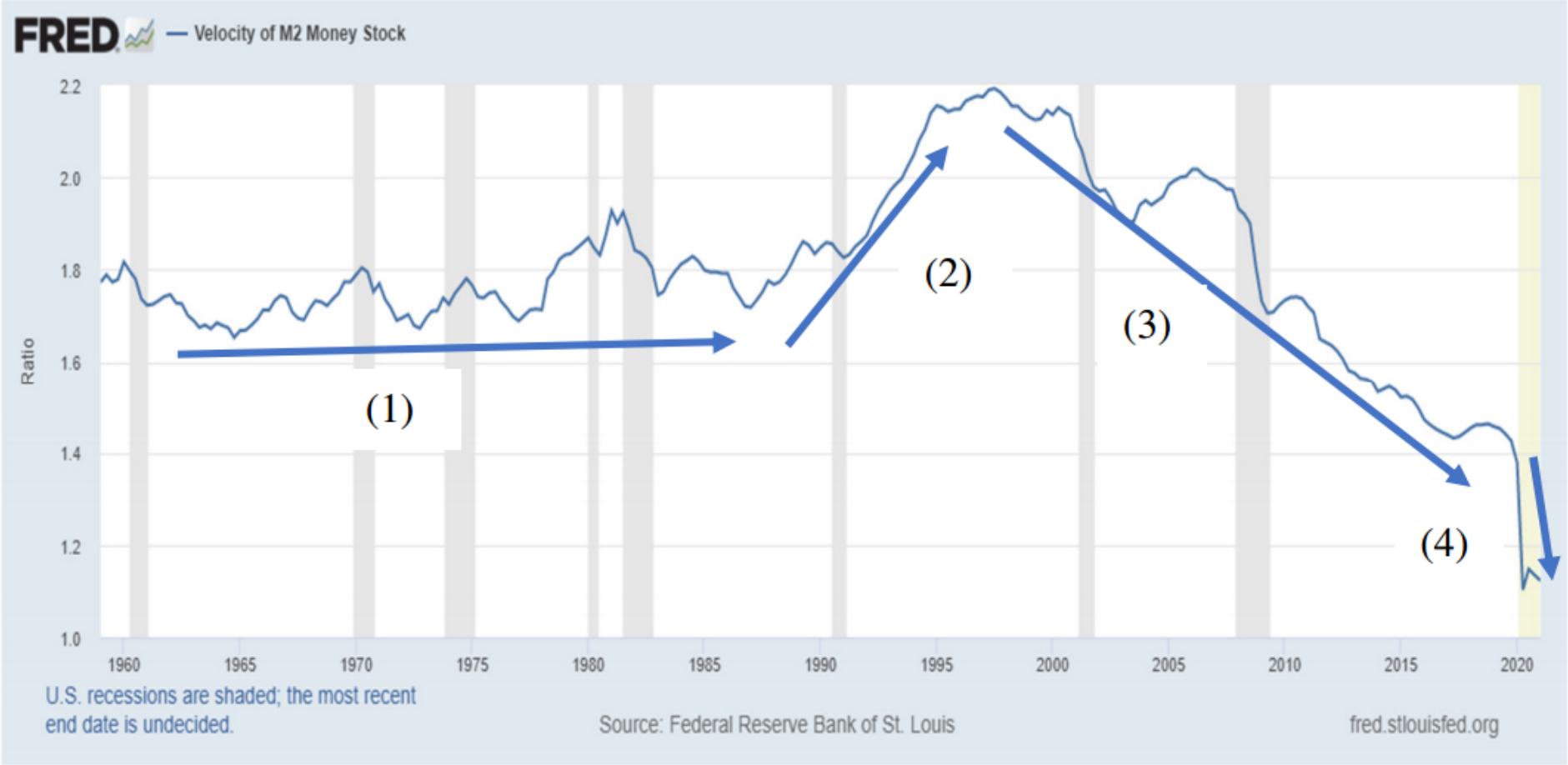
Figure 3: US Income Velocity for M2 (Nominal GDP/M2), 1959-2021



M2 Velocity in 24 Developed Economies

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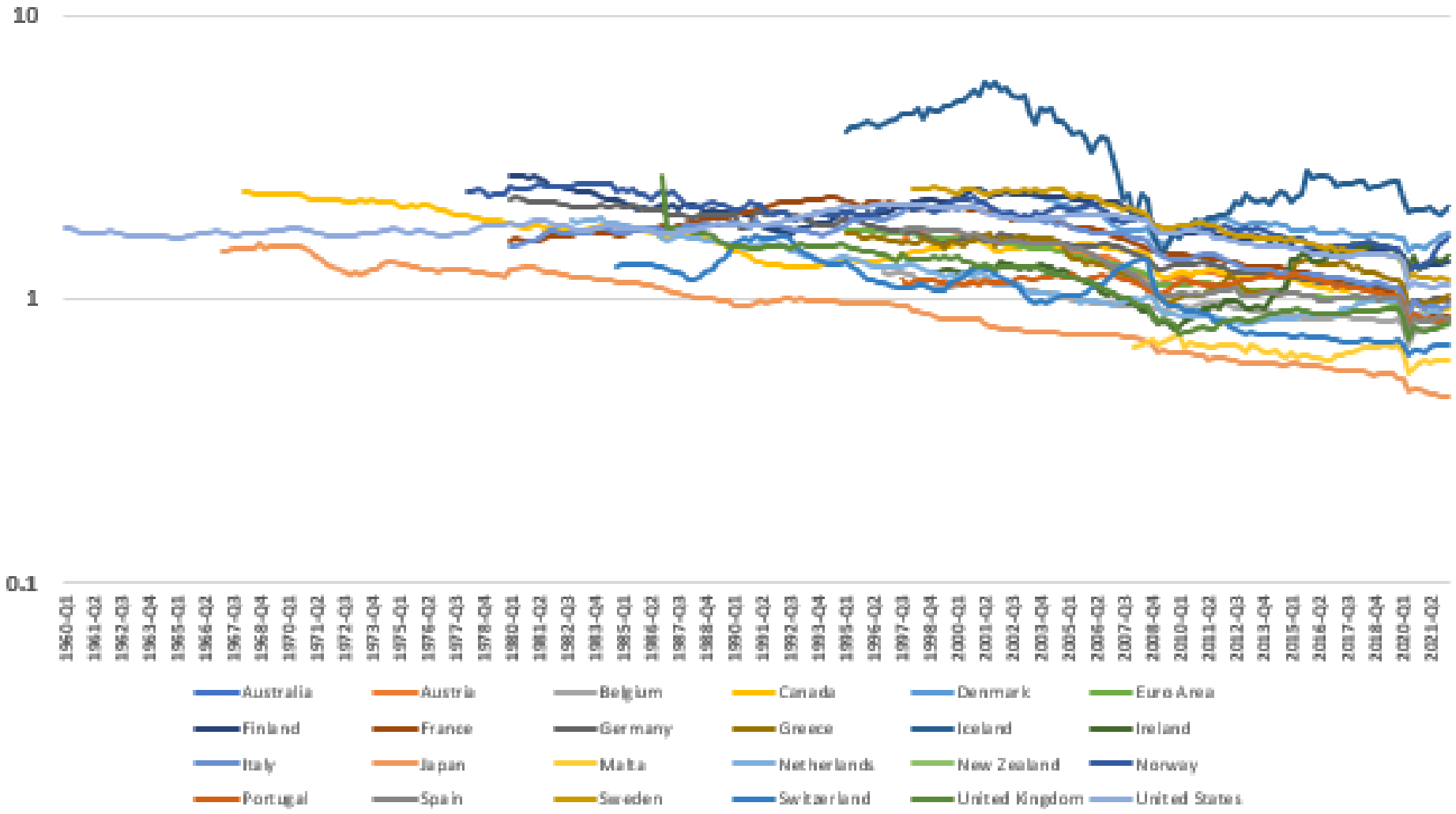

M3 Velocity for 24 Developed Economies

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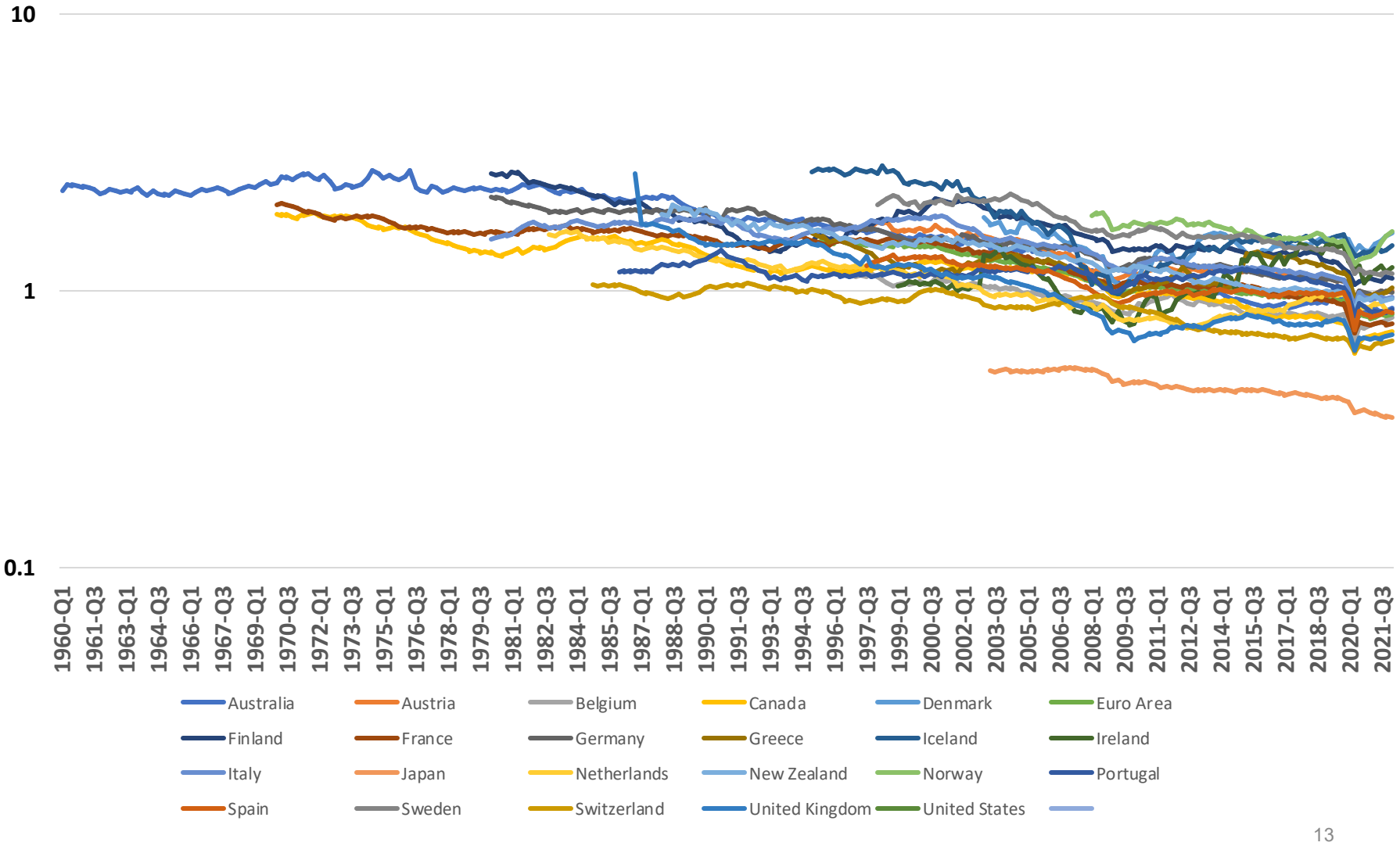

M3 Velocity in 24 Developed Economies (Max, min, and median)

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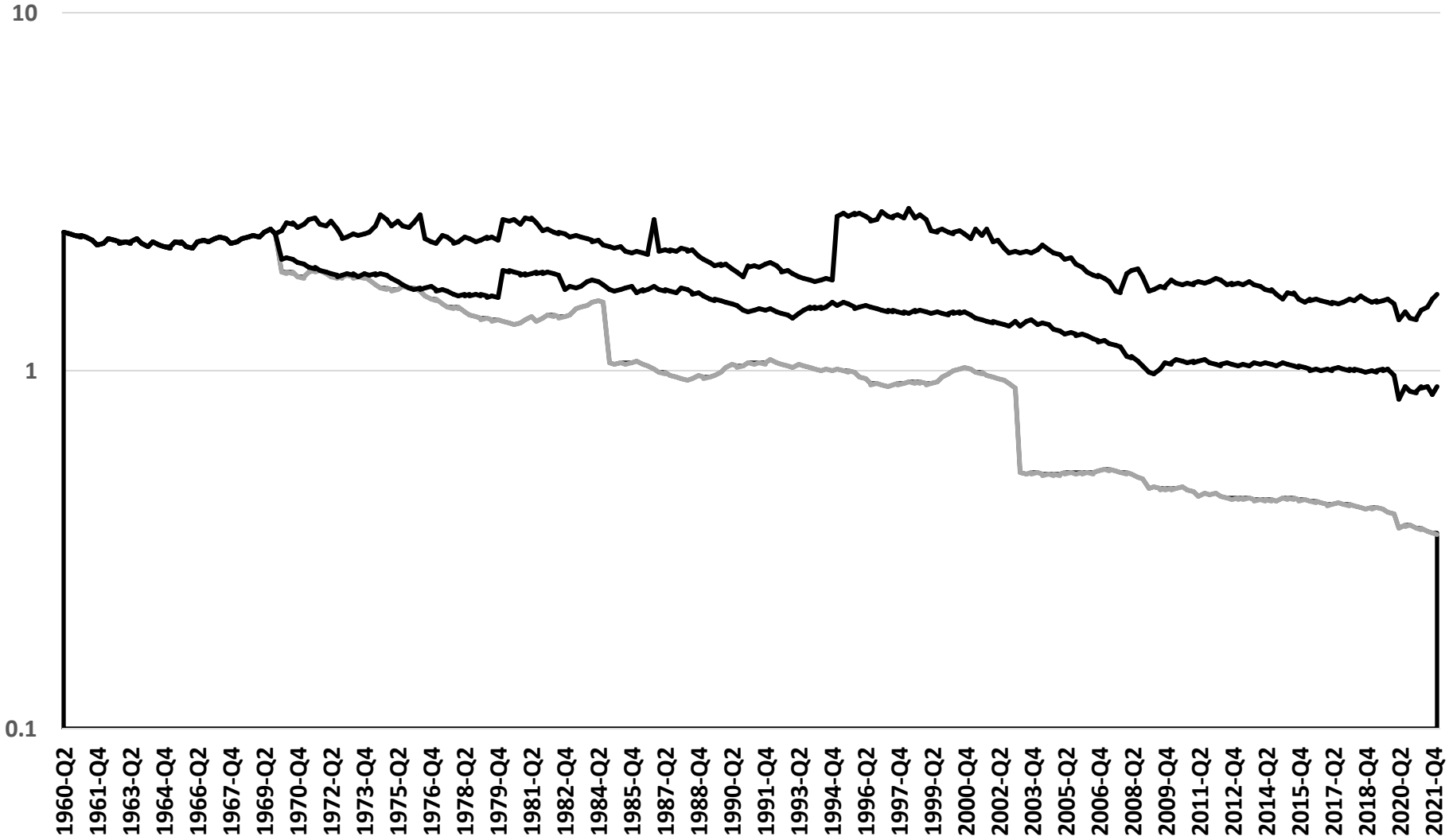

M2 Velocity of 64 EM Economies

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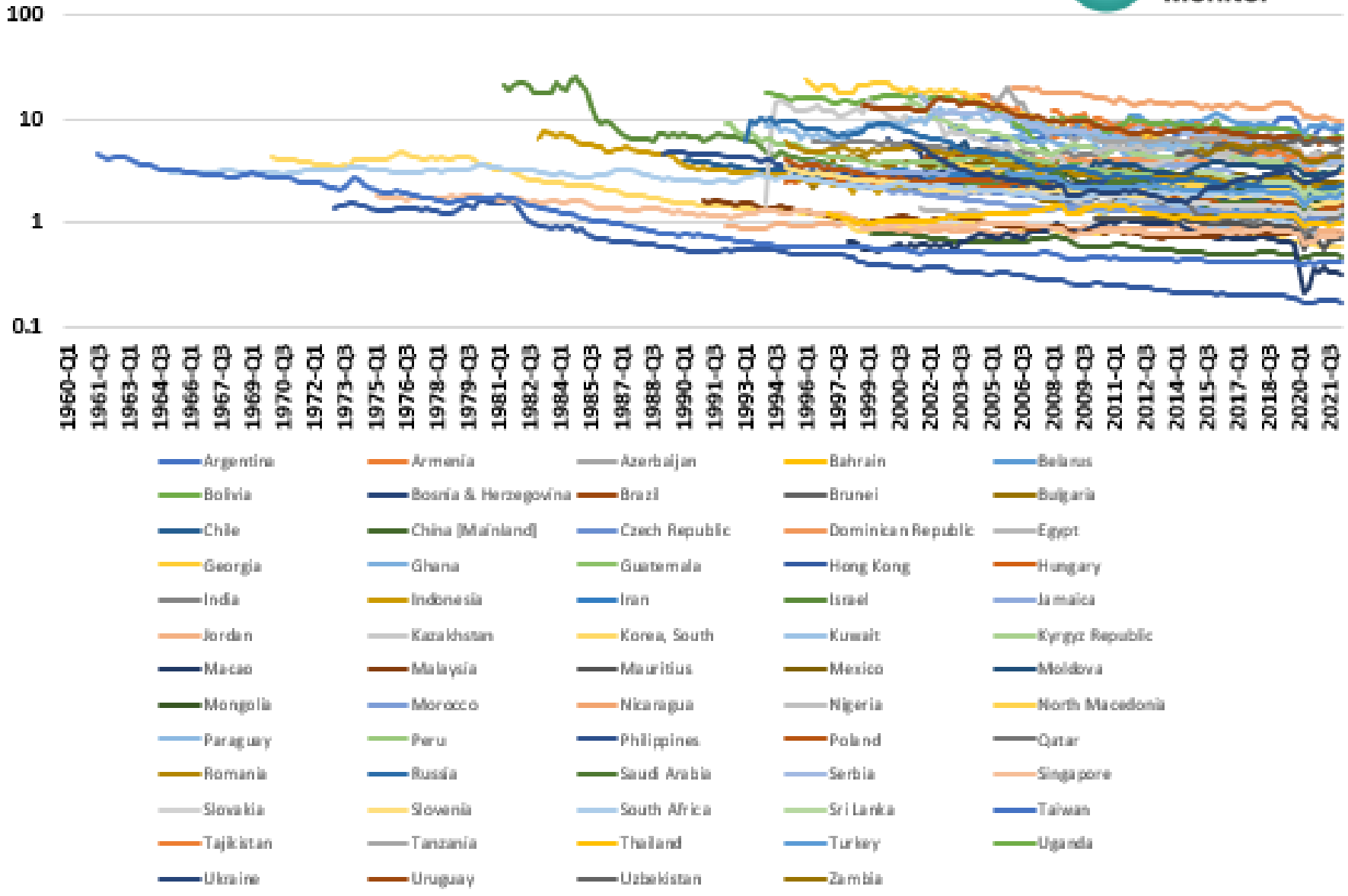

M3 Velocity for 64 EM Economies

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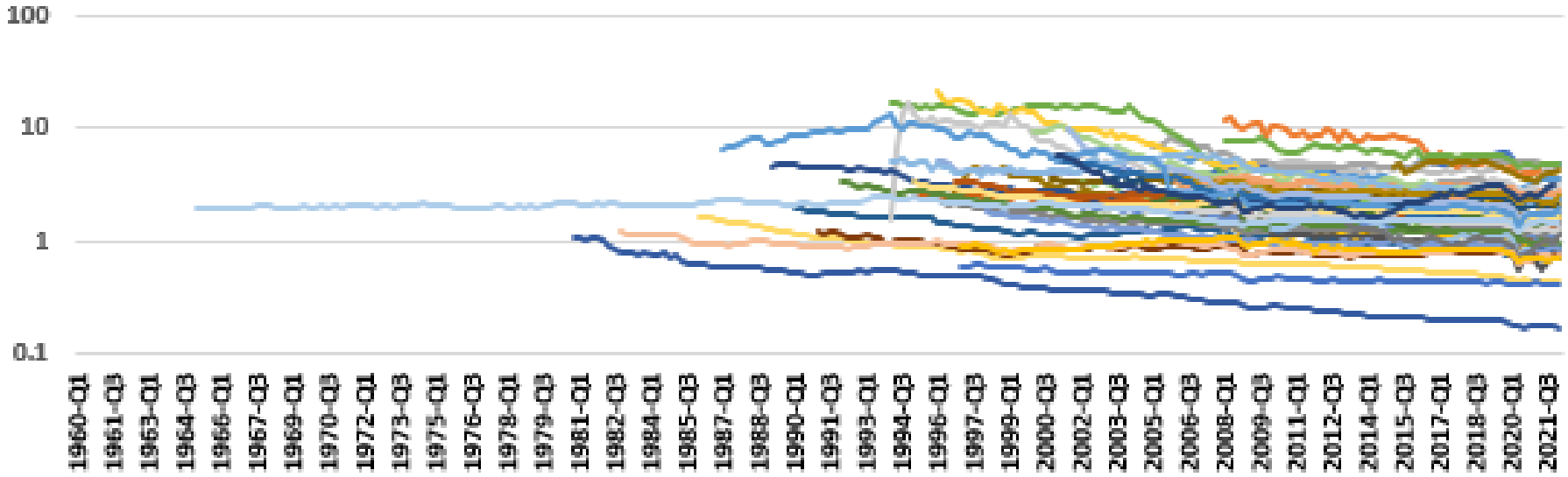

Argentina, Armenia, Azerbaijan, Bahrain, Belarus, Bolivia, Bosnia & Herzegovina, Brazil, Brunei, Bulgaria, Chile, China [Mainland], Czech Republic, Dominican Republic, Egypt, Georgia, Ghana, Guatemala, Hong Kong, Hungary, India, Indonesia, Iran, Israel, Jamaica, Jordan, Kazakhstan, Korea, South, Kuwait, Kyrgyz Republic, Macao, Malaysia, Mauritius, Mexico, Moldova, Mongolia, Morocco, Nicaragua, Nigeria, North Macedonia, Paraguay, Peru, Philippines, Poland, Qatar, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, Sri Lanka, Taiwan, Tajikistan, Tanzania, Thailand, Turkey, Uganda, Ukraine, Uruguay, Uzbekistan, Zambia

M3 Velocity for 64 EM Economies (Max, min and median)

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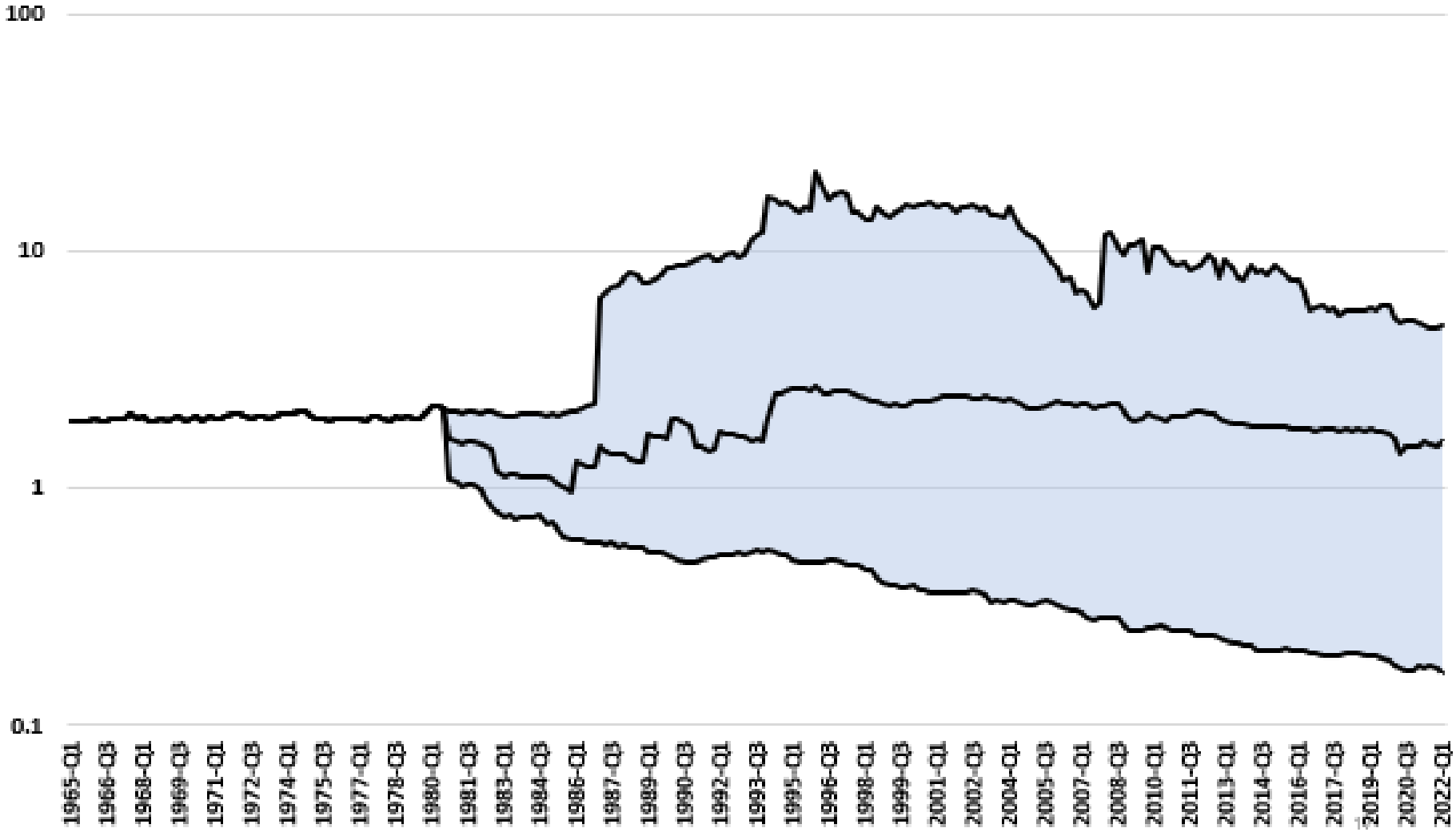

Summary Data for M2 & M3 Income Velocity in Developed & Emerging (89) Economies

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DATA SUMMARY - ALL COUNTRIES (av. % changes)				
	M2 DEVELOPED	M3 DEVELOPED	M2 EM	M3 EM
Median	**-1.74%**	**-1.85%**	**-2.96%**	**-3.03%**
Mean	**-1.71%**	**-1.63%**	**-3.05%**	**-3.09%**
Trimmed Mean (10%)	-1.76%	-1.70%	-3.06%	-3.00%
Trimmed Mean ex-highest and lowest	-1.76%	-1.70%	-3.09%	-3.07%
Trimmed Mean ex-2 highest and lowest	-1.74%	-1.73%	-3.08%	-3.00%

Summary Measures of Income Velocity

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DATA SUMMARY				
	M2, 24 DEVELOPED	M3, 23 DEVELOPED	M2, 64 EMs	M3, 47 EMs
Average % Annual Compound Change	-1.68%	-1.43%	-3.06%	-3.12%
	(Table 1)	(Table 2)	(Table 3)	(Table 4)

Positive Conclusions: Velocity is Stable around a Declining Trend

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- Income velocity is downward sloping, and trend-stable, except for the anomalous case of the U.S.(1946-1997).
- In developed economies, the median compound annual rate of decline of velocity is -1.68% p.a. for M2, and -1.43% for M3.
- In emerging economies, the median compound annual rate of decline of velocity is -3.06% p.a. for M2 and -3.12% for M3.
- Based on the Quantity Theory of Money, this means that, applied to nominal income or nominal GDP, broad money growth must finance three items: real GDP growth, an inflation target, and a further amount to allow for the annual increase in money holdings (equivalent to the decline in velocity).

Normative Conclusions: Broad Money Growth Can be Used to Improve Inflation Outcomes

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- Properly interpreted, the stability of the downward trend in income velocity provides a rationale for the Friedman rule of maintaining a stable rate of (broad) money growth in each economy slightly higher than the desired rate of nominal income growth.
- Applied to the implementation of monetary policy, the Friedman monetary growth rule should be used as a guide to setting a ***medium-term*** (e.g. six month), ***intermediate objective for broad money growth*** (e.g. a 5% year-over-year growth rate of a revived M3 in the US, or M4x in the UK).
- Central bankers need to embed an intermediate broad money growth target in their dashboard. Policymakers should not be expected to hit the intermediate target on a month-by-month basis, but only over a 6-12-month timeframe. This would at least avoid the kind of egregious broad money explosion that precipitated the Covid-era inflation.