BIS Triennial Survey 2025:

FX settlement risk – you can't fix what you can't measure

The global foreign exchange (FX) market has grown substantially over the years, and so has FX settlement risk. The BIS Triennial Survey,[1] the most comprehensive source of information on the size and structure of the FX market, tracks developments in the FX market, including the magnitude of FX settlement risk. This paper examines the global results that were recently published in its 14th edition.

[1] Triennial Central Bank Survey of Foreign Exchange and OTC Derivatives Markets; see bis.org/stats_triennial_surveys/index.htm

Global FX market: From billions to trillions

The global FX market as we know it is just over 50 years old. After the collapse of the fixed exchange rate system of Bretton Woods in 1973, major economies officially allowed their currencies to float. This marked the beginning of the modern era of market-determined exchange rates and free-floating currency markets.[2] In the 1970s, FX trading expanded from a niche back-office function into a major line of business for large international banks.

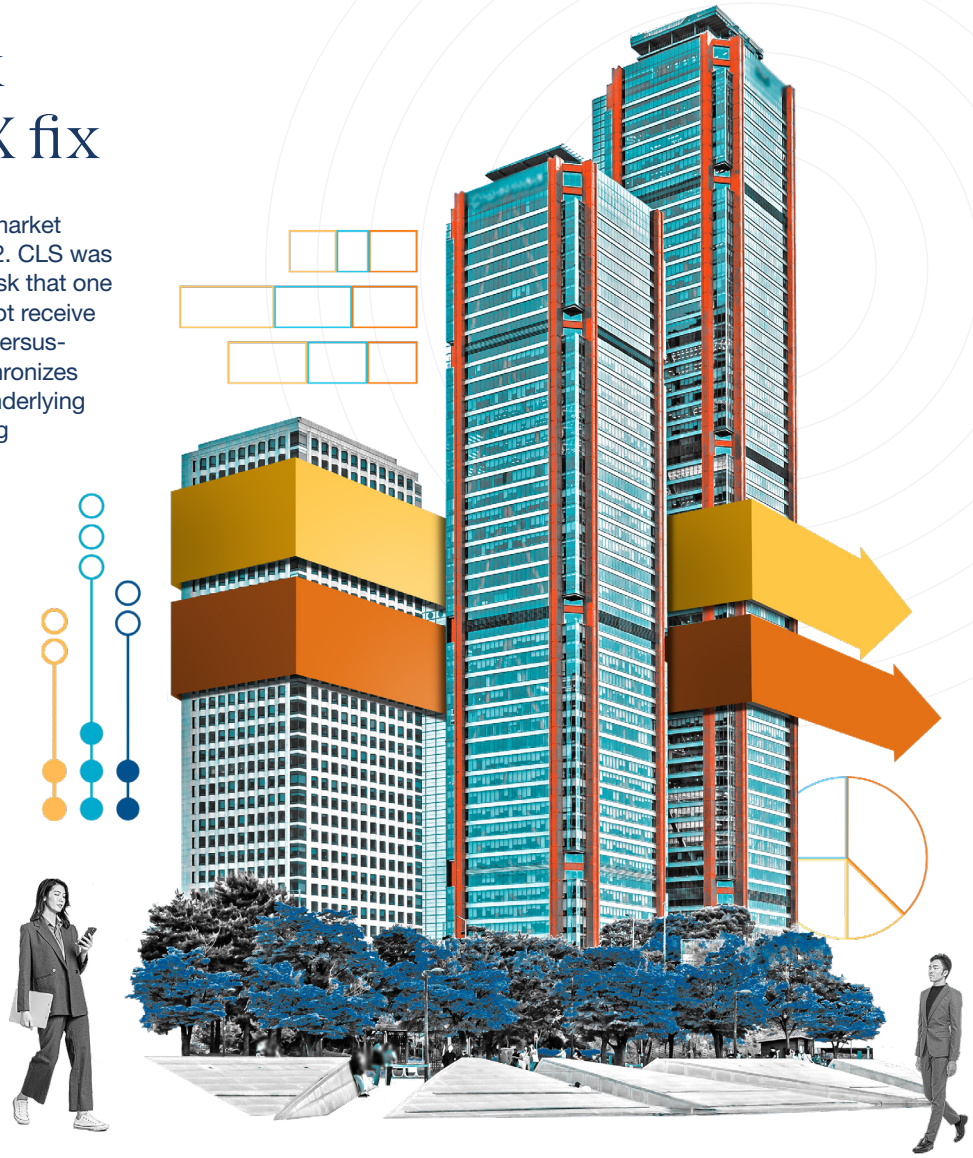
Since then, the FX market has grown significantly, establishing itself as the largest and most liquid financial market in the world. Daily turnover has soared from below USD100 billion[3] in the 1970s to around USD9.5 trillion in 2025.[4]

The FX market's substantial growth has been fuelled by a combination of factors, such as globalization and deregulation efforts in the 1980s and 1990s, technological innovations in the late 1990s and early 2000s like electronic trading,[5] monetary policy divergence and the resulting FX volatility after the 2008 financial crisis, and the increasing internationalization of currencies from emerging markets and developing economies (EMDE) over the past 10–15 years.

FX settlement risk mitigation: The FX fix

Another factor that significantly boosted FX market activity was the establishment of CLS in 2002. CLS was created to mitigate FX settlement risk – the risk that one party delivers the currency it sold but does not receive the currency it bought. It provides payment-versus-payment (PvP) functionality, which fully synchronizes the settlement of the payment instructions underlying the two currency legs of an FX trade, resulting in simultaneous settlement.

In 1974, one year after the end of the Bretton Woods system, FX settlement risk came into the spotlight when Bankhaus Herstatt collapsed. The collapse caused failures in executing the outgoing legs of FX payments after the in-leg had already been received. The Herstatt crisis was a watershed moment for the global regulatory and central bank community,[6] which led to comprehensive analysis around measures for FX settlement risk mitigation. In the early 1990s, the public sector called on the industry to develop and provide risk-reducing multicurrency services. The industry established CLS in response.[7] The reliance on settlement arrangements without risk mitigation has decreased substantially over the past 25 years, largely due to CLS.



[2] Shaping FX // 02 Policy – The fall of Bretton Woods: FX, 50 years afloat.
[3] DraKoln, N. (2004) Forex for small speculators.
[4] According to global results; see BIS Triennial Central Bank Survey – OTC foreign exchange turnover, December 2025.
[5] BIS Working paper No. 710 (2018) FX market structure: evolution and implications.
[6] At the time, Bankhaus Herstatt had speculated in an environment with high US dollar volatility and accumulated losses that substantially exceeded its own capital. When the German regulator closed it down, counterparties incurred losses because the bank had already received payments in Deutsche marks but had not yet sent US dollar payments. This is the essence of FX settlement risk: the risk of a party paying the currency it sold but not receiving the currency it bought.
[7] CLS provides payment-versus-payment (PvP) functionality, wherein a party's payment instruction in one currency and the corresponding payment instruction in the counter currency are settled at the same time.

BIS Triennial Survey: The global (F)X-ray

To appropriately address FX settlement risk, and in the spirit of "you can't fix what you can't measure", quantitative data about the actual magnitude of the risk is essential. The BIS Triennial Survey provides this much-needed transparency.

The first formal BIS Triennial Survey conducted in 1986 covered turnover in the traditional FX markets (spot, forwards, swaps) of Canada, Japan, the UK and the US. By 1992, 26 jurisdictions were already reporting comprehensive FX turnover data. In 1995, the survey expanded to include over-the-counter (OTC) currency and interest rate derivatives markets. Participation has continued to grow over the years, reaching 52 jurisdictions[8] to date, capturing approximately 95% of global FX market activity.

The survey is now the most comprehensive source of information about the global FX market, with more than 1,100 financial institutions participating. Central banks collect unconsolidated data from reporting dealers and submit aggregated data to the BIS, which makes adjustments, e.g., to eliminate double counting.

Turnover is reported for the month of April, while outstanding positions are reported by the end of June of the reporting year. Typically, preliminary results are released towards the end of September of the survey year, with detailed data and analysis published by December. FX settlement data for the 2025 results is expected in Q1 2026.

Public-private sector collaboration: The bigger FX picture

FX settlement risk is a global challenge best addressed through public and private sector collaboration. In addition to the BIS Triennial Survey, two key complementary initiatives play a central role in analyzing and mitigating risk: the FX Global Code and the G20 cross-border payments roadmap. Together, these initiatives help ensure that finding solutions to mitigate FX settlement risk remains high on the agenda of all stakeholders. CLS, itself the result of a public-private partnership, strongly supports these initiatives.

- The **FX Global Code** comprises a set of global principles of good practice for the FX market. Principles 35 (Settlement Risk) and 50 (Measuring, Monitoring & Controlling Settlement Risk) of the Code encourage FX market participants to apply a best practice approach to FX settlement risk management and netting. The Code has been widely adopted by both public and private sector institutions throughout the FX ecosystem. The most recent Code update, to which CLS contributed,[9] was published in January 2025.
- The **G20 cross-border roadmap**[10] was launched in 2020 as an unprecedented multi-year initiative to address challenges in cross-border payments. Based on stocktakes and assessments conducted during its first two years (including work on the building block related to FX settlement risk mitigation), subsequent efforts shifted to prioritizing and implementing tangible enhancements by 2027. CLS actively contributes to the Payments Interoperability and Extension Task Force, which published a report in March 2025 suggesting next steps for mitigating FX settlement risk from an industry perspective.[11]

[8] bis.org/statistics/rpfx25_announcement.htm
[9] See cls_fx_policy_03_update_to_the_fx_global_code_the_risk_waterfall_for_fx_flows.pdf
[10] See cls-fx-policy-01-navigating-the-fx-lane-shaping-fx-series-september-2023.pdf
[11] See bis.org/cpmi/cross_border/events.htm

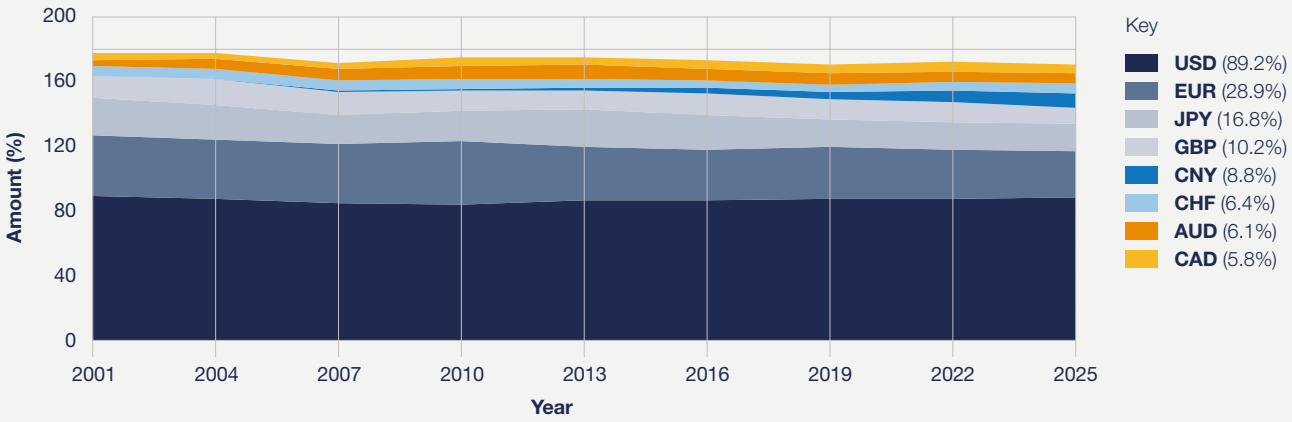
The 2025 Survey findings: FX in flux?

The 2025 Survey findings confirm the FX market's continued role as the world's largest financial market. FX turnover stood at USD9.5 trillion in April 2025, representing a 27% increase compared to 2022 (though data collection in both 2022 and 2025 coincided with high FX market volatility, which may have led to higher results). For comparison, similar or even higher growth rates have also been observed in CLSSettlement. For example, in April 2025, average daily traded volumes reached USD2.54 trillion, an increase of around 37% compared to the previous BIS Triennial Survey period in April 2022. In 1986, when the first BIS Triennial Survey was conducted, FX market turnover stood at USD206 billion per day. To put this into perspective, FX trading volumes in 1986 were around five times the size of daily global domestic product; while in 2025, they were more than thirty times larger.[12]

According to the results of the 2025 Survey, the US dollar was on one side of 89.2% of all trades,[13] reaffirming its dominant role in the FX market over the years. The share of the euro declined further (28.9%, down from 30.6% in 2022 and 32.3% in 2019), as did the share of the pound sterling (10.2%, compared with 12.9% in 2022 and 12.8% in 2019).

The Japanese yen share remained relatively unchanged (16.8%), consistent with previous reporting cycles. Meanwhile, the share of the Chinese renminbi has doubled since 2019 to reach 8.8%. It remained the fifth most actively traded currency and is now closing the gap with the pound sterling (figure 1).

Figure 1: **Global FX market turnover by top eight currencies**



Source: Bank for International Settlements Triennial Central Bank Survey of foreign exchange and over-the-counter (OTC) derivatives markets in 2025 (BIS Triennial Survey 2025). Sum of shares in individual currencies totals 200% as two currencies are involved in each transaction.

[12] Source: World Bank, World Development Indicators database: global GDP in 1986: USD15.35 trillion = ca. USD42 billion per day; global GDP in 2024: USD111.33 trillion = USD306 billion trillion per day.

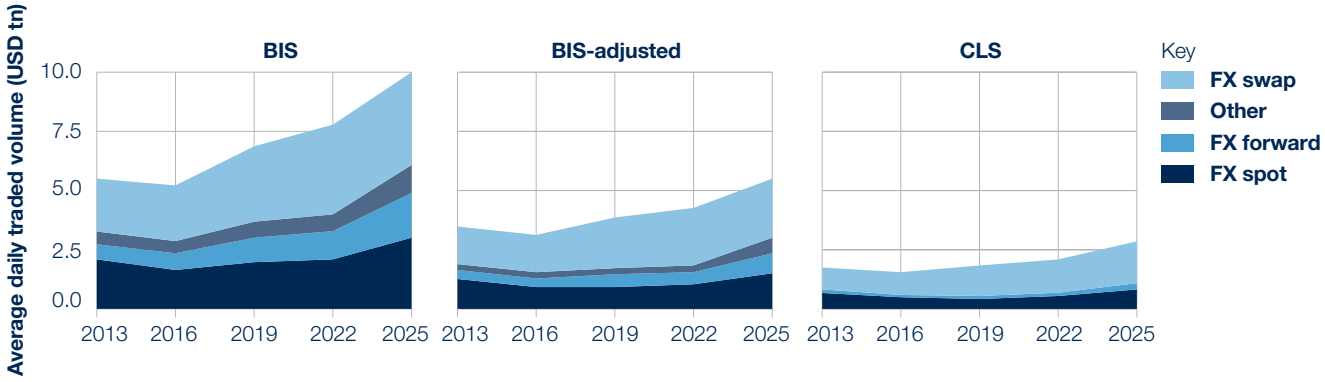
[13] Note that the sum of shares in individual currencies totals 200% as two currencies are involved in each FX trade.

Under the hood

Comparing BIS Triennial Survey and CLS traded data

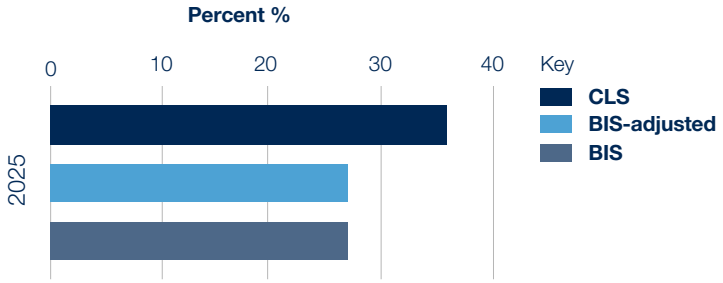
In order to facilitate comparability with the BIS Triennial Survey methodology, which captures actual FX trading volumes, CLS data shown below is based on traded volume. For example, while CLS settled on average over USD8 trillion of payment instructions in April 2025, the traded volume was approximately USD2.54 trillion that month. Moreover, as Easter falls in the reporting period, CLS traded data has been adjusted in order to avoid underestimation.[14]

Figure 2: **CLS traded volume compared to BIS and BIS-adjusted data, April 2013–2025**



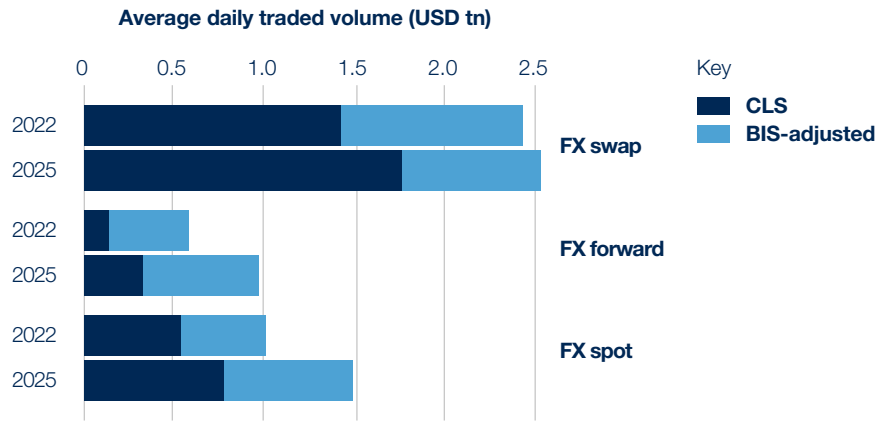
Source: CLS and BIS Triennial Survey.

Figure 3: **Percentage growth since the last BIS report**



Source: CLS and BIS Triennial Survey.

Figure 4: **CLS market share compared to BIS-adjusted data since the 2022 Survey**



Source: CLS and BIS Triennial Survey.

[14] The public holidays of Good Friday and Easter Monday both count as CLS business days but record very low trade value. While BIS daily average figures are given according to the working days of the parties reporting to their survey (and so, for example, a bank would exclude those two days and calculate an average only over the rest of the month), CLS would count both as working days, and so underestimate the average daily value in April. Therefore, the month's total traded value in CLS was divided by the number of working days not including Easter holidays.

Comparing BIS Triennial Survey and CLS traded data (continued)

CLS traded data is compared to both BIS Triennial Survey data (as reported by the BIS) and BIS Triennial Survey adjusted data (covering the share of the global FX market for the 18 currencies which CLS settles).

Over the three-year horizon from April 2022 to April 2025, CLS traded data (daily average) has seen a higher growth than the global FX market (figure 3).

While CLS spot value has grown in sync with the global FX market, both FX swaps and FX forwards increased well beyond the wider market performance (figure 4).

When looking at CLS's most traded currencies (figure 5) and most traded currency pairs (figure 6), it is noteworthy that growth in CLS (except in the Euro) has been more pronounced compared to the FX market as a whole.

Figure 5: **Percentage growth comparison by major currencies since the 2022 BIS Survey**

Currency	CLS	BIS-adjusted
CHF	71%	56%
CAD	41%	25%
JPY	51%	32%
USD	36%	27%
EUR	23%	20%
GBP	20%	7%

Figure 6: **Percentage growth comparison by major currency pairs since the 2022 BIS Survey**

Currency	CLS	BIS-adjusted
USD/HKD	109%	91%
USD/CHF	74%	58%
USD/SGD	56%	24%
USD/JPY	55%	37%
USD/CAD	40%	26%
AUD/USD	31%	29%
EUR/USD	21%	17%
GBP/USD	19%	5%
EUR/GBP	14%	17%

The 2025 Survey findings: Is the level of FX settlement risk still unsettling?

A dedicated FX settlement risk segment was introduced in the 2019 BIS Triennial Survey.[15] [16] In 2022, the methodology was further refined to allow for more granular data collection.[17] [18] Starting in 2025, the categorization of FX settlement arrangements now more stringently follows a waterfall approach – from PvP, the *de facto* market standard for FX settlement risk mitigation, down to gross settlement, which may involve fully unmitigated FX settlement risk.[19] In addition, further methodological adjustments were made to improve accuracy and reduce double counting.[20]

Due to refinements in the methodology for measuring FX settlement risk over the years, the findings from the three surveys are highly, but not perfectly, comparable. Nevertheless, the results clearly show that the magnitude of FX settlement risk remains a key concern.

- In 2019, daily FX settlement without risk mitigation stood at around 24%[21] of the overall FX market value (equalling total payment obligations of around USD4.5 trillion per day.
- The 2022 Survey found that the share of settlement without risk mitigation represented 31% of the global FX market (equivalent to USD7.0 trillion in total daily payment obligations).[22]
- Although settlement-related findings from the 2025 Survey are not expected until Q1 2026, preliminary estimates suggest that up to 15% (equivalent to around USD4.1 trillion payment obligations per day) of the FX market is settled without risk mitigation.[23]

Beyond BIS Triennial Surveys, over the past three decades both the BIS and CLS have conducted additional studies of varying scope and methodologies to assess FX settlement risk exposure on a global scale. Together, these efforts offer valuable insights into the magnitude and evolution of FX settlement risk and provide indications of broader trends, in particular the sharp decline in unmitigated settlement risk in flows following the go-live of CLS.

- In 1998, the BIS Committee on Payment and Settlement Systems (CPSS) published a progress report on the G10 central banks' campaign to mitigate FX settlement risk exposures.[24] A survey conducted by the G10 central banks among 63 banks found that bilateral netting reduced settlement flows and, consequently, overall risk exposure by around 15%.[25] The remaining 85% of flows were settled without risk mitigation (representing around USD3.8 trillion in payment obligations per day).
- In 2008, the CPSS published another progress report[26] that contained findings from an additional survey conducted in 2007 by 27 central banks across 109 institutions (both banks and non-banks), covering 80% of the FX market. The report concluded that around 33% of flows were settled without risk mitigation (representing approximately USD3.2 trillion of payment flows per day).[27]
- In 2013, CLS conducted a survey[28] across 44 (out of 63 at the time) settlement members. The results suggested that around 13% of the global FX market was settled without risk protection.[29] However, since the survey focused on larger market participants – which generally have greater access to risk-mitigating settlement methods – the figure may potentially be an underestimate. In absolute terms, the survey results suggested that the total amount of payment obligations exposed to settlement risk could have stood at around USD2.2 trillion.[30]
- In 2023, CLS, together with several settlement members, conducted a quantitative analysis on settlement practices and FX settlement risk.[31] The analysis indicated that 85% of payment obligations leveraged settlement practices with little to no settlement risk,[32] while only 6% were subject to substantial FX settlement risk. However, as the survey was limited to CLSSettlement-eligible currencies and involved only a small number of participants, the findings are not directly comparable to the previously mentioned survey results.

[15] The 2019 Survey classified FX settlement into categories such as payment-versus-payment (PvP) settlement (where both legs settle simultaneously, e.g., through CLS), "on-us" settlement (where both legs settle across the books of the same institution), and gross non-PvP settlement (e.g., through correspondent banking arrangements).
[16] Bech, M., Holden, H. (2019) FX settlement risk remains significant, BIS Quarterly Review December 2019.
[17] By 2022, the BIS expanded the granularity of settlement reporting, whereby settlement methods were broken down in more detail, including "on-us" settlement with and without loss protection. Moreover, settlement data was collected by counterparty type and also with more nuanced method distinction. For example, it was reported how much of inter-dealer settlement vs. customer settlement were PvP, "on-us" or gross settlement, which allowed for adjustments for double-counting and for a better understanding where FX settlement risk was concentrated.
[18] Glowka, M., Nilsson, T. (2022) FX settlement risk: an unsettled issue, BIS Quarterly Review December 2022.
[19] bis.org/statistics/triennialrep/2025survey_guidelinesfxsettlement.pdf
[20] For example, banks were required to report on a global consolidated basis rather than by local sales desk to avoid double-counting internal trades. Moreover, previous triennial surveys collected data on trades executed in April but settled after April on a best effort basis only, which potentially led to understating the total at-risk amounts.
[21] Representing settlement "via other non-PvP arrangements"; on-us settlement represented around 16% of the settlement flows but information on the use of loss-protection was lacking.
[22] Representing settlement "via other non-PvP arrangements" (23%) and "on-us without loss protection" (8%); see Glowka, M., Nilsson, T. (2022) FX settlement risk: an unsettled issue, BIS Quarterly Review December 2022.
[23] Lintern, P. (2024) Once more unto the breach, speech given at FX Markets Europe conference.
[24] Committee on Payment and Settlement Systems of the central banks of the Group of Ten countries (1998), Reducing Foreign Exchange Settlement Risk: A Progress Report.
[25] At that time, multilateral netting was found to be much less common, reducing settlement flows by less than 1%.
[26] CPSS (2008) Progress in reducing foreign exchange settlement risk.
[27] The survey found that 59% of settlement flows used risk mitigation (CLS 55%, other PvP arrangements 1%, on-us with loss protection 3%), 8% relied on pre-settlement netting and 33% were settled without risk mitigation (32% via other non-PvP arrangements and 1% via on-us without loss protection).
[28] Kos, D., Levich, R. (2016) Settlement risk in the global FX market: How much remains?
[29] The survey found that 12.6% of the daily FX flow values settle via other non-PvP arrangements, 37% via CLS, 4% through other PvP arrangements, 27% pre-settlement netting, and 9% rely on "on-us", but survey methodology is lacking information on loss-protection.
[30] The survey findings present a range since bilateral netting (which is partially exposed to settlement risk) pushes global exposure to settlement risk higher.
[31] See CLS white paper Shaping FX // 02 The FX ecosystem – "FX settlement risk: To PvP or not to PvP".
[32] Mainly the notional that is settled via CLSSettlement and via what is referred to above as "on-us" settlement.

Understanding the notional value of payment obligations associated with unmitigated flows

As FX market turnover continues to grow, it is important to understand – in nominal terms – the value of transactions for which unmitigated settlement risk remains. Average daily FX trade volumes do not fully capture the value of cash exchanged in an FX transaction. As each FX trade involves two sides (e.g., spot trades) or even four sides (FX/currency swaps), the total payment obligations generated by FX transactions are much larger than the value of FX market turnover.

> “Payment obligations are estimated to have increased by nearly 500% since 1998, unmitigated flows have grown by less than 200%.”

In fact, payment obligations are typically three to four times higher than the corresponding FX market value and can therefore provide a clearer indication of FX settlement risk, as well as the monetary value of obligations that are not risk mitigated.

Figure 7 illustrates this relationship by highlighting the estimated maximum notional value of FX flows that may not benefit from risk mitigation. The figures should be considered an approximate maximum exposure level because they do not capture any bilateral or multilateral netting, which would otherwise reduce FX settlement risk.

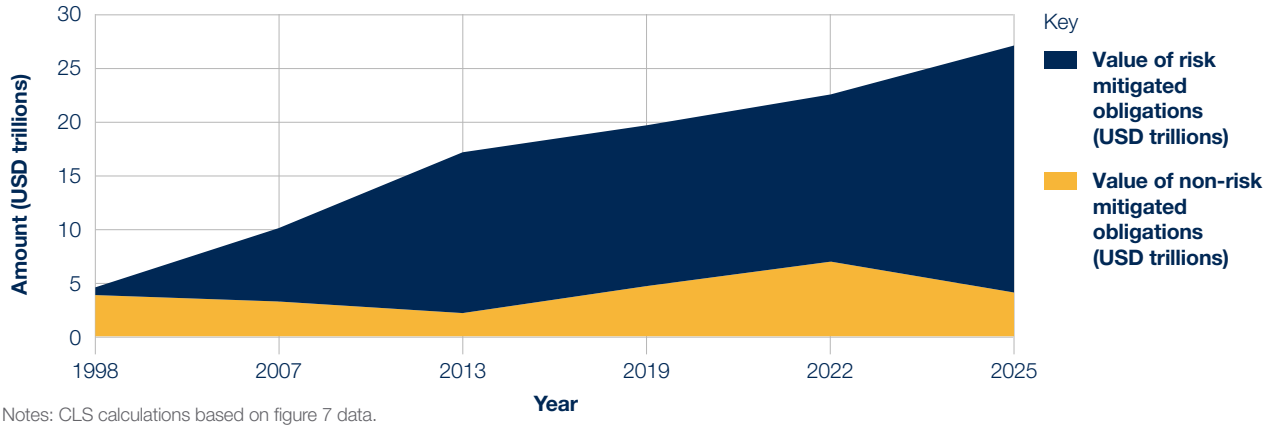
Similarly, figure 8 provides an estimate of FX settlement risk exposure by illustrating the proportional relationship between growing FX settlement risk and total payment obligations. As shown, despite the growth of total gross payment obligations, settlement risk exposure remains relatively contained because the value of unmitigated payment obligations has grown at a much slower rate. Consequently, whilst payment obligations are estimated to have increased nearly 500% since 1998, unmitigated flows have grown by less than 200%.

Figure 7: **Understanding FX settlement risk – unmitigated flows**

Year	FX market size (ADV)[33] USD trillions	Total (gross) payment obligations[34] USD trillions	Unmitigated risk[35] %	Value of non-risk mitigated obligations[36] USD trillions
1998	1.53	4.54	85%	3.84
2007	3.32	10.14	32%	3.24
2013	5.36	21.68	13%	2.17
2019	6.60	18.70	24%	4.49
2022	7.51	22.88	31%	7.02
2025	9.50	27.16	15%	4.07

[33] Based on BIS Triennial Survey Data.
[34] Payment obligations have been calculated using the total of payments required for each transaction (e.g., 2 payments for spot, 4 for swaps) as understood by Bech and Holden (2019). The 2019 figures in this study follow the Bech and Holden approach, which aggregates instruments using the weighting formula 2 × (Spot + Forwards) + 4 × (FX Swaps + Currency Swaps). In comparison, judging from BIS reports, the organisation appears to have applied a more granular and internally consistent weighting scheme over time, assigning 2 × Spot, 2 × Forwards, 4 × Swaps, and 2 × Currency Swaps.
[35] The provided percentage for unmitigated risk have been taken using BIS, CPSS, Bank of England and CLS reports as referenced above.
[36] CLS calculations. The value of non-risk mitigated obligations is equivalent to this percentage of the total gross payment obligation that is considered unmitigated.

Figure 8: **Measuring FX obligations 1998–2025**



Notes: CLS calculations based on figure 7 data.

Transparency matters: Keeping FX settlement risk high on the agenda

The surveys conducted by the BIS and CLS clearly document the exponential growth of the global FX market over the past decades. They also show that although the share of the global FX transactions settling without risk protection has decreased in relative terms, it remains significant in absolute terms. This is largely due to the increasing market share of EMDE currencies, for which the availability of risk-mitigating settlement arrangements remains limited.

Efforts to track and mitigate FX settlement risk, particularly for EMDE currencies, must remain a priority for all stakeholders. The BIS Triennial Survey continues to provide the data needed to document these risks and support the evolving efforts to mitigate them.

> “Efforts to track and mitigate FX settlement risk, particularly for EMDE currencies, must remain a priority.”

Read our ShapingFX series

FX Global Code

Using CLS products and services plays an integral part in helping you comply with the FX Global Code.

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info@cls-group.com
cls-group.com