



Breaking the settlement failure chain

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Trade settlement fails create added costs and risks for financial institutions. It is a deficiency that the industry – together with regulators – is trying valiantly to solve. Should firms be unable to improve their settlement discipline it could result in the industry facing even higher outgoings, especially as regulators in the European Union (EU) and in other geographies, such as North America start taking more punitive measures against financial institutions for trade fails.

This white paper provides a deep dive on the status of trade settlement fails with a particular focus on the European Union, and the ways in which market participants are coming together to overcome the lingering issue of settlement indiscipline.

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Foreword

Failure in trade settlement is not a new problem – it is an obstacle that the industry has been burdened with for many years. Fails occur when, on the settlement date, either the seller does not deliver the securities, or the buyer does not deliver the funds.¹ The primary driver of fails is that the seller has insufficient securities available on time for delivery – although poor-quality data, market volatility, insufficient liquidity and legacy systems can also contribute.

Not only is the problem longstanding, but it is also more common than you might expect – and can come with severe consequences. When a failure occurs, it can have adverse impacts on capital markets from an operating cost and systemic risk perspective. Additionally, for the market participants involved, settlement fails can also result in fines and reputational damage.

Recent events are also having an impact. The Russia/Ukraine crisis and ensuing market volatility, the introduction of a wider penalty regime in Europe for settlement fails and late matching, the decision of some markets to shorten their settlement cycles to T+1 from T+2 have coalesced to drive renewed efforts from financial institutions to improve settlement discipline.

So how are market participants addressing the challenges? There are several solutions available that could potentially reduce the regularity of trade settlement fails. They include a combination of adopting techniques and services to improve transparency of both sides of a securities settlement, embracing auto-partialling, and leveraging new technologies to drive post-trade efficiencies. New technology such as blockchain can facilitate the multiparty transparency needed.

Deutsche Bank has focused with clients on their ability to use shaping tools, partial settlement, hold and release and auto-partial release to help clients increase their settlement efficiency and reduce the impact of fails. Going forward, we are investing heavily in transforming our underlying architecture in a move towards fully real time processing, and multiple channels for data sharing on instructions, for example via API and Cloud.

This white paper, *Breaking the Settlement Failure Chain* explores the next steps in the settlement failure journey – providing insights into the status of trade settlement fails, the causes behind the industry's poor track record, and the ways in which market participants are cooperating to tackle these shortcomings.



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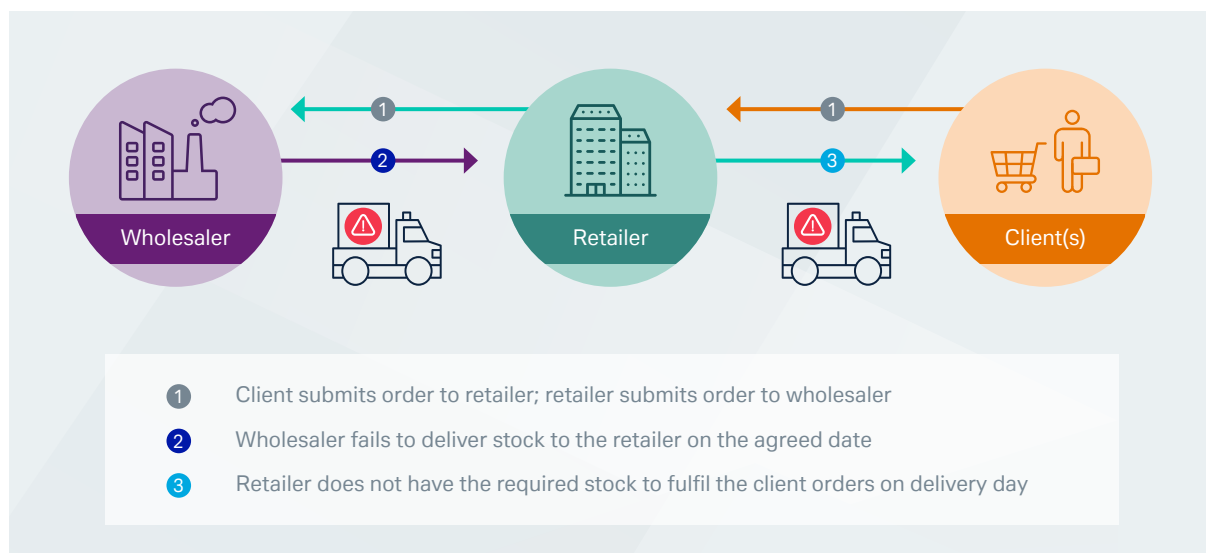
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Rise of settlement fails

1.1 What are settlement fails?

Imagine you are a retailer and have bought inventory to fulfil client orders. On delivery day you suddenly hear from your supplier that they are unable to deliver, due to high demand and lack of available stock in the warehouse. As a result, there is a knock-on effect from the fact you can no longer fulfil the onward delivery to your clients, impacting your own reputation. Ultimately you might get the inventory days later to meet your onwards commitment, but the delay has come at a cost.

Figure 1: How settlement chains break



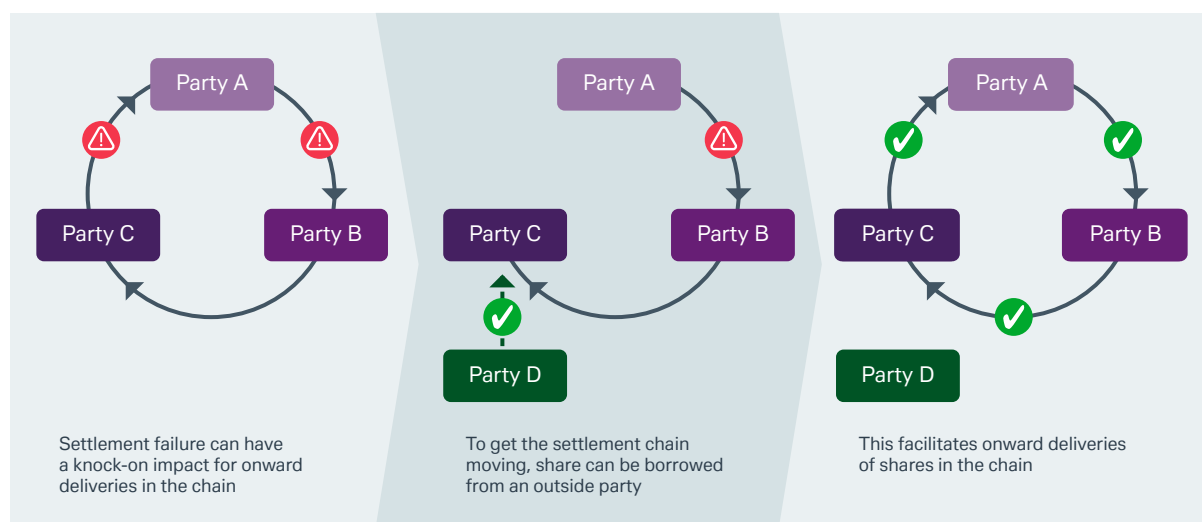
Source: Deutsche Bank

Now imagine you are a broker, providing a service to clients in buying securities on their behalf from a regulated exchange. In this hypothetical case the inventory is one million shares and your client is, say, a pension fund or investment manager. When the shares are unable to be delivered, this is called a settlement fail. Settlement fails happen more often than you might suppose and are widely accepted as possible within the market, although likely to resolve in a short period of time.



When securities from a receipt are required to make an onward delivery, this is called a settlement chain. When the receipt fails, it causes a delivery fail in the next link of that chain. These settlement chains may have multiple links, where there are further onward deliveries required. So, the impact of settlement failures can have a ripple effect – see Figure 2.

Figure 2: Settlement chains



Source: Deutsche Bank

Figure 2 demonstrates how a failure “circle” arises whereby Party A cannot deliver to Party B, who then cannot deliver to Party C, who needs those shares to deliver to Party A. When this happens, one of the impacted parties will borrow the shares from a separate Party D to get the settlement chain moving.

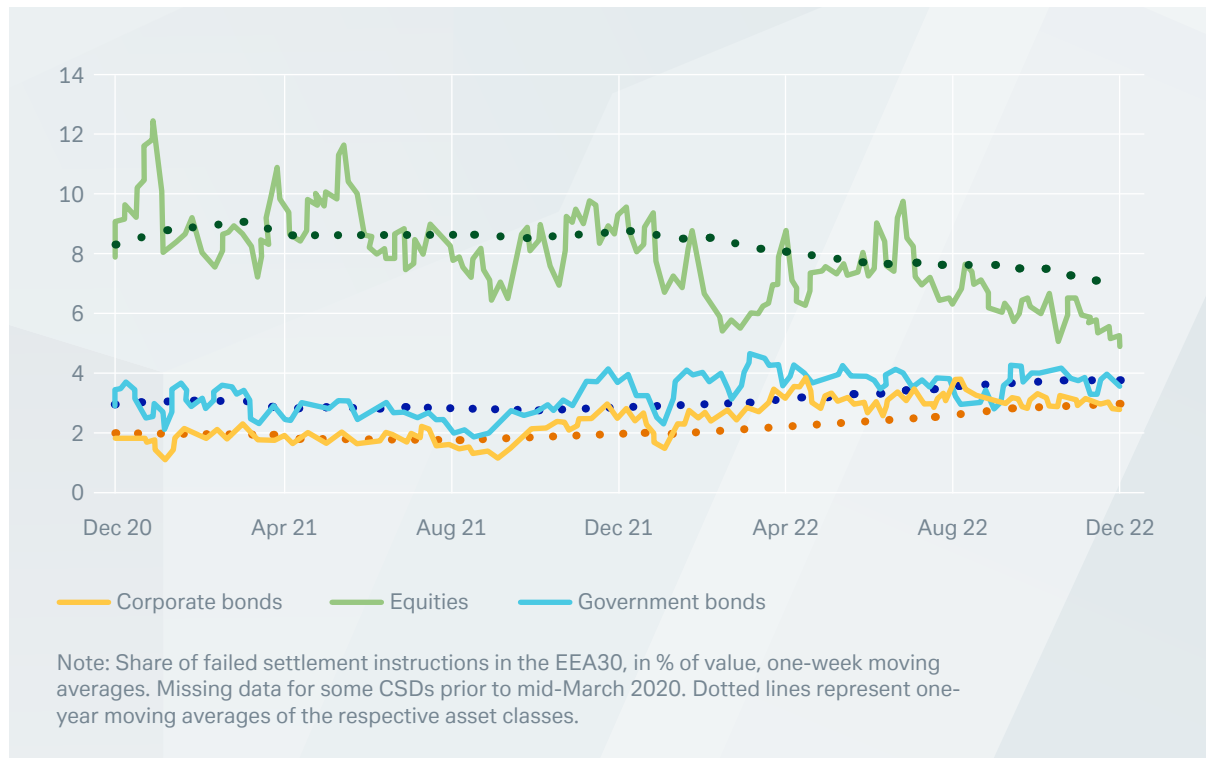
1.2 Background to the problem

Settlement failures are a global problem with regional and local solutions applied. For example, penalties have been applied in the US treasury markets and, more recently, penalties under the Central Securities Depositories Regulation (CSDR) Settlement Discipline Regime (SDR) that has replaced certain localised penalty regimes existing previously.²

Although the overwhelming majority of equity and bond trades settle on time, fails do still occur periodically. Data from the European Securities and Markets Authority (ESMA) has showed a more recent downward trend for equities settlement fails in Europe, falling below 6% as of December 2022, with a one-year moving average around 8%³ – see Figure 3. While settlement fail rates are lower for government and corporate bonds, these numbers have edged upwards slightly over the same period.⁴

Turning to the global picture, according to an article published by Swift on 2 March 2023, where the focus mainly covers cross-border settlement and reconciliation flows, “currently about one out of 10 transactions need correcting or ends up failing”.⁵ According to Swift Watch, continues the article, “4% of settlement instructions are cancelled before or on settlement date; 1% of settlement instructions are cancelled after settlement date; 5% of settlements are completed after the settlement date”.

Figure 3: Example of settlement fails in EU CSDs



Source: TRV Risk Monitor, ESMA report on Trends, Risks and Vulnerabilities, No 1, 2023⁶

1.3 Variations in settlement completion

Settlement fail rates vary according to the underlying asset class being traded and also who provides the statistics. Mike Clarke, Global Head of Product Management and Head of UK&I Region, Securities Services at Deutsche Bank, explains, “When we look at settlement fails in Europe, fail rates for exchange traded funds (ETFs) are much higher than equities and bonds because a lot of (International) ETF settlement is cross-border and some of the processes that underpin it are not that efficient. In some markets, ETF settlement failures account for close to 40% of all settlement failures. Therefore, we need to look at the operating processes involved to identify how we improve the settlement rate. We need to be able to understand the anomalies that are skewing the data before we apply broad brush solutions.”

“When we look at data provided by CSDs,” he adds, “we need to also consider the basis on which they are creating the metric they report for settlement efficiency”. His point is for example, some CSDs exclude on-hold transactions from their fail rates whilst others include the same.

Further, he explains, the variation is also because some CSDs are removing unmatched items from their settlement statistics or, another example, some are counting failing transactions for each failing day whilst other CSDs are counting each transaction once irrespective of the number of days failing – and what is needed is a consistent approach to data. “When we talk about variation in settlement completion, the market itself uses different measures,” he adds. And herein lies the problem, to really assess settlement rates we need a common methodology for determining the metric.

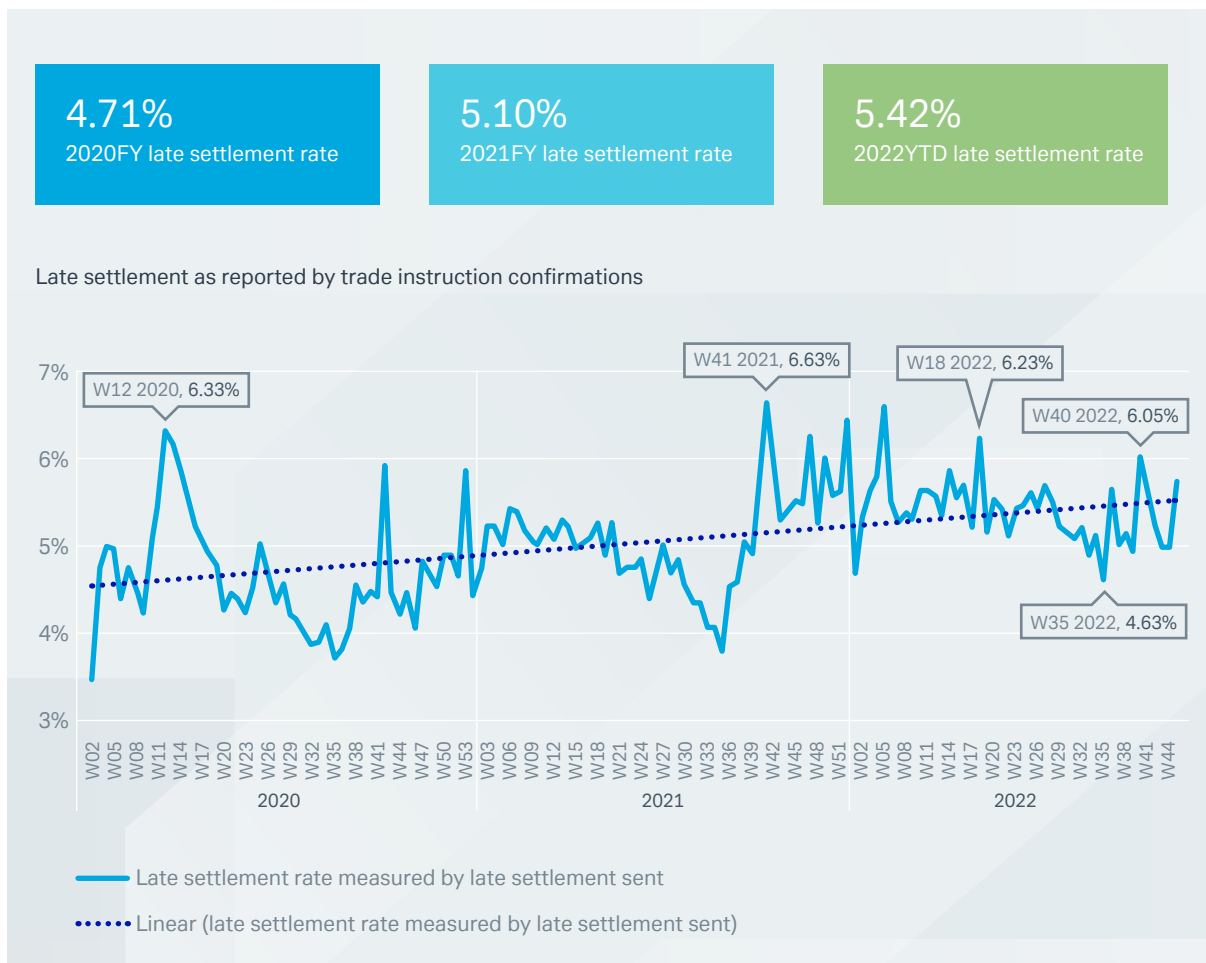
“Bad SSIs can result in failures to settle where there is an assumption that the SSIs are in place to settle and they have not been updated – or recently reviewed – and changes to settlement expectations with bad SSIs then result in a failure to settle on time,” says Derek Coyle, Vice President, Custody Product at Brown Brothers Harriman (BBH) Investor Services.

One of the issues in managing unmatched transactions today is very often there is only limited information on the reason for the matching error. When something is unmatched, a counterparty can only see their own side of the messaging. Where there is a difference, i.e. it is unmatched, they lack the transparency to see the data on the other side (an issue in the payments space that has been addressed by the July 2021 launch of SWIFT Go).²

Solutions (see Section 4) that address the unmatched data problem include the Swift Unique Transaction Identifier (UTI) and those from data aggregation providers such as AccessFintech.

1.4.2 Systemic shocks and market volatility

Figure 5: Market volatility events and higher transaction volumes lead to increased inefficiencies



Source: Swift

A common trigger for trade fails is when there are spikes in transaction volumes, often caused by market volatility. This increases transaction volumes, and with such an increase, there is more strain on the infrastructure (if exception-based, dealing with more exceptions), and then liquidity dries up.

As an illustration, Figure 4 shows how settlement rates can be impacted by market volatility events – including the Ukraine/Russia conflict and inflation increases.

Markets have remained highly volatile since March 2020 caused initially by the pandemic and then the outbreak of war in Ukraine. These two black swan events have precipitated a sharp jump in trading volumes and trade fails. In addition, there was a notable increase in the number of fails in the immediate aftermath of the UK's mini budget of September 2022, according to Minutes from the Bank of England's Securities Lending Committee, which were released the following November.⁹ Trade fails can also increase when new practices are introduced into the transaction chain, such as compressed settlement time-frames (see [Section 3.3](#)).

Extract from Bank of England Securities Lending Committee Meeting November 2022

Post the [September 2022] mini-budget, there was an increase in securities lending fails on returns and resulting CSDR penalties. The Committee noted CSDR penalties are bigger than expected – and not washing through the system as easily as anticipated. Levels of fails remain high, which means the level of penalties remain high, particularly in Europe. There is discussion around increasing the level of fines, but other avenues need to be explored, such as allowing partial settlements. Fails are largest by volume in the equity space, but are most common in corporate bond lending, though settlement rates have fallen across all products. The Committee noted that this problem has existed in the industry for years, and CSDR penalties have not made a large improvement thus far. The Committee discussed some potential drivers for high levels of fails which included: technical issues, liquidity of the underlying security and deliberate fails. The Committee noted that technological improvements were clearly the most important way to improve this issue, due to reliance on rigid archaic systems. The Committee noted that better investment was therefore needed, and that the trend of managing books to zero balances might have to be reviewed so firms could carry cash buffers to account for fails.

Source: Bank of England: Minutes of the Securities Lending Committee meeting – November 2022⁹

1.4.3 Other causes

Finding the cash to settle. Liquidity is an area that will become more acute as settlement cycles are shortened. For settlement to take place requires adequate securities and cash to facilitate the movement. When dealing across borders, the cross-border counterparty needs to ensure the correct amount of currency is available in the market of settlement in the appropriate currency so that settlement can take place versus their account.



As settlement cycles shorten, the time available for, say, a US investor to place Hong Kong dollars to his service provider in the Hong Kong market becomes a key factor in whether that settlement succeeds or fails.

FX processes and timelines therefore need to be considered carefully to allow for funding of this activity.

The advent of wholesale central bank digital currencies (CBDCs)¹⁰ could facilitate more real-time movement of cash across borders although this is unlikely to materialise in the short term for all markets.

Legacy systems and old technology. Each reason for failure summarised in this section is exacerbated by the legacy systems or antiquated technologies employed in the back offices at both trading firms and their intermediaries. This ongoing reliance on manual processes during trade matching, confirmations and instructions certainly increases the likelihood of transactions not settling on time. In marked contrast to front office systems, there has been limited investment into post-trade technology since the financial crisis of 2008, although this imbalance is slowly starting to improve.

1.5 Call for transparency to drive efficiency

Security settlement is driven from a pair of matching settlement instructions moving through the value chain. Today, when there is a matching problem in that data, participants can only see their own side of the messaging. This triggers communications between parties to identify the root cause of the issue. Where those parties are across multiple jurisdictions their communications can incur delays. To overcome this, we need to identify the issues without the need for such additional communication. To this end, data transparency of both sides of the instruction would allow for faster identification of where the problem resides and who to contact to resolve it.

“Transparency is a key theme”, says Simon Daniel, Product Manager at Swift. “The lack of transparency between counterparties as it relates to settlements can lead to timing issues, data discrepancies and problems with inventory.”

2

Impact of settlement fails

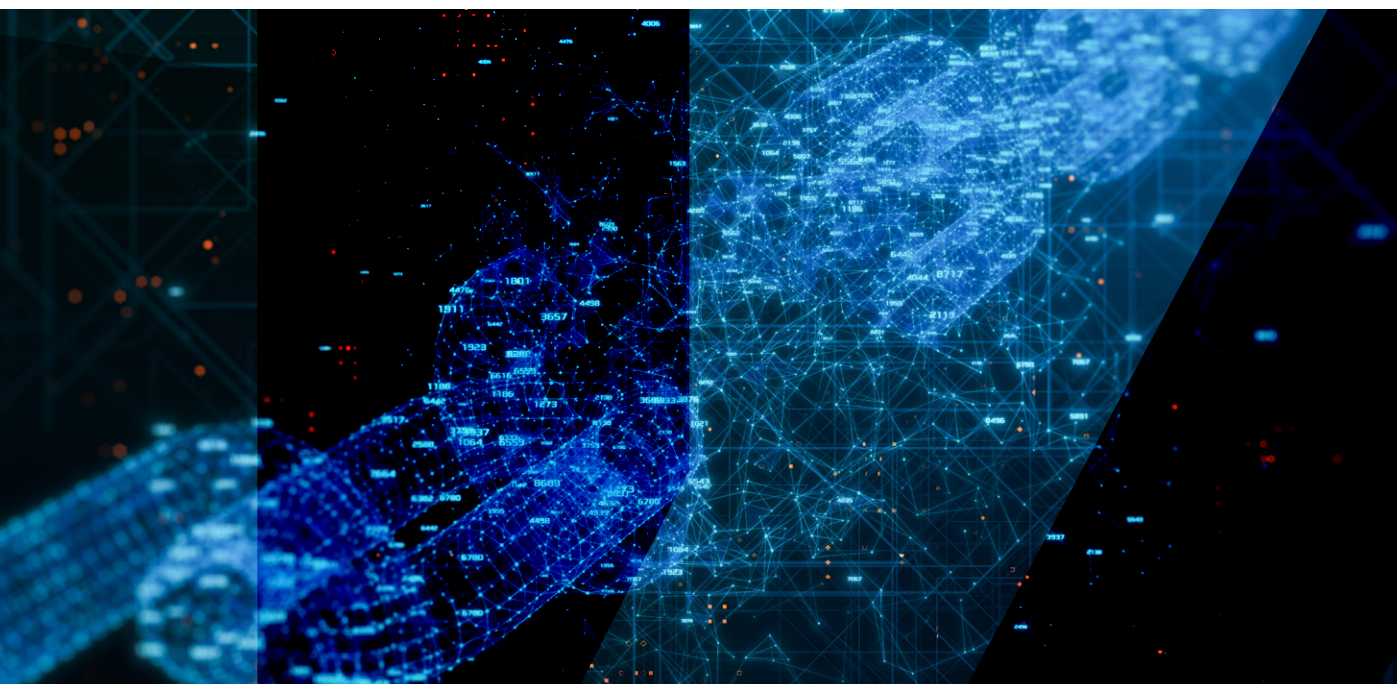
2.1 Cost and risk

Settlement fails can have various adverse impacts on capital markets and these all come down to cost and risk. It is also worth remembering the risk to the industry is introduced from the combined knock-on effects of the settlement fail. Once the failure has occurred, market participants all try to borrow at once, which puts a strain on liquidity – precipitating further fails.

In short, the failure costs are:

- Operating costs – of having to try to manage the fails and initiate loans (with the resulting overdraft costs)
- Penalty costs (see [section 2.2](#))

In some instances, they may even increase systemic risk, according to Jesús Benito, Head, Domestic Custody Operations, at SIX, Switzerland and Spain national Central Securities Depositories (CSD). “Settlement failures are a source of systemic risk,” explains Benito. “If a participant expecting to receive securities or cash on a particular due date is not receiving them because of a settlement fail at its counterparty, then there is a risk that the affected participant will be unable to meet their obligations with other counterparties on the same date. This could result in a potential ‘domino effect’ that could eventually cause a systemic risk, should this snowball effect continue growing in the market.”



2.2 Cost and penalties

Aside from potentially compounding market risk, settlement fails can result in financial institutions incurring added costs, especially since the rollout of the Settlement Discipline Regime (SDR) under the EU's Central Securities Depositories Regulation (CSDR). SDR, which came into effect in February 2022, imposes cash penalties on counterparties responsible for trade fails.¹¹

Under SDR, cash penalties range from between 0.5 basis points (bps) and 1 bps depending on the nature and properties of the underlying security being traded (i.e. the more liquid the security, the higher the penalty).

Following SDR's introduction, Euroclear Bank said it had issued approximately 60,000 penalties per day, averaging around €50 each.¹² It went on to report that fines for late matching accounted for around 20% of all penalties imposed by the Bank, and 30% of the total cost of all penalties.¹³ In aggregate, these fines are fairly substantial.

Other markets also prescribe cash penalties for settlement fails. The US, for example, imposes penalties on fails involving US Treasuries. According to the Depository Trust & Clearing Corporation (DTCC), the Fixed Income Clearing Corporation follows the recommendations set by the Treasury Market Practices Group, and "collects interest at an annual rate of 3% on the settlement value of the trade."¹⁴

Matt Johnson, Director, ITP Product Management & Industry Relations at the Depository Trust and Clearing Corporation (DTCC), says that in addition to cash penalties, settlement fails can result in interest payments being accrued. "This further augments costs, particularly in the current economic environment which is characterised by high interest rates," adds Johnson. These heightened costs are likely to erode margins at financial institutions just as the industry is facing substantial revenue contractions elsewhere, due to a combination of tough macro headwinds, client pressure on fees, and mounting operational and regulatory spending.

2.3 Reputational risk

Among further challenges, late settlement carries reputational risk. For example, any financial institution which routinely fails to settle its trades on time may struggle to find counterparties willing to trade with it in the future, due to the operational risks and costs associated with the relationship.

When intermediaries such as brokers are unable to make onward deliveries caused by failure of incoming settlements, this can impact their relationship with their clients and the likelihood of future transactions in a highly competitive market.

3

Improving settlement discipline

The industry has every incentive for members to work together to find ways of improving settlement discipline. The Central Securities Depositories Regulation (CSDR)'s Settlement Discipline Regime (SDR), originally scheduled to come into force from 14 September 2020, eventually took effect from 1 February 2022. The client white paper toolkit, first published in 2019 as a new resource to support clients as they navigated the changing regulatory landscape, was updated and published in January 2022 as a new resource, [CSDR: The final countdown](#).⁴⁵ But regulation is not enough on its own.

Better settlement discipline could also help bring about much needed operational efficiency. Operations teams spend too much of their time investigating trade settlement fails or trying to identify matches, and this consumes a huge amount of technology resources and internal budget. Were the industry able to identify the root causes of settlement fails and prevent them from occurring in the first place, then skilled operations experts could allocate more of their time to supporting activities which are genuinely value add, as opposed to mundane back-end processes.

3.1 Impact of CSDR

The go-live of SDR coincided with significant external economic and geopolitical turmoil. The introduction of cash penalties coincided with the February 2022 outbreak of the Russia-Ukraine war, which precipitated a spike in trading volumes and fails.

Deutsche Bank's Mike Clarke reflects, "We believe it is too soon to form an overall conclusion on the impact of the penalty regime on the reduction of settlement failures, since many parties, including CSDs, are continuing to work on optimisation solutions (i.e. partial settlements within omnibus accounts), and the picture can vary across different markets due to the differences in measurement. A positive impact, however, is the further increased awareness across the industry and the acknowledgement of the need to improve settlement efficiency."

SIX's Jesús Benito believes SDR is having a positive effect on settlement discipline. "We have observed a significant increase in settlement efficiency rates in our system since SDR has been in force mainly in over the counter (OTC) equity transactions," he reports. "We have seen a 4% increase in the settlement efficiency rate in terms of volume (i.e. the number of transactions) and more than 2% in terms of value (EUR cash value) for our whole system. However, if we look exclusively at equities transactions, the increase in settlement efficiency is higher in value – with a 9% improvement rate."

3.2 Mandatory Buy-In rules and CSDR Refit

Regulation and market reforms designed to strengthen post-trade processes are expected to prompt financial institutions into addressing settlement discipline with more urgency.

EU regulators opted to delay the implementation of SDR's Mandatory Buy-In Rules (MBI) rules in 2022, and the MBI is now deferred until November 2025. The International Securities and Lending Association explained in August 2022, "The ECB have advised that the entire application of the Mandatory Buy-in (MBI) regime should be removed, stating that they would cause 'a significant interference in the execution of securities transactions and the functioning of securities markets' also highlighting the 'non-availability of a buy-in agent' in the market.

In addition to the above, the ECB have also suggested excluding Securities Finance Transactions (SFTs) from the scope of MBI's, were they to come into effect."¹⁶

By way of background, a mandatory buy-in is where, following a fixed time period after the expected settlement date, if the securities remain undelivered the receiving party initiates a purchase of the missing securities from the market, the cost of which is passed to the failing party.

A CSDR Refit was proposed in March 2022 by the European Commission (EC). As part of this plan, the EC recommended the introduction of MBIs if it becomes clear that cash penalties are not having their intended effect. It also suggested amending the conditions under which CSDs can access banking services and streamlining the passporting requirements for CSDs operating in the EU.¹⁷ The Refit is in the final stages of political negotiations.

If settlement rates do not improve or meet a certain measurable threshold set by regulators, then the EC and ESMA could well be inclined to introduce MBIs.

Should MBIs be introduced, the implications could be significant for market participants. MBIs have been a source of dispute in the industry ever since they were first proposed under the SDR, with trade bodies including the Association for Financial Markets in Europe (AFME) and the International Capital Market Association (ICMA) warning regulators that their imposition risks undermining market liquidity (especially in the corporate bond market and other less liquid segments) and driving up costs for issuers and investors.¹⁸

"An estimate from the custodian side could see the monthly volume of buy-ins increase approximately 50-fold, meaning both an increase in operational handling, but also the impact on liquidity and needing to fund for additional trades to be settled," said BBH's Coyle. As such, many are hoping that buy-ins become a voluntary, as opposed to a mandatory obligation.

3.3 T+1 momentum

Major markets, including the US and Canada, are starting to shift away from the T+2 settlement model for equities to T+1, while others – including the UK, EU and a handful of emerging economies – are contemplating such a move.¹⁹ India completed its transition to T+1 at the end of January 2023,²⁰ having phased the changes in gradually over the preceding 12 months.

Does reducing the post-trade settlement window reduce the risk of settlement fails? This market reform comes as experts argue that settlement compression will yield capital and margin savings, liquidity optimisation and reduced settlement and counterparty risk.

However, T+1 shortens the time available to get the settlement completed and puts pressure on operational processes and technology systems – increasing the chance of failure. To mitigate fails in a T+1 environment, inefficiency and manual processing need to be removed from the value chain and multi-party workflow employed rather than single linear message-based workflow.

According to the AFME report, *“T+1 Settlement in Europe: Potential Benefits and Challenges”*, the industry group stressed that the number of hours between trading and the start of the settlement cycle would be dramatically reduced. Although logic should dictate that moving from T+2 to T+1 correlates to a 50% reduction in settlement processing times, AFME calculates market participants now have just two hours to complete the relevant post-trade processes (resolving matching errors, addressing cash funding/FX issues, etc), down from the current 12 hours, which represents an 83% reduction. AFME fears this is likely to result in a substantial jump in the number of settlement fails, and cash penalties.²¹

The spectre of more fails and cash penalties following T+1’s implementation will pose a challenge for many financial institutions.

“We have to rethink all of our processes involved in the post-trade arena to really take advantage of shortened settlement cycles, i.e. we need to look at how do we get the right cash value in place for settlement when dealing with cross-border counterparties, and how do we re-evaluate how we currently process steps within the value chain, for example, can we move the current fund allocation process to get the information pre-trade rather than post-trade?” said Clarke. He went on to explain that ultimately the way forward is a move towards a “multi-party workflow”.

In other words, parties need to be able to move away from a linear flow of:

1) Investor 2) Investment manager 3) Global custodian 4) Sub-custodian 5) CSD

And then back up that chain.

“If we move to a model where we are sharing a single view of operating data, where this view brings together both sides of the trade, and where the buyer, seller, broker and custodian all see the same information in real time, all parties could quickly see where exactly the problem is and allow it to be rectified more efficiently. But at the minute we have a linear workflow where you can only see your part of the chain, and to find and rectify the problem you may have to communicate across multiple parties. As you shorten the time between trade date and settlement date, that problem resolution becomes harder. If you can get a consolidated single view of the workflow then we can identify where the problem is and react much quicker,” reflected Clarke.

4

Solutions

There are several solutions available to financial institutions, which could potentially reduce the regularity of trade settlement fails. These include:

- Increased data transparency of settlement instructions across all involved parties; and
- Settlement efficiency measures such as partial settlement.

4.1 Greater data transparency

One way to minimise settlement fails would be to obtain better transparency into the trading lifecycle. Market participants would then be able to procure more accurate insights into what is happening during the entire transaction process and start to implement tools that allow for multiparty workflow to take place.

As explained in Section 1.4, visibility of both sides of the instruction makes it simpler to identify which party needs to act in order to resolve the issue. There are several ways to achieve this currently evolving in the marketplace, one of which is the adoption of Swift's Unique Transaction Identifier (UTI).

Swift explains, "The UTI is a unique alpha-numeric code comprised of up to 52 characters that is assigned to a securities trade. This enables a trade to be tracked from end to end throughout the lifecycle of its settlement. The UTI is part of the ISO stable – namely ISO 23897:2020 – and is already used in securities markets for transaction reporting purposes."²²

In other words, according to Swift, market participants already utilise the UTI to report details of their OTC and exchange traded derivatives and securities financing transactions (i.e. securities lending, securities borrowing) to ESMA-regulated trade repositories under the European Market Infrastructure Regulation (EMIR) and the Securities Financing Transaction Regulation (SFTR) respectively.²³



While UTI transaction data will not eliminate pre-settlement matching and timing exceptions, it will identify them sooner, provide the data points required to determine the cause of these exceptions and facilitate faster subsequent actions. It will also reduce the number of instances where a firm needs to query their counterparty. Consolidated data from UTI adoption can also directly eliminate some failures from matching and timing issues.

Source: Swift – *Solving the post-trade transparency challenge: The case for a unique transaction identifier in securities*²⁴

By incorporating the UTI into the settlement process, trading counterparties will be able to identify operational risks or problems during the transaction lifecycle, thereby helping them to avert potential fails. “The UTI provides counterparties with greater visibility allowing them to spot issues in the settlement process, obtain data more quickly and ensure that information is accurate,” says Swift’s Securities Product Manager, Simon Daniel. “Through better transparency, trading counterparties can correct problems in the settlement process, allowing them to reduce the risk of settlement fails.”

Analysis by Swift, in conjunction with a working group of financial institutions and several industry bodies, found that adoption of the UTI could achieve a 50% reduction in the number of pre-settlement matching and timing exceptions that require investigation by a counterparty, and a 90% drop off in the number of matching or timing fails.²⁵

While there is a compelling case for leveraging the UTI, adoption is key – it will only work if a large proportion of the market embraces it. However, Swift is working closely with the securities industry on the UTI and educating the wider market about its benefits through communication campaigns and flagship events such as Sibos.

Deutsche Bank as part of the SWIFT working group is supportive to the implementation of the UTI concept and will promote the use of this identifier to our clients (and peers in the industry).

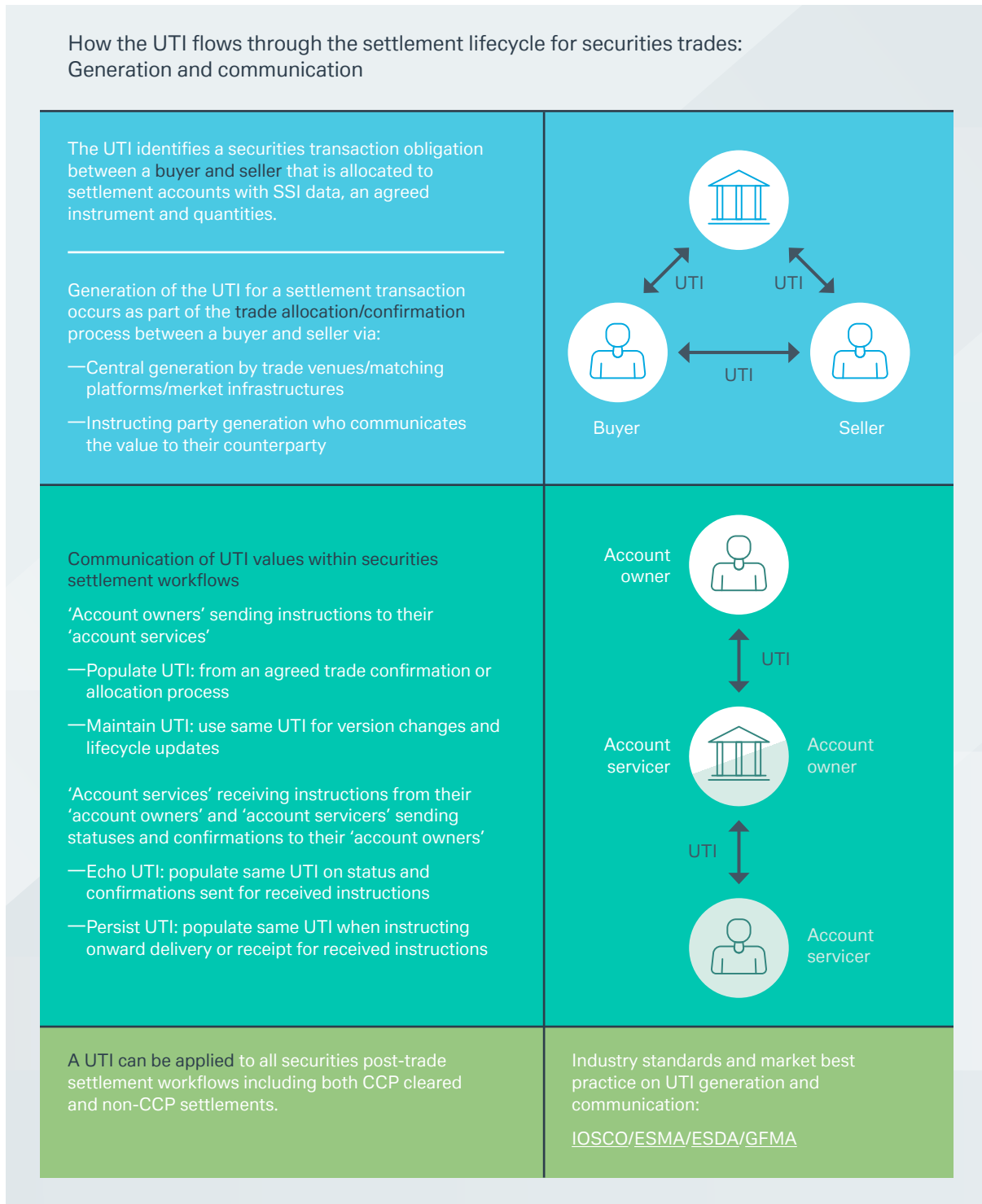
4.2 Partial settlement

A useful tool for the market to improve settlement liquidity and reduce the value of penalties is the use of partial settlement. Within a settlement instruction each party can indicate that they are open to allowing a partial delivery to take place. A partial delivery is one where the seller delivers the shares available in their inventory to the buyer in return for a proportionate amount of cash proceeds. This reduces the outstanding amount that is failing and therefore reduces the size of any penalty.

For partial settlement to occur, both sides need to have indicated that a partial is allowed. Non-acceptance by one side may result in an imbalance in the penalties levied on market intermediaries.

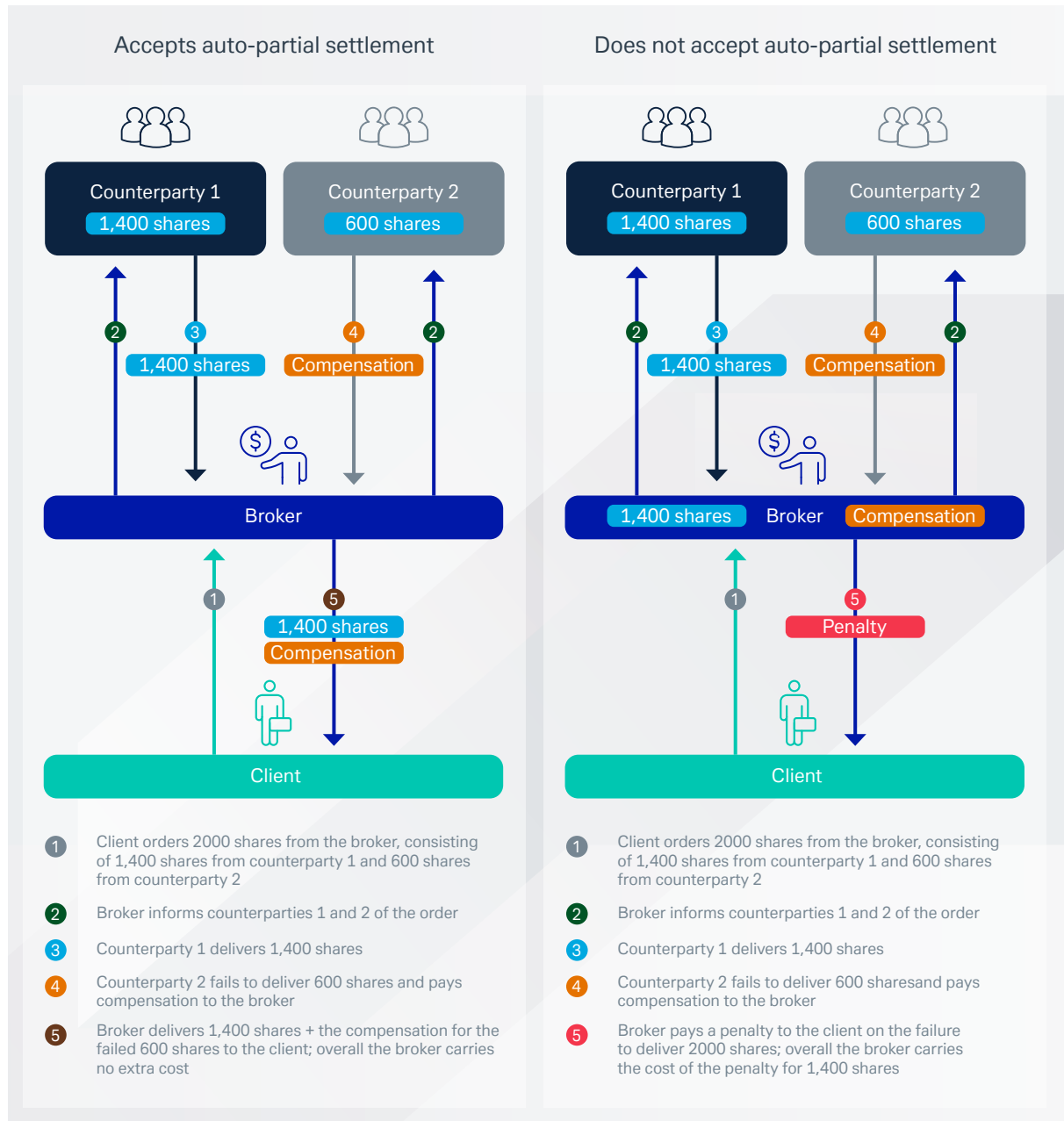
The process for partial settlement depends on the type of underlying account. Automated partial settlement, or ‘auto-partial’ can be offered by CSDs or an intermediary (e.g. custodian/account service provider) in the chain to their client, in order to “automatically identify the availability of securities for partial settlement when full settlement has failed”, as explained by ICMA.²⁶ The impact of auto-partialling is already being felt, with Euroclear Bank stating that the contribution of auto-partialling to settlement efficiency had increased from 2% in 2021 to 3.5% in 2022.²⁷

Figure 5: Summary of UTI settlement lifecycle



Source: Swift – Solving the post-trade transparency challenge: The case for a unique transaction identifier in securities

Figure 6: Auto-partial settlements



Source: Deutsche Bank

Figure 6 demonstrates the following scenario:

Consider a broker who has received an order for 2000 shares from a client, who has then executed this as two tranches of 600 and 1400 shares from two counterparties. Should 1400 shares be received, and the 600 shares fail, then the broker does not have sufficient inventory to make delivery to the client. If the client has indicated that they will not accept partial settlement, the broker will receive compensation for the failed 600 shares and incurs a penalty based on the failure to deliver 2000 shares to the client.

While auto-partial settlement can contribute positively to settlement efficiency, it is limited to segregated accounts. Auto-partial settlement is not supported for omnibus accounts, as the intermediary has no visibility of the underlying client's position and therefore the account owner must instruct their service provider (via MT530 or equivalent messages) the maximum quantity allowed for partial settlement, referred to as 'manual release'. However, "not all participants in the intermediary chain (including some CSDs) have the ability to perform a partial release of securities held within an omnibus custody account, in addition not all parties accept partial settlement. These limitations impact the ability for partial settlement to be used," comments Deutsche Bank's Clarke. CSDs, CSD participants and other intermediaries in the chain need to invest in their settlement infrastructure to support partial release for omnibus accounts. However, Clarke confirms the industry is making progress on implementing partial settlement on omnibus accounts.

Key to the maximum value that can be gained from partial settlement is the mass adoption by all market participants. Partial settlement does incur costs as parties will apply a settlement fee per partial settlement. This means it becomes an investment decision, as to whether the risk to attract penalty costs exceeds the settlement costs. Given that by far most transactions are still settling on time, to bear the penalty costs for a subset of failing transactions could, in practice, have a less negative financial impact. Hence the question as to whether settlement fail penalties are high enough.

Deutsche Bank continues to recommend partial settlement and the associated reduction of penalty amounts being raised, simply because fulfilling the settlement obligation (even partially) should outweigh any financial decision.

Partial settlement for omnibus accounts (manual release) should not be confused with "shaping", which is a different method to improve settlement efficiency. "Shaping" is where there is a pre-agreement between both counterparties to divide a large trade into a defined number of smaller transactions, which may help to reduce the impact of a settlement failure, and therefore reduce the implications for late settlement penalties.²⁸

Agreeing shaping after a successful match of the "full" settlement transaction and after intended settlement date should not be pursued, since neither party is willing to bear the late matching penalty.

Deutsche Bank is aware of ongoing discussion in finding a solution to avoid the application of the late matching fee for such "replacement instruction" but is anticipating solution to be found.

4.4 Automation and innovation

The threat of more frequent cash penalties is likely to motivate financial institutions into bolstering their settlement discipline through better automation of their middle and back-office operations, according to Swift's Daniel.

Utilising predictive analytics, for example, to comb through historical settlement fail data might help financial institutions to ascertain the conditions as to whether live trades will fail or not. This will prompt them to pay closer attention to that trade, its processes and counterparties.

In the flow white paper, [Unleashing the potential of AI in securities services](#) (June 2021), the authors comment, "Preventing and reducing failure rates is a top priority for custodians – one that, provided there is a clear goal and sufficient labelled data, can be solved using an AI-based approach. For example, custodians are leveraging AI technology to predict failure possibilities based on specific features and historical settlement data, including time, country, exchange, amount and asset type, as well as any combination thereof. In addition, they are also generating pre-trade predictions at the point a trade order is submitted – providing operations staff with a real-time view of the issues that can delay settlement."²⁹

“Through forward-looking predictive analytics, financial institutions can gain insights into whether a trade is likely to fail. This will prompt them to pay closer attention to that trade, its processes and counterparties,” says the paper’s co-author, Boon-Hiong Chan, Head of Securities Market and Technology Advocacy, Securities Services, at Deutsche Bank.

Predictive analytics does, admittedly, also have pitfalls. SIX’s Benito says the actual cost of implementing predictive analytics, together with other disruptive technologies such as artificial intelligence (AI), would be significant, and potentially prohibitive for some smaller financial institutions. Swift’s Daniel suggests these organisations might also lack the settlement flow volumes to extrapolate meaningful data to feed into predictive analytics tools.

While predictive analytics can – as the name implies – predict when or where a trade settlement is likely to fail, the technology may not explain the reason for the fail. Trading counterparties need the reason for a fail to mitigate it, so the level of transparency within the predictive analytics inevitably steers the success rate of this approach.

Looking further ahead, the integration of innovative technologies, such as Blockchain or distributed ledger technology (DLT), into existing processes could also potentially drive down settlement fail rates. “If DLT is introduced into current settlement procedures, this new technology would replace existing technology and procedures,” says Benito. “As a result, atomic settlement would be available and settlement fails would no longer exist. We foresee earlier adoption of DLT for new asset classes or even some fixed-income instruments. However, we do not see this possibility in the short run, for traditional equities markets, for example.”

For Blockchain to succeed, however, requires the industry to develop a framework to support interoperability between different protocols and platforms, and establish standards around its use.

4.5 Taking settlement efficiency to the next level

Right now, settlement efficiency across multiple asset classes and geographies is not where it should be for a variety of reasons. An inability by the industry to remedy this longstanding problem could result in a build-up of risk in the market at a time of unprecedented volatility. Moreover, persistently high settlement fails could lead to financial institutions being on the receiving end of frequent cash penalties as more markets transition to T+1. Additionally, the threat of MBIs being enacted inside the EU cannot be discounted either, especially if SDR’s cash penalties only have a limited impact on changing market behaviour and practices.

Fortunately, there is an abundance of short to medium-term solutions available, which could help augment settlement efficiency. Through greater adoption of Swift’s UTI and auto-partialling, the number of settlement fails could reduce. However, critical mass is key, and adoption must be industry-wide if the full benefits are to be realised. Similarly, used in the right way, an embrace of automation and innovative technologies such as predictive analytics or even Blockchain could play a useful role in rooting out settlement fails.

Deutsche Bank’s Clarke comes back to the underlying requirement for a transition from linear to multi-party workflows to take the industry forward. This is something blockchain may be able to help with, but we need to find the right technology solution to the problem at hand. “While blockchain can help with multi-party workflow, the most important thing is to be working off a complete picture of the data in such a way that all parties see the same information at the same time and can identify where the problems lie.”

Despite the scale of the settlement fail problem – the industry is in a position to fix it. But it needs to move fast.

Glossary

AFME	Association for Financial Markets in Europe	EU	European Union
AI	Artificial Intelligence	ICSD	International central securities depository
CSD	Central securities depository	ICMA	International Capital Market Association
CSDR	Central Securities Depositories Regulation	MBI	Mandatory buy-in
DLT	Distributed Ledger Technology	OTC	Over the Counter
DTCC	Depository Trust & Clearing Corporation	SDR	Settlement Discipline Regime
EC	European Commission	SFTR	Securities Financing Transaction Regulation
EMIR	European Market Infrastructure Regulation	SSI	Standing settlement instruction
ESMA	European Securities and Markets Authority	T2S	Target2Securities
ETF	Exchange traded Fund	UTI	Unique Transaction Identifier

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