

# Extending and aligning RTGS operating hours

Cross-border  
Payments  
Interoperability and  
Extension Taskforce:  
Task Team 1

March 2025

This report was written with contributions from members of PIE task team 1.\* The views expressed in them are solely those of the contributors, who are responsible for the accuracy of their respective contribution, and not necessarily the views of the Bank for International Settlements (BIS), the BIS Committee on Payments and Market Infrastructures (CPMI) or its member central banks.

\* AfricaNenda (Michael Mbuthia),  
CLS (Dirk Bullmann, Kerry Denerstein),  
EBA Clearing (Ella Adler), Fnality (Stephan Mahnke), Global  
Financial Markets Association (Andrew Harvey), Japanese  
Bankers Association (Misao Watanabe, Michinobu Kishi),  
The Clearing House (Richard Dzina).

## 1. Introduction

It has been four years since the G20 endorsed a roadmap to enhance cross-border payments (the Roadmap),<sup>1</sup> developed by the Financial Stability Board (FSB) in coordination with the Bank for International Settlements' Committee on Payments and Market Infrastructures (CPMI) and other relevant international organizations and standard-setting bodies. As the program has turned to implementation, the CPMI and FSB have organized the work around priority themes, one of which revolving around interoperability and extension of payment systems.

Under the umbrella of the CPMI-led cross-border payments interoperability and extension Taskforce (PIE TF), there have been reflections on industry-led measures that could potentially be taken with respect to extending and aligning RTGS operating hours.

Against this background, this report presents feedback received from the involved PIE TF members on possible follow-up work around aligning and extending operating hours in support of the G20 roadmap targets.

## 2. Background: Findings of the 2022 / 2023 CPMI reports on extension and alignment of operating hours

With regard to extending and aligning operating hours of key payment systems (building block 12 of the original G20 cross-border roadmap), the CPMI published in May 2022 a report<sup>2</sup> with a focus on real-time gross settlement (RTGS) systems. It suggests that an extension of RTGS operating hours across jurisdictions could potentially speed up cross-border payments, improve liquidity management, reduce settlement risk, and enhance the performance of ancillary payment systems.

The report presents three potential scenarios for extending RTGS operating hours (referred to as “end states”) and associated operational and risk considerations: an incremental increase in operating hours on standard working days (end state 1), an increase to include current non-operating days, e.g. weekends and holidays (end-state 2), and an extension to full 24-hour and seven-days-a-week (24/7) operations (end state 3).

Furthermore, the report introduces a new concept, the “global settlement window”, which represents the period of time during which the largest number of RTGS systems are simultaneously operating.

In February 2023, the CPMI published a technical report<sup>3</sup> that builds on the May 2022 report. It proposes an analytical framework for central banks and RTGS system operators to guide their approach for extending operating hours.

## 3. Implications of extending and aligning operating hours

The 2022 CPMI report acknowledges that extensions and alignment of operating hours can have broad implications, also for other payment infrastructures, payment service providers, end users that indirectly utilize the payment system, and other industry stakeholders. The impact of changes to the operating hour schedule of a RTGS system ultimately needs to be addressed by the whole payment system ecosystem, with the understanding that the magnitude of required changes would be more pronounced for end states 2 and 3 as compared to end state 1.

<sup>1</sup> FSB (2020), Enhancing cross-border payments roadmap.

<sup>2</sup> CPMI (2022), Extending and aligning payment system operating hours for cross-border payments.

<sup>3</sup> CPMI (2023), Operational and technical considerations for extending and aligning payment system operating hours for cross-border payments: An analytical framework.

In an initial step, the PIE TF task team<sup>4</sup> reflected on the comprehensiveness of the implications of extended operating hours as described in the 2022 CPMI report:<sup>5</sup>

- **Operational and risk considerations highlighted in the 2022 CPMI report:**

The 2022 CPMI report concludes that, from an operational perspective, there would arise costs for technical adjustments of software and hardware on both the operator and the participant side. Those costs ultimately need to be borne by the RTGS system participants. Moreover, there could be the need for increasing staff numbers to cover operating hour extensions, which translates into increasing costs for the RTGS system participants.

The report furthermore states that extending and aligning operating hours does not necessarily introduce new risks but rather extends the time window during which risks could materialize. With respect to financial risk, it was noted that operating hour changes could affect the participants' liquidity management, possibly leading to increased liquidity costs. Central bank liquidity facilities and liquidity bridges might be necessary to support liquidity management by participants. Moreover, in relation to operational risk, RTGS system participants need to consider a potential impact on the magnitude of errors, fraud, money laundering/terrorist financing, the need for business continuity planning arrangements and the materialization of cyber-attacks.

- **Operational and risk considerations highlighted in the PIE TF context:**

Responses received in the context of the PIE TF work were very much in line with the findings of the 2022 CPMI report<sup>6</sup> with respect to potential cost impact, liquidity considerations and resilience aspects. Beyond the points mentioned in the CPMI report, emphasis was put on the following aspects:

- **Costs:** As extending and aligning RTGS opening hours may require a substantial level of investment on the participants' side (e.g. for adjustment of interfaces, messaging and reporting systems) and costs on the side of the RTGS system operator would need to be ultimately passed to participants, it was stressed that emphasis needs to be placed on ensuring full transparency on cost recovery principles.

Social costs could also be significant as, in many countries, it could be forbidden to work on given days or public holidays.

- **Resilience:** Extending and aligning operating hours could be of some benefit in failure scenarios, giving the RTGS system operator and its clients more time to resolve a settlement failure and ultimately mitigate cross-border impact. This aspect would be more pronounced in payment systems with a global reach where, for example, Asia Pacific currencies currently have the earliest closing times due to their time zones.

At the same time, longer operating hours could come with substantial operational challenges, especially around service availability and resilience. For example, extending operating hours into new operating days (i.e., the weekend) could be challenging if this period was to be utilized for weekend system maintenance and change programs.

- **Liquidity:** Extended operating hours could mitigate funding-related liquidity risk by enabling the participants to ensure funding, also over the weekend and on holidays (which is relevant in an end state 3 – 24/7 scenario). In the same vein, it would allow participants to withdraw liquidity over the weekend and on holidays so that participants can use the liquidity for other purposes. This is considered a clear benefit if the payment system is based on pre-funding arrangements.

<sup>4</sup> At the level of the PIE Taskforce, eight members had expressed interest in contributing to these considerations around the extension and alignment of operating hours. Amongst these contributors, there were six payment system operators or service providers and two associations. Despite the comparably small number, there was a balanced geographical representation (EMEA: 3, APAC: 1, AMER: 2, global: 2). In order to place the analysis on a broader basis, the team also reached out to five globally operating banks for further input, of which two provided feedback.

<sup>5</sup> In an initial step, the analysis was based on a questionnaire that focused primarily on operational and technical challenges, as well as potential corresponding actions. Commercially sensitive questions were not included in the survey. The results were subsequently discussed at task team level, either in dedicated meetings or in written form.

<sup>6</sup> Feedback received from banks, non-bank PSPs, operators of financial market infrastructures, industry trade associations and a central bank, covering a range of jurisdictions, is summarized in annex 2 of the 2022 CPMI report.

However, some respondents identified liquidity management challenges, particularly in stress scenarios, if RTGS systems remain open on days when markets are closed. In certain circumstances, this could expose banks to outflows without any possibility to source liquidity. There could be challenges in terms of trapped liquidity during weekends and overnight periods when payments are settled towards non-active participants.

## 4. Reflections on preferred end states

The 2022 CPMI report concluded that, based on input received through public consultation, the market participants' preferences for a particular end state ranged from most practical (end state 1, extended hours on current operating days) to most future-oriented (end state 3, 24/7 operations). The large majority of consultation respondents that stated a preference favored either end state 1 or end state 3, with end state 2 (an increase to include current non-operating days, e.g. weekends and holidays) being understood as an intermediate step towards reaching end state 3.

The survey subsequently conducted at PIE TF level largely echoed the findings of the 2022 CPMI report, but it also indicated that there appears to be a divide between the wholesale and retail side with respect to the desirable end state:

- On the wholesale side, extensions on current business days (end state 1) were overall deemed sufficient to realize identified benefits such as extended opportunities for payment-versus-payment (PvP) mechanisms to mitigate FX settlement risk and the provision of higher levels of flexibility in failure scenarios (particularly for Asia Pacific currencies, and longer operating windows for systems relying on pre-funding).

Wholesale respondents also highlighted that the widening of operating hours could come with substantial costs, especially when extending into the weekend (end state 2)<sup>7</sup> and to 24/7 (end state 3). Moreover, it was felt by several respondents that there appears to be limited demand by users to go beyond existing operating hours, though the business case for extended business hours may be stronger in some jurisdictions/currency zones than others.

- Retail respondents in general identified demand for weekend and holiday operating hours (end state 2). Respondents however cautioned that true 24/7 operations (versus near 24/7) may not be necessary and in certain cases could pose significant challenges (e.g., the need for weekend maintenance and system updates and complexities related to market conventions such as "value date"). It should however be noted that, as mentioned in the 2022 CPMI report, end users in the retail payment segments may see in general fewer direct benefits from extensions to RTGS operating hours given that they are somewhat removed from connections to RTGS systems and have little need to make large-value payments.

## 5. Motivation behind possible extension and alignment

Today, there still exists significant variation across jurisdictions in RTGS system's daily operating hours on working days, with only a few systems operating on weekends and holidays or even 24/7. As fast payment systems, which focus on high volume and low value transactions, are already operating (close to) 24/7, an expansion of operating hours is increasingly discussed on the RTGS system operator side. However, as shown in the 2023 CPMI monitoring survey<sup>8</sup>, most of the RTGS systems that consider extending operating hours have not yet undertaken internal analysis, stakeholder consultation or both. Against this background, the gaps between RTGS system operating hours can still be substantial. The business case for narrowing down or eventually even closing the time gaps between RTGS operating hours predominantly depends on each jurisdiction's present circumstances, including the business needs of RTGS participants and their users. The motivation behind considerations around

<sup>7</sup> One wholesale FMI did indicate a strong expression from its participants to explore an extension of operating hours on the weekend.

<sup>8</sup> Fitzgerald, E., Illes, A., Lammer, T. (2024) "Steady as we go: results of the 2023 CPMI cross-border payments monitoring survey".

extending and aligning operating hours therefore largely hinges on the concrete situation in a jurisdiction. The reduction of settlement risk, liquidity costs, the existence of cross-border use cases and other factors play a role in these reflections.

It is however noteworthy that there exist global developments which need to play a role in the considerations around extending and aligning operating hours of RTGS systems. For example, the provision of a better experience for customers which demand instant payment transactions play a role. Moreover, the facilitation on innovation may be an important factor in these reflections. Market players may see a demand for extended and aligned operating hours of their respective RTGS systems in order to maintain their competitiveness given the advent of new technologies and new entrants focused on off-hours/cross-border use cases.

## 6. Reflections on the need for concerted action at PIE TF / global level

### 6.1 Operating hours as an enabler

The 2022 CPMI report acknowledges that the extension and alignment of RTGS operating hours cannot by itself overcome pertinent challenges in the cross-border space. Adjustments of the operating hour time window can however serve as an enabler for other building blocks of the G20 cross-border roadmap, such as building block 9 (facilitate the adoption of PvP) or building block 14 (harmonized version of ISO20022 message formats) of the original roadmap.

Moreover, in order to have wider impact and achieve tangible benefits, the extension or alignment of RTGS operating hours would need to be accompanied by similar extensions of operating hours and services in other components of the payment ecosystem, such as banks and providers in the FX and money markets space.

### 6.2 Disparities between jurisdictions

The business case for and the motivation behind extending and aligning operating hours largely depend on the concrete situation in a jurisdiction or currency area. While there are common themes on a global scale like payment speed and innovation (section 5), the specificities of a market including the level of economic interconnectedness are decisive and driving factors in reflections for adapting existing services.

Against this background, RTGS system participants and the wider industry within a jurisdiction need to be consulted at an early stage of possible considerations around evolving the settlement window of an RTGS system. The evaluation of gaps in operating hours at an international level could be considered bilaterally between jurisdictions (e.g. for specific currency corridors), regionally (e.g., depending on trade connections) or globally.

### 6.3 Global settlement window

The 2022 CPMI report introduced the concept of a global settlement window, which is defined as the time frame during which the highest numbers of RTGS systems across jurisdictions are concurrently open. Based on a stock take conducted in the first quarter of 2021, the CPMI report concludes on a five-hour interval from 06:00 to 11:00 GMT on working days, which largely coincides with the PvP settlement and funding window of CLS (05:00 to 10:00 GMT).

At PIE TF team level, support was expressed for the global settlement window concept, as it could serve as a useful tool to support reflections at jurisdictional level on the possible need for adjusting RTGS operating hours. At the same time, it was noted that the stock take could be refreshed periodically in order to make sure that information is up to date. If such a review was eventually conducted, the refinement that had been suggested by respondents in the context of the 2022 CPMI report (covering the most used/demanded currencies and corridors; regional or bilateral settlement windows; specific country operating/access requirements that impact the practical ability to settle cross-border payments) could be considered.

## 6.4 Conclusions and suggested next steps

The PIE TF team reflected on the need for further focused work on extending and aligning operating hours in light of the work previously conducted at CPMI level and also in view of activities already ongoing at national level in their respective jurisdictions.<sup>9</sup>

Overall, the analysis showed similar results than the findings reached by the CPMI. It was noted that extending operating hours cannot by itself address challenges, for example around the speediness of cross-border payments. While it was acknowledged that a clear business case may exist for moving towards extended operating hours and even 24/7 operations in the retail payment space, the situation was less clear on the wholesale side.

### **Suggested next step: Focus on jurisdiction-specific activities.**

The business case for narrowing down or eventually even closing the time gaps between RTGS operating hours predominantly depends on jurisdiction-specific conditions, including the business needs of RTGS system participants and their users, and also the economic interconnectedness of the jurisdiction.

Activities involving the industry should therefore primarily center at jurisdictional level (e.g. public consultations, workshops with the industry).

### **Suggested next step: Public-sector steer on further work on a global scale.**

Further work to extend and align RTGS operating hours on a global scale, if any, should be led by the central banks and RTGS system operators, for example via the CPMI-established Community of Practice on Payment Systems (CoPS).<sup>10</sup>

Points of contact between the CoPS and the PIE TF have previously been established and could be leveraged for future interaction if needed.

### **Suggested next step: Follow-up analysis on global settlement window concept.**

The concept of a global settlement window, as introduced in the 2022 CPMI report, is considered a useful tool for jurisdictional reflections on operating hour alignment for cross-border payments.

Some PIE TF task team members see benefit in conducting follow-up work on the most used/demanded currencies and corridors and regional or bilateral settlement windows. Such work could possibly be carried out as a joint CoPS–PIE TF endeavor.

<sup>9</sup> For example Bank of England (<https://www.bankofengland.co.uk/paper/2024/response-to-the-discussion-paper-exploring-extended-rtgs-hours>) and Federal Reserve System (<https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20240621b1.pdf>)

<sup>10</sup> CoPS is a CPMI-sponsored forum, launched in 2023, for central banks to exchange ideas on developing or upgrading their payment systems, factoring an international dimension into them, and discussing innovative developments. Output from CoPS's work related to extending RTGS system operating hours is set forth in CPMI Brief No. 6, Changing the clock: practical approaches to extend payment system operating hours, January 2025.



## Annex – Summary of detailed responses (anonymized)

### **Question: To what extent would an RTGS system's earlier open, later close, and/or extension into new operating days benefit your institution and why? What other changes at the national, international, or global level would be required in order to derive the benefit?**

Extended operating hours could create additional business opportunities and create additional system traffic. To gain benefits, it is however necessary to ensure cost-effectiveness on the financial institution side, bearing in mind the precise business needs of customers (early morning, night, and holidays). As extending RTGS opening hours requires a substantial level of investment for the whole payment system and costs would need to be passed to participants, emphasis needs to be placed on ensuring full transparency on cost recovery principles.

Extended operating hours would facilitate longer usage of risk-mitigating arrangements on a global scale, such as payment-versus-payment whereby settlement occurs “atomically” on an all or nothing basis.

Furthermore, extending operating hours could be of some benefit in failure scenarios giving the system operator and its clients more time to resolve a settlement failure (especially in payment systems with a global reach where for example Asian Pacific currencies currently have the earliest closing times due to their time zones).

At the same time, longer operating hours could come with substantial operational challenges, especially around service availability and resilience. For example, extending operating hours into new operating days (i.e., the weekend) could be challenging if this period was to be utilized for weekend system maintenance and change programs.

In addition, extended operating hours could mitigate funding-related liquidity risk by enabling the participants to ensure funding, also over the weekend and on holidays. In the same vein, it would allow participants to withdraw liquidity over the weekend and on holidays so that participants can use the liquidity for other purposes. This is considered a clear benefit if the payment system is based on pre-funding arrangements.

However, some respondents identified liquidity management challenges, particularly in stress scenarios, if RTGS systems remain open on days when markets are closed. In certain circumstances, this could expose banks to outflows without any possibility to source liquidity. There could be challenges in terms of trapped liquidity during weekends and overnight periods when payments are settled towards non-active participants.

Wider reflections around operating hours should also bear in mind the level playing field between private and public sector operated systems (e.g. ability to engage in cross-border initiatives).

Social costs could also be significant as, in many countries, it could be problematic to work on given days or public holidays. It was suggested that further work be done to assess the potential carbon footprint associated with extending RTGS operating hours and any ecological impacts.

Finally, practical experience gained with shifts towards 24/7 operations for instant payments show that for cross-border operations also 24/7 solutions for related services such as the FX conversion were needed.

### **Question: How important is 24/7 operations (vs. near 24/7)?**

Generally, it is understood in the industry that not all payments require a fast delivery, and that this very much depends on the underlying use case. A suitable objective could be to require that all financial institutions and infrastructures work towards making available the option to send fast cross-border payments, bearing in mind that different speed options might have different cost implications.

Overall, there is no strong business case on the wholesale side. If RTGS systems decide to proceed with 24/7 operations, likely driven by retail demand, participants could be given the opportunity to opt-out of connecting during the extended sessions.

From a wholesale FX market perspective, a 24/5.5 arrangement on a global scale could be worth exploring. Shorter settlement cycles (e.g. following the shift from T+2 to T+1 in the securities space in some jurisdictions) could lead to a closer alignment of cut-off times and eventually operating hours. On the retail side, there appears to be demand for 24/7. Extending weekend and holidays hours may be more beneficial than extended weekday hours.

Irrespective of retail or wholesale arrangements, there may exist complexities around “value-date” which would need to be considered when moving to 24/7.

**Question: With respect to the jurisdictions where you operate, are fast payment systems (24/7/365) implemented or projected to be implemented within the next 2 years? Do you see any potential in fast payment systems as facilitating cross border operations?**

Fast payment systems (on the retail side) are available in several jurisdictions and overall potential is seen for their facilitation for cross-border operations. It would depend on the limit of the payment allowed in fast payment systems as to whether they can ultimately be used for wholesale purposes in addition to retail. In this respect, it was noted that, although some systems are focused on retail payments, they are not limited to small amounts and are therefore used for wholesale domestic payments as well.

**Question: Is your institution currently engaged (or planning to become engaged) in any initiatives aimed at extending operating hours?**

To the extent that for example 24/7 operations are not yet in existence, respondents generally follow initiatives at domestic level under the coordination of the respective central bank (e.g., through industry working groups).