The macro-to-FX transmission chain: a complete evidence base

Bond volatility drives equity volatility, which reshapes yield curves, moves the dollar, and ultimately determines directional bias across every G10 and EM currency pair. This transmission chain—MOVE → VIX → US Treasury curve → DXY → individual FX pairs—is not just practitioner folklore. It is backed by decades of academic research, Fed and BIS working papers, and institutional frameworks that quantify each link with remarkable precision. The evidence shows that global FX volatility risk alone explains over 90% of carry trade cross-sectional returns, City Research Online SSRN that a 1 percentage point widening of 2-year OIS differentials generates roughly 3.5% dollar appreciation, and that the entire system operates through the leverage constraints of financial intermediaries whose VaR limits transmit volatility shocks across every asset class. What follows is the complete institutional and academic evidence base for each link in this chain.

---

1. The MOVE index as regime sentinel for currency markets

The ICE BofA MOVE index measures implied volatility on US Treasury options across the 2Y–30Y curve, Tradingcenter Babypips and its role as a leading indicator for FX regime shifts rests on a specific mechanism: **bond volatility tightens financial intermediary balance sheets before equity volatility does**, triggering carry trade unwinds and capital flow reversals that reshape currency markets.

MOVE leads VIX during acute stress

A 2025 CFA Institute study by Horstmeyer, Pang, and Sanahuja applied Granger causality tests to daily VIX and MOVE data from 2003–2025. They found that under normal conditions, VIX leads MOVE—equity vol transmits to bond vol. But **when both indices exceed their 75th percentile simultaneously, the relationship reverses: MOVE leads VIX**. CFA Institute cfainstitute The 30-day rolling correlation between the two indices averages ~0.59 over the full sample, CFA Institute with a long-term correlation of ~0.80 Tradingcenter (https://blogs.cfainstitute.org/investor/2025/07/23/volatility-signals-do-equities-forecast-bonds/). Charles Schwab documented this concretely during the March 2023 SVB crisis: “the MOVE Index began climbing several days before corresponding moves in the VIX” Charles Schwab (https://www.schwab.com/learn/story/whats-move-index-and-why-it-might-matter).

Threshold levels and FX regime changes

Practitioner literature identifies three MOVE bands: **below 80 signals calm markets**, 80–120 reflects normal uncertainty tied to data releases and Fed meetings, and **above 120 signals elevated stress** XS requiring active FX regime reassessment (https://www.xs.com/en/blog/move-index/). The all-time high of 264.6 occurred on October 10, 2008; TradingView the March 2023 SVB spike hit ~199; an April 2025 spike reached ~172. Society of Actuaries The Society of Actuaries identified dual MOVE-VIX spikes as regime-shift indicators: "When both indices rise together, it tends to signal a regime shift—from stable to turbulent—where traditional diversification approaches may begin to break down" Society of Actuaries (https://www.soa.org/sections/investment/investment-newsletter/2025/september/rr-2025-09-bitalvo/).

No single academic paper establishes the specific thresholds of 65, 70, or 75 as FX regime triggers. These appear to be practitioner-derived levels. The academic literature focuses on volatility innovations and percentile-based regime detection rather than absolute levels.

The intermediary transmission mechanism

The foundational paper connecting bond volatility to FX is **Fang & Liu (2021), "Volatility, Intermediaries, and Exchange Rates"** in the *Journal of Financial Economics*. They show that financial market volatility drives exchange rates through the risk management practices of financial intermediaries—specifically VaR constraints. Higher portfolio volatility forces tighter funding conditions, increases the marginal value of wealth, and generates expected foreign currency appreciation. Since over 85% of FX market turnover involves financial institutions, the VaR constraint parameter directly links volatility to leverage and, through it, to exchange rates (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2872904).

BIS Working Paper No. 606, "Market Volatility, Monetary Policy and the Term Premium," uses both MOVE and VIX in a structural VAR framework Bank for International Settlements with US quarterly data from 1988–2019. It finds that bond volatility shocks increase the term premium while equity volatility shocks decrease it— Bank for International Settlements confirming that MOVE and VIX carry different information for yield curves Bank for International Settlements and, by extension, for FX (https://www.bis.org/publ/work606.pdf).

Bond volatility and carry trade unwinds

The most quantitatively rigorous link comes from a 2025 paper in the *Journal of Financial and Quantitative Analysis*: "Currency Carry, Momentum, and Global Interest Rate Volatility." This paper shows that returns to both currency carry and momentum strategies compensate for the risk of **global interest rate volatility (IRV)**, with risk exposures explaining **92% of the cross-sectional return variations**. Higher global IRV increases

uncertainty about future risk-taking and tightens financial constraints, triggering position unwinding Cambridge Core (https://www.cambridge.org/core/journals/journal-of-financial-and-quantitative-analysis/article/abs/currency-carry-momentum-and-global-interest-rate-volatility/6DAA8829E00934C1FBEA610136307E5C). This is the paper most directly linking a MOVE-type measure to FX returns.

The March 2023 case study

The SVB crisis provides a clean natural experiment. MOVE spiked to ~199 while 2-year Treasury yields fell ~100 basis points in three days. The Fed created the Bank Term Funding Program on March 12 Brookings and activated daily FX swap lines with five central banks (ECB, BoJ, BoE, BoC, SNB) on March 19. Brookings EUR/USD rallied from ~1.055 to ~1.09 as US rate-cut expectations exploded, and JPY strengthened as carry positions were reduced. The IMF's Global Financial Stability Note 2024/001 called it "the most important sector-specific shock since the global financial crisis" IMF eLibrary (https://www.imf.org/-/media/Files/Publications/gfs-notes/2024/English/GFSNEA2024001.ashx). The IMF's October 2025 GFSR Chapter 2 explicitly uses MOVE alongside VIX as uncertainty shock measures, finding that a one-standard-deviation shock widens CIP deviations by ~40 basis points and increases excess FX return volatility by ~0.3 percentage points International Monetary Fund (https://www.imf.org/-/media/files/publications/gfsr/2025/october/english/ch2.pdf).

---

2. VIX transmission to currencies operates through leverage and risk appetite

The global financial cycle mechanism

The foundational framework comes from **Hélène Rey's 2013 Jackson Hole paper, "Dilemma not Trilemma,"** which established that gross capital flows, credit creation, and asset prices "dance largely to the same tune" as the VIX. The VIX proxies for the risk appetite of leveraged financial intermediaries—broker-dealers and global banks. When VIX rises, these intermediaries face VaR constraints, deleverage, reduce cross-border lending, and trigger capital flow reversals that affect FX markets globally (https://www.nber.org/papers/w21162). The BIS confirmed this in its September 2024 Quarterly Review, finding that for equity flows to emerging markets, **the change in VIX is the most important driver** (https://www.bis.org/publ/qtrpdf/r_qt2409d.htm).

VIX thresholds and EM currency liquidation

While no single paper formally establishes VIX 25 as a precise threshold, the literature

documents clear nonlinear effects. **Brunnermeier, Nagel, and Pedersen (2008/2009), "Carry Trades and Currency Crashes,"** show that carry trade losses accelerate during quarters when VIX increases, with negatively skewed returns reflecting crash risk University of Chicago Press (https://www.nber.org/papers/w14473). **De Bock and De Carvalho Filho (2013), "The Behavior of Currencies during Risk-Off Episodes"** (IMF Working Paper 13/8), demonstrate that risk-off episodes identified using VIX show EM currencies systematically depreciating versus USD, with the magnitude correlated to yield level and current account position. They find that "a currency's yield has become a better predictor of risk-off depreciations in recent episodes" (https://www.imf.org/en/Publications/WP/Issues/2016/12/31/The-Behavior-of-Currencies-during-Risk-off-Episodes-40233).

The August 2024 yen carry trade unwind provides recent evidence. BIS Bulletin No. 90 documents how VIX briefly exceeded 60, triggering massive carry trade unwinding and EM currency selloffs—particularly the Mexican peso and Brazilian real Bank for International Settlements (https://www.bis.org/publ/bisbull90.pdf).

JPY and CHF safe-haven evidence

Ranaldo and Söderlind (2010), "Safe Haven Currencies," in the *Review of Finance* use high-frequency data from 1993–2008 to show that the Swiss franc and Japanese yen appreciate against USD when US stock prices fall and FX volatility rises. These effects are **nonlinear**—amplified during crises (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=999382). **Fatum and Yamamoto (2016)** find that during the GFC, the JPY appreciated against all other safe-haven currencies, making it the "safest" safe haven (https://www.dallasfed.org/-/media/documents/research/international/wpapers/2014/0199.pdf). **Habib and Stracca (2012)** at the ECB identify net foreign asset position as the most robust determinant of safe-haven status, explaining why Japan and Switzerland's large positive NFA positions underpin their currencies' safe-haven behavior (https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1288.pdf).

Volatility as the dominant currency risk factor

Menkhoff, Sarno, Schmeling, and Schrimpf (2012), "Carry Trades and Global Foreign Exchange Volatility," in the *Journal of Finance* provide the definitive quantitative finding: their global FX volatility proxy captures **more than 90% of the cross-sectional excess returns** in five carry trade portfolios. High interest rate currencies deliver low returns during unexpected high volatility; low interest rate currencies provide a hedge ResearchGate (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1342968). **Lustig, Roussanov, and Verdelhan (2011), "Common Risk Factors in Currency Markets,"** in the *Review of Financial Studies* identify an HML factor in exchange rates related to global equity volatility

that explains most cross-sectional variation in currency excess returns (https://www.nber.org/papers/w14082).

---

3. US yield curve transmission to the dollar: front-end drives weeks, long-end drives quarters

The 2-year OIS differential as primary driver

The Fed's May 2024 FEDS Note, "Monetary Policy and Exchange Rates during the Global Tightening," provides the clearest institutional evidence. Using 2-year OIS differentials (US minus advanced foreign economy average) as the primary explanatory variable, it finds that **a 1 percentage point widening generates approximately 3.5% dollar appreciation** on average across AUD, CAD, EUR, JPY, NOK, NZD, and SEK. JPY sensitivity was highest at ~5.0, reflecting Japan's large net foreign investment position. About **half of the 13% advanced-economy dollar appreciation since September 2021 is attributable to relatively higher US interest rates**, with the remainder explained by risk appetite measures (VIX + high-yield spreads). Federal Reserve The combined model achieves adjusted R^2 of 0.30–0.42 for most currencies (https://www.federalreserve.gov/econres/notes/feds-notes/monetary-policy-and-exchange-rates-during-the-global-tightening-20240510.html).

Front-end rates and the 1–4 week lag

The 3-month to 2-year segment reflects near-term monetary policy expectations. An ECB conference paper by Krohn (2025), "Demand-Driven Risk Premia in Foreign Exchange and Bond Markets," provides precise timing: Treasury demand shocks cause **USD depreciation peaking at ~10 days**, with effects reverting to insignificance after 14 days European Central Bank (https://www.ecb.europa.eu/press/conferences/shared/pdf/KROHN%20Ingomar%20-%20Demand%20Driven%20Risk%20Premia%20in%20FX%20and%20Bond%20Markets.pdf). BIS Working Paper 1195 documents that monetary policy effects on longer-term yields "build up gradually over time, beyond a horizon of one month" (https://www.bis.org/publ/work1195.pdf). These findings are consistent with a **1–4 week transmission lag for front-end rate changes**.

The 2s10s spread and structural FX transmission

The 2s10s reflects the structural growth outlook and term premium. Themarketsunplugged Thoughtful Finance **Chinn and Meredith (2004), "Monetary Policy and Long-Horizon Uncovered Interest Parity,"** tested UIP using G-7 long-maturity bonds and found that **long-horizon regressions yield coefficients of the correct sign and closer to unity than**

zero—UIP works at 5–10 year horizons even though it fails at 1–12 month horizons (https://www.nber.org/papers/w6797). This is consistent with the 2s10s operating as a structural signal over **1–4 quarter horizons**.

Term premium as a distinct FX driver

Greenwood, Hanson, Stein, and Sunderam (2023), "A Quantity-Driven Theory of Term Premia and Exchange Rates," in the *Quarterly Journal of Economics* show that the component of long-term rate differentials that matters for exchange rates is a **forecastable term premium differential**, not expected future short rates. NBER SSRN Short-rate differential coefficient ~4.72 and term premium differential coefficient ~2.99 are both highly significant. American Economic Association Supply shocks to long-term bonds in one currency influence both FX rates and term premia in both currencies SSRN NBER (https://www.nber.org/papers/w27615).

Key academic papers on yield curve–FX linkages

- **Ehrmann, Fratzscher, and Rigobon (2011), "Stocks, Bonds, Money Markets and Exchange Rates: Measuring International Financial Transmission,"** *Journal of Applied Econometrics* 26(6): 948–974. ScienceDirect Finds substantial international spillovers within and across asset classes, with the US being a transmitter rather than receiver (https://www.nber.org/papers/w11166).
- **Kearns, Schrimpf, and Xia (2019), "Explaining Monetary Spillovers: The Matrix Reloaded,"** RBA Research Discussion Paper 2019-03. Well over half of economies' 10-year yields show significant response to Fed monetary policy news (https://www.rba.gov.au/publications/rdp/2019/pdf/rdp2019-03.pdf).
- **Cochrane (2011), "Determinacy and Identification with Taylor Rules,"** *Journal of Political Economy* 119(3): 565–615. Questions the conventional sign of monetary policy effects on interest rates in New-Keynesian models. NBER Related work: Cochrane and Piazzesi (2002) on high-frequency Fed identification (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=305062).
- **Kalemli-Özcan (2019), "US Monetary Policy and International Risk Spillovers,"** NBER Working Paper 26297. Monetary policy divergence vis-à-vis the US has larger spillover effects in emerging markets than advanced economies Federal Reserve (https://www.nber.org/papers/w26297).

UIP failure at short horizons, success at long horizons

The forward premium puzzle—where currencies with higher interest rates tend to appreciate rather than depreciate at short horizons—is Harvard Business School Fordham University

"almost universally rejected" at 1–12 month horizons E-jei but holds much better at 5–10 year horizons (Chinn & Meredith 2004; University of Wisconsin Lothian & Wu 2011). **Chaboud and Wright (2003)** at the Fed find that UIP holds over very short windows (intraday) but fails at longer short-term horizons Federal Reserve (https://www.federalreserve.gov/pubs/ifdp/2003/752/revision/ifdp752r.pdf). This horizon-dependent behavior directly supports the two-speed transmission framework: front-end differentials drive FX at weekly frequencies while long-end differentials drive FX at quarterly frequencies.

---

4. DXY structure creates differentiated transmission across pairs

DXY composition and EUR dominance

The US Dollar Index is a weighted geometric mean of six currencies with EUR carrying **57.6%** of the weight, followed by JPY at 13.6%, GBP at 11.9%, CAD at 9.1%, SEK at 4.2%, and CHF at 3.6% TRADING ECONOMICS (https://www.ice.com/publicdocs/futures_us/ICE_Dollar_Index_FAQ.pdf). Cerno Capital found the **monthly correlation between DXY and EUR/USD is 0.98** over 1975–2015, with EUR accounting for over two-thirds (69%) of DXY movements. European currencies total 75% of DXY weight, making the index "overwhelmingly Europe-centric" despite the Euro Area representing only 16.6% of actual US foreign trade (https://cernocapital.com/us-dollar-index-fit-purpose). A quantitative beta analysis by Dean Markwick (2026) confirms **EUR beta to DXY ≈ 1.0**, with SEK showing $\beta > 1$ (amplifying DXY moves) (https://dm13450.github.io/2026/03/10/Making-Sense-of-the-DXY.html).

Rate differentials as the driver of each bilateral pair

EUR/USD and the US-Germany spread. The European Commission's Economic Brief 055 (McCoy, 2020) demonstrates strong correlation between EA-US interest rate differentials and EUR/USD, citing Goldman Sachs research that "the two-year interest rate differential turns out to be the strongest driver of the US dollar" (https://economy-finance.ec.europa.eu/system/files/2020-11/eb055_en.pdf). The St. Louis Fed (February 2026) confirmed visually: "When this interest rate differential has increased, the US dollar has tended to appreciate" FRED (https://fredblog.stlouisfed.org/2026/02/the-link-between-interest-rates-and-exchange-rates/).

USD/JPY and the US-Japan spread. CME Group research identifies four key drivers: interest rate differentials, QE balance sheet ratios, economic growth rates, and trade balances. MDPI The US-Japan rate differential widened to its widest since pre-2008 after

the Fed began hiking in March 2022, making rate differentials the dominant driver (https://www.cmegroup.com/insights/economic-research/2023/four-factors-that-impact-yen-dollar-exchange-rate.html). AMRO identifies the 5-year differential as the most relevant tenor for USD/JPY (https://www.amro-asia.org/wp-content/uploads/2022/09/AMRO-Analytical-Note-on-JPY_final.pdf).

USD/CAD and oil. The historical correlation between USD/CAD and crude oil ranges from **0.75–0.80** (inverse for CAD value). Crude oil exports account for ~10% of Canada's GDP. However, the oil-CAD correlation has weakened somewhat in recent years, with rate differentials and trade dynamics becoming more important.

AUD/USD, China, and commodities. FOREX.com analysis shows AUD/USD correlations with Chinese bond yields of **0.83–0.93** for 5Y and 10Y yields (20-day rolling), making AUD "a bet on China's growth and inflation outlook" (https://www.forex.com/en-us/news-and-analysis/aud-usd-cad-nzd-commodity-currencies-hitch-a-ride-on-china-yield-curve-rollercoaster/). **Chen and Rogoff (2003), "Commodity Currencies,"** the seminal paper, estimate commodity price elasticities of 0.5–1.0 for AUD and NZD real exchange rates (https://scholar.harvard.edu/files/rogoff/files/51_jie2003.pdf). The Fed Dallas Working Paper 207 finds interest rate factors can account for **up to half of the variation in one-year currency returns** when nonlinear risk premia are included (https://www.dallasfed.org/-/media/documents/institute/wpapers/2014/0207.pdf).

EUR energy vulnerability as a distinct transmission channel

The euro area's dependence on energy imports creates a unique FX vulnerability absent in most G10 economies. The ECB documented that the 2021–2022 energy shock generated a **negative income effect of ~3.5 percentage points of GDP** at its peak, with the current account swinging from a +2.8% surplus in 2021 to a −0.8% deficit in 2022—a record 3.6 percentage point swing driven by energy import costs (https://www.ecb.europa.eu/press/economic-bulletin/articles/2023/html/ecb.ebart202306_014cd4215076.en.html). ECB analysis found the energy price surge caused a cumulative 2.4 percentage point GDP loss between Q3 2021 and Q3 2022 (https://www.ecb.europa.eu/press/economic-bulletin/focus/2022/html/ecb.ebbox202203_01a3fe116ba1.en.html). This terms-of-trade channel operates independently from rate differentials and makes EUR/USD uniquely sensitive to crude oil and natural gas price shocks.

EM pairs exhibit extreme carry-regime asymmetry

The ECB Economic Bulletin (2019) decomposes EM FX movements into four factors: a dollar factor, a carry factor, interest rate differentials, and idiosyncratic domestic shocks (https://www.ecb.europa.eu/press/economic-bulletin/focus/2019/html/ecb.ebbox201903_02~29b4722819.en.html). The critical

difference from G7: EM pairs such as USD/ZAR and USD/MXN exhibit **extreme asymmetry**—gradual carry-driven appreciation during risk-on periods versus sharp, violent depreciation during risk-off. This reflects narrower liquidity, higher interest rate differentials, and greater sensitivity to global risk appetite. Hambuckers and Ulm (2023) confirm empirically: "The larger the IRD, the more likely the high-yield currency appreciates—but at cost of increased crash risk likelihood" (https://www.sciencedirect.com/science/article/abs/pii/S0264999323003668).

---

5. Sector rotation provides cross-asset regime confirmation

The XLU/SPX ratio as risk-off sentinel

The most rigorous academic treatment is **Bilello and Gayed (2014), "An Intermarket Approach to Beta Rotation: The Strategy, Signal, and Power of Utilities,"** winner of the 2014 Charles H. Dow Award. They demonstrate that **when the 4-week rate of change of the XLU/SPY ratio is positive (utilities outperforming), this signals a risk-off regime** with rising volatility and drawdown risk. Backtested from 1926 to 2013, the signal's power is "quantitatively proven." Their key insight: "If bonds are a leading indicator of the economy, Utilities are a leading indicator of the stock market" Silo Tips (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2417974).

The FX implication is direct: defensive sector outperformance (XLU, XLP, XLV leading SPX) maps to late-cycle or recessionary environments Ryan O\'Connell, CFA where USD strengthens on safe-haven flows, JPY and CHF appreciate, The-ifw and EM currencies weaken. XLE leadership signals inflation or commodity shocks— EBC Financial Group USD strengthens via rate differential expectations while EUR and JPY weaken as energy importers. Leadlagreport XLF underperformance during credit stress signals banking fragility, Marketgauge which the Boston Fed found produces contractionary effects 2–4x larger than non-systemic financial distress Federal Reserve Bank of Boston (https://www.bostonfed.org/publications/current-policy-perspectives/2023/the-historical-effects-of-banking-distress-on-economic-activity.aspx).

The business cycle mapping

Fidelity's Asset Allocation Research Team maps sector performance to four business cycle phases Peaksharesfunds Fidelity using data from 1962–2020. Sector rotation precedes actual economic turning points by **3–6 months**, Marketgauge providing early warning for FX regime shifts. Cyclical leadership (XLI, XLY, XLK) signals early-to-mid-cycle expansion Acclimetry +2 where USD typically weakens and carry trades are favorable. Energy and materials leadership signals late cycle with rising inflation PocketOption Fidelity

(https://www.fidelity.com/bin-public/060_www_fidelity_com/documents/fixed-income/Business_Cycle_Sector_Approach.pdf).

The cross-asset confirmation framework maps as follows:

Sector signal	Macro regime	FX implication
XLU/XLP/XLV outperform	Risk-off / late cycle	USD bid, JPY/CHF up, EM weak
XLE leadership	Inflation/commodity shock	USD bid (rates), EUR/JPY weak, CAD/NOK up
XLF underperformance	Credit stress	USD safe-haven bid, EM currencies under pressure
XLI/XLY/XLK leadership	Risk-on / early-mid cycle	USD weak, EM up, carry trades favorable

---

6. Building the practical framework: what the institutional literature prescribes

Exchange rate models now work—because monetary policy improved

The most important recent finding comes from **Engel and Wu (2024), "Exchange Rate Models Are Better Than You Think, and Why They Didn't Work in the Old Days"** (NBER Working Paper 32808). Their model links monthly bilateral exchange rate changes to real interest rates, expected inflation, trade balances, global risk measures, and liquidity demand. It fits "very well" for the US dollar against all G10 currencies, with fit increasing "almost monotonically" since the 1990s. **The improvement is attributed to credible inflation targeting satisfying the Taylor Principle**, which eliminated self-fulfilling expectation equilibria and made fundamental models reliable (https://www.nber.org/papers/w32808; full paper at https://users.ssc.wisc.edu/~cengel/WorkingPapers/BetterThanYouThink.pdf).

Policy rate differentials as the structural floor

The Fed FEDS Note (2024) quantifies the structural relationship: for advanced economy currencies, a **1 percentage point widening of the 2-year OIS differential produces ~3.5% dollar appreciation**. Federal Reserve However, co-movement with risk appetite measures was stronger than with OIS differentials alone, and the combined model (OIS +

VIX + high-yield spread) significantly outperforms rate differentials in isolation. This confirms that policy rate differentials set the structural floor but risk appetite determines the deviation around it (https://www.federalreserve.gov/econres/notes/feds-notes/monetary-policy-and-exchange-rates-during-the-global-tightening-20240510.html).

Taylor rule models outperform alternatives

Molodtsova and Papell (2009/2013) demonstrate significant out-of-sample predictability for 12 OECD exchange rates using Taylor rule fundamentals. Taylor rule models outperform the random walk, interest rate differentials, monetary, and PPP models. The predictability is strongest when central banks credibly follow their rules—during periods of low Taylor rule deviations (https://www.nber.org/system/files/working_papers/w18330/w18330.pdf; https://www.federalreserve.gov/pubs/ifdp/2009/963/ifdp963r.pdf).

Inflation expectations as a paradoxical leading indicator

Engel and Wu (2024) find that higher US inflation leads to dollar appreciation when monetary policy is credible—because markets price in tighter policy. This paradoxical result means that **rising PCE-based inflation expectations relative to yield changes can serve as a leading indicator for dollar strength**, as long as the Fed maintains credibility. Benigno and Benigno (2012) confirm: an increase in volatility of US monetary-policy and inflation-target shocks appreciates the dollar (https://www.journals.uchicago.edu/doi/full/10.1086/663993).

The Dollar Smile framework

Stephen Jen's Dollar Smile, introduced at Morgan Stanley in 2001, captures the nonlinear relationship between US economic conditions and dollar strength. The dollar strengthens for two opposite reasons—global risk-off (left side) and US economic outperformance (right side)—and weakens only when conditions are calm enough for investors to seek yields elsewhere (middle). Goldman Sachs Asset Management validated the framework in 2025 while noting "the curve has likely flattened" (https://am.gs.com/en-us/advisors/insights/article/2025/dollars-shifting-landscape-from-dominance-to-diversification). Schroders confirmed its validity but warned that in Schroders US-first recessions, the smile may not hold (https://www.schroders.com/en-us/us/institutional/insights/the-dollar-smile-theory-what-is-it-and-is-it-still-valid-in-the-new-market-regime/).

The global dollar cycle (BIS evidence)

BIS Working Paper 695 shows that a stronger dollar reduces dollar-denominated cross-border bank flows and lowers real investment in EMEs—the financial channel dominates the traditional trade channel (https://www.bis.org/publ/work695.pdf). BIS Working Paper 819

quantifies how dollar appreciation tightens credit supply through lender balance sheet effects (https://www.bis.org/publ/work819.pdf). Miranda-Agrippino and Rey (NBER WP 21722) demonstrate that one global factor explains an important share of risky asset price variation worldwide and decreases significantly after US monetary contraction (https://www.nber.org/system/files/working_papers/w21722/w21722.pdf).

The complete transmission hierarchy with timing lags

The institutional evidence base supports the following transmission hierarchy, ranked by quantitative importance:

Transmission link	Timing lag	Key evidence	R^2 or effect size
MOVE → VIX (during stress)	Days	CFA Institute 2025; Schwab March 2023	Granger-causal above 75th percentile
2Y OIS differential → DXY	1–4 weeks	Fed FEDS Note 2024; Krohn 2025	~3.5% per 1pp; peak at 10 days
Global FX volatility → carry returns	Contemporaneous	Menkhoff et al. 2012	>90% cross-section
Global IRV → carry + momentum	Contemporaneous	JFQA 2025	92% cross-section
Term premium differential → FX	1–4 quarters	Greenwood et al. 2023	Coefficient ~2.99
Long-end differentials → FX (UIP)	5–10 years	Chinn & Meredith 2004	Correct sign, near unity
Fed tightening → foreign GDP	~3 years	Boston Fed WP 19-15	–0.9% peak impact

The evidence converges on a clear conclusion: the macro-to-FX transmission chain is not a loose heuristic but a quantitatively supported framework where **bond volatility signals regime shifts days before equity volatility**, front-end rate differentials drive currency moves over weeks, term premium differentials drive structural positioning over quarters, and global risk appetite—proxied by VIX and intermediary leverage—determines the deviation of exchange rates from their interest-rate-implied values at every frequency. The Engel and

Wu (2024) finding that these models now work well, after decades of failure, reflects the structural shift to credible inflation-targeting regimes that anchor expectations and make the transmission chain operate as theory predicts.