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Liquidity Risk and Interdependence in Payment Systems: The Case of Peru

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Bilateral Assistance & Capacity Building for Central Banks

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Abstract

The failure of a financial institution (banks and microfinance institutions) to meet its payment obligations can have implications, not only for its continuity, but also for the stability of payment systems, markets, and the financial system in general. Central banks, as monetary authorities, regulators, and overseers of a country's payment infrastructures must monitor the liquidity risk of participants in those systems in order to prevent in time any event of this nature. To do this, the liquidity needs of the entities must be identified and anticipated to mitigate the possible effects of their inability to pay and the possible consequences on the payment systems. This paper reviews the literature on liquidity risks and their systemic consequences. It also presents different indicators of liquidity and interdependence built with the transactional data of the RTGS System, administered by the Central Reserve Bank of Peru. These indicators are contrasted with the participant's intraday facilities operations in the RTGS (from Jan-2010 to Nov-2021), in order to assess the liquidity problem and its consequences from a systemic point of view.

Keywords: RTGS, liquidity risk, systemic risk, indicators

JEL: E42, E50, E58

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1. Introduction

Central banks have as one of their main objectives to ensure the efficiency and security of payment systems. In many countries, central banks operate and manage the RTGS systems (High value payment system with high importance for the settlement of funds between financial institutions). Likewise, their role as regulator allows them to issue standards to the rest of the systems to meet the efficiency and security objectives. On the other hand, in several countries the central bank also has the role of oversees and is in charge of verifying regulatory compliance by the participants of the payment systems. In this paper, we will focus on the case of Peru and the Real Time Gross Settlement System (RTGS System) managed by the central bank.

The Central Reserve Bank of Peru *(Banco Central de Reserva del Perú*, BCRP) regulates and oversees the proper functioning of payment systems. The BCRP manages the RTGS System and regulates and oversees the Automatic Clearing House (ACH), and the Multibank Securities Settlement System (*Sistema de Liquidación Multibancaria de Valores*, SLMV). These systems are exposed to different types of risks such as liquidity risk, credit risk, operational risk, among others, and they have been recognized as systematically important by the Payments and Securities Settlement Law (Law 29440).

In this paper, we focus on liquidity risk in the payment systems, which is the risk that a counterparty, whether a participant or other entity, will have insufficient funds to meet its financial obligations as and when expected, although it may be able to do so in the future[1]. We use payment data from the RTGS System of Peru (from Jan-2010 to Nov-2021) and propose indicators to monitor the liquidity of its participants considering their network importance for the rest of participants in the system. These indicators will help to identify financial institutions with significant liquidity problems that may require financing from the central bank.

The paper is organized as follows: Section 2 reviews studies about the topic of payments systems, and how to measure and monitor its participant's liquidity and systemic risk. Section 3 describes the Peruvian payment system, section 4 focusses on the main component of the Peruvian payment system, the RTGS System. Section 5 presents the current data and indicators used to monitor the RTGS system, its performance, and the proposed indicators. Section 6 describes the results of the indicators and Section 7 present the conclusions and next steps.

2. Literature Review

Different approaches to analyze payments systems were covered worldwide to measure and monitor different types of risks as liquidity and systemic risks; we list different studies conducted in the different RTGS systems.

Benos, Garratt and Zimmerman (2014) attempt to prove that counterparty risk causes payments to be delayed using data from operations via CHAPS. This counterparty risk is perceived by banks, to a greater extent, after the failure of Leman Brothers. To do this, the authors develop a proxy variable to measure counterparty risk and through a regression they prove that it is statistically significant to explain the delays in payments via CHAPS.

Bech, Garratt and Chapman (2010) analyze the distribution of liquidity in the Canadian interbank payment market. For this they use the limits on bilateral credits between participants (something that is not used in Peru). They model the behavior of bilateral lines of credit between participants to estimate the distribution of liquidity that will be had daily.

[1] Principles for financial market infrastructures, https://www.bis.org/cpmi/publ/d101a.pdf

Bech and Garratt (2012) analyze the possible causes that the interbank payment market becomes illiquid. Using game theory, they model the behavior of the market. Finding that when the cost of financing is cheaper than the cost of late payments (reputation, penalty, etc.), payments will be made on time. On the other hand, in crisis scenarios, where the cost of delaying payments is low, payments are delayed. Even if the crisis only affects a limited set of banks, others may perceive that they will not receive their payments and will delay their own payments, with the aim of having liquidity for preventive measures and not out of real need.

Armantier, Arnold and McAndrews (2008) analyze the changes in the concentration of activity during a day of operations of the Fedwire funds transfer service of the Federal Reserve, the high value payment system in the United States. They found that the peak of the distribution of daytime trades has shifted later in the day in the period between 1998 and 2006. The authors performed a regression analysis and found that the factors most affected were changes in Federal Reserve policies and operations that affected settlement times, as well as numerous changes in settlement institutions. A more concentrated payments market significantly influenced the later settlement of Fedwire's value. Another important factor is the interdependence between Fedwire and Clearing House Interbank Payments System's (CHIPS), shown by seeing that changes in the CHIPS settlement time contributed to the later settlement of Fedwire payments and the extended operating hours of CHIPS delay virtually all payments submitted after 17:00.

Garratt (2019) seeks to improve upon existing centralized netting queues by making two fundamental changes with the application of Shapley value cost allocation method[2]. First, instead of making decisions on how much liquidity to provide to the queue before netting arrangements are determined, banks receive take-it-or-leave-it offers that determine which of their payments will be settled as well as their share of the liquidity cost. Second, rather than attempting to maximize the value or volume of payments settled in the queue, he proposes to use information regarding the instantaneous benefits and costs of participants to define a welfare measure for any set of netted payments. These changes ensure welfare maximizing netting proposals are always accepted.

Castro, et. al (2020) uses reinforcement learning (RL), a computational approach to automate learning of sequential decision-making, to approximate the policy rules of banks participating in a high-value payments system. The results show that, in a simplified learning problem for which the optimal solution is known, policy rules trained with the RL algorithm converge to the optimal solution and generalize to a problem where agents must simultaneously learn a policy to choose their initial liquidity that minimizes their cost of processing all payments. Also show that in more complex settings, both agents learn to reduce their liquidity costs. The results show the applicability of RL to estimate best-response functions in real-world strategic games.

Copeland and Garratt (2019) analyze the decreasing block pricing scheme of Fedwire Funds service to attract nonurgent payments. They find that when facing Fedwire's volume-based pricing scheme and given the existence of competing services, banks respond to average price. This result suggests that Fedwire's advantage over competing services of being able to provide immediate settlement is small. Moreover, attempts to increase demand for Fedwire services by lowering the cost of banks' final block of payments may be ineffective if there is not a corresponding decrease in average cost.

Bech, Martin, and McAndrews (2012) analyze the different liquidity concepts for a payment system. From their point of view, late payments can be a variable that reflects the need for liquidity. Payments will try to be delayed obtaining liquidity and not to use intraday facilities due to their opportunity cost (fees, interest, reputation, etc.). The authors use Fedwire operations and generate two periods: pre-Lehman and post-Lehman. They find that in the post-Lehman period, participants have improved

[2] The Shapley value is a solution concept used in game theory that involves fairly distributing both gains and costs to several actors working in coalition. It is the average expected marginal contribution of one player after all possible combinations have been considered.

their behavior (also due to excess liquidity) which reduces the need for intraday operations and exposure to liquidity risks.

Studies have also been conducted to define indicators that can be used to monitor the liquidity risk of payment system participants, such as the following.

Arjani, Li and Sabetti (2020) propose a tool for predicting intraday liquidity risks in a RTGS system. To achieve this goal, they construct an intraday liquidity risk indicator (LRI) to assess intraday liquidity risks of a participant by comparing the evolution of the expected liquidity sources of the participant for settling payments with its expected liquidity requirements in the remainder of the payment day. If the participant's expected liquidity requirements are larger than its expected liquidity sources, the participant is very likely to incur a lack of intraday liquidity for settlement obligation within the remainder of the day. Otherwise, the available liquidity sources of the participant will be sufficient to cover its expected intraday liquidity requirements. Furthermore, based on the LRI, they propose a framework that can predict the likelihood of an intraday liquidity risk event throughout the remainder of the payment day, where an intraday liquidity risk event is said to occur if the LRI rises above one. Using data from Canada's RTGS-equivalent payment system, the Large Value Transfer System, to evaluate the forecasting performance of the LRI, they find that the LRI performs reasonably well.

Heijmans and Wendt (2020) develop a composite risk indicator to assess the criticality of participants in a large-value payment system network, they propose an approach of combining liquidity risk and interconnections. Their results of applying this composite indicator to European RTGS system (TARGET2), suggest that central counterparties and central securities depositories are less critical, while the most critical participants are other payment systems (e.g., CLS and EURO1), due to the size of the underlying payment flows. Some banks may be critical, but this is mainly due to their interconnectedness with other participants.

3. Peruvian Payment System

The Peruvian payment system comprises a set of instruments, rules, common procedures, and technical standards that allow interconnection and communication between its participants. This payment system plays a key role in the Peruvian financial market, because through it the liquidation of funds from operations in the capital, securities and foreign exchange markets is carried out.

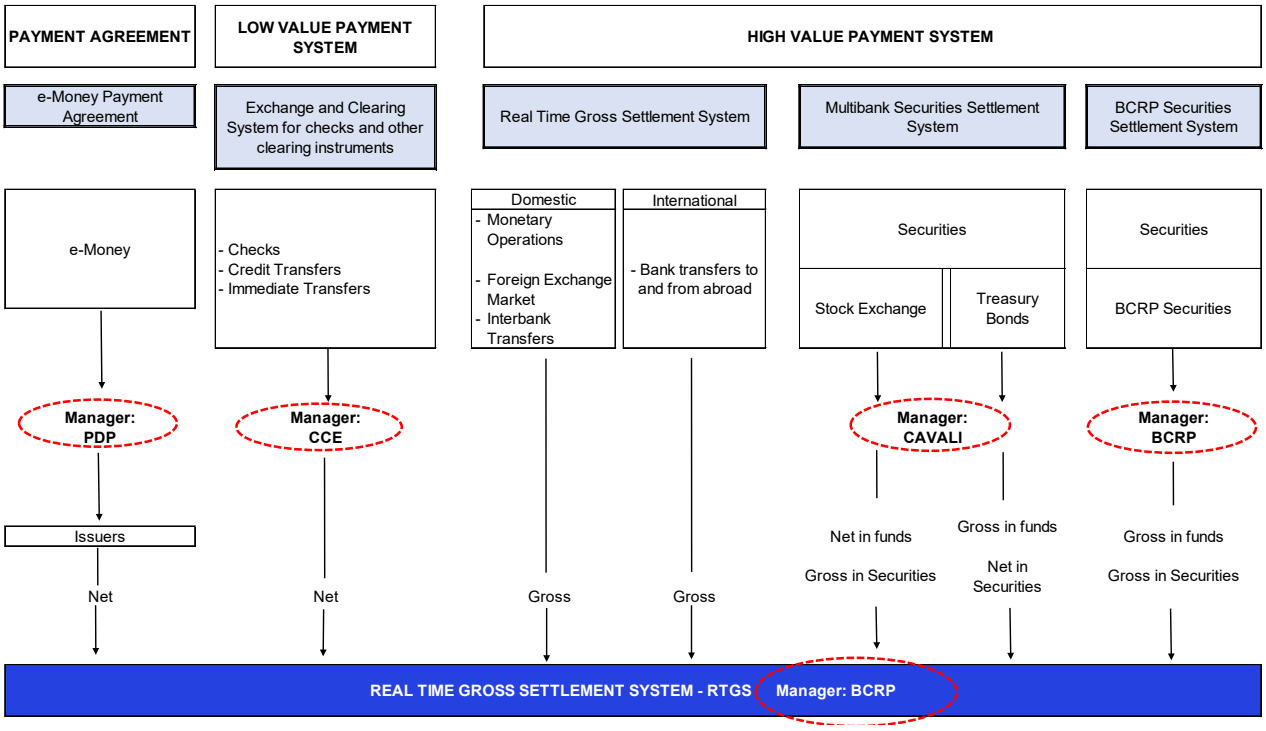
The BCRP led the modernization process of the Peruvian payment systems that ended in 2020 and resulted in better levels of security in operations, reducing the risks faced by financial institutions, users and the BCRP, and more efficient payment instruments. Payment systems that are safe and efficient help to promote bancarization[3]

Since 2000, the center of the payment systems in Peru is the RTGS System operated and managed by the BCRP, which is a high-value electronic payment system, where payment orders are settled one by one in real time, if the participant has available resources in their accounts.

Peruvian payment system also has an Automatic Clearing House (ACH) managed by the *Cámara de Compensación Electrónica (CCE)* and collectively owned by banks. This is a low-value and massive payment system with a large number of operations where the net balances are settled in a deferred period in relation to the payment instruction. The CCE clearing the instruments of checks, credit transfers (deferred) and immediate transfers (available 24x7).

[3] Bancarization, is the level of access to and the degree of use of formal financial services generally and banking services particularly. Bancarization mainly refers to the percentage of population with access and use of banking services.

Figure 1. Peruvian Payment System



The Peruvian payment landscape also includes the Electronic Money Payment Agreement, which is the set of agreements or procedures to process the electronic money transfer orders. This agreement is managed by *Pagos Digitales Peruanos (PDP)* which settles their transactions in the RTGS System. More than 30 companies from the financial system participate in the Electronic Money Payment Agreement.

4. The RTGS System of Peru

The RTGS system began operating in 2000, replacing a Deferred Net Settlement system. The RTGS System eliminates the vulnerabilities generated by the size and duration of the credit and liquidity risk exposure in the interbank settlement process. In addition, it reduces the possibility that any of the participants could default on their obligations and affect the financial conditions of other participants. In the previous system (based in Current Accounts Systems), transactions were recorded, but not settled until the end of the day; if a debit balance remained uncovered due to lack of funds, the BCRP had to grant a financing or extend some transfers made by the debtor bank.

Any transfer order accepted by the RTGS System is irrevocable and final. For a funds transfer order to be accepted by the system, the ordering institution must have its own funds in its current account at the BCRP or have an intraday facility (banks can carry out temporary purchase operations of financial assets with the BCRP). The system has a by-pass FIFO queue mechanism where the operations are executed in a sequence respecting their order of arrival, in case the participant does not have available funds in his account, the system automatically searches the queue for those transfers that do meet this requirement.

All Financial System Entities (BCRP, 19 Banks, 9 Financial Institutions, 19 Municipal and Rural Savings Entity) and other 5 entities approved by the BCRP (Ministry of Economy and Finance,

Deposit Insurance Fund, Mivivienda Fund, among others) participate in the RTGS System. Each participant has an account in soles and another in US dollars.

Table 1. Participants of the financial system

	# Participants
Total number of participants	53
Directly connected participants	53
Banks	19
Central Bank	1
Government	1
Postal institution	0
Other IMFs*	1
Other**	31
Indirectly connected participants	0

*Payment systems, central counterparties, and securities settlement systems.

**Mainly microfinance entities (29)

5. Data and indicators for payment systems monitoring

5.1. RTGS System Data

This research uses the information available on the RTGS System operations, these consist of high value transactions records that are carried out in a daily basis through this system.

Currently the opening of the system is at 8:00 and the general closing of the system is at 18:30, during this time transactions are settled one by one and in real time between the financial system agents. The transactions are mostly high value. All financial entities and several payment systems, agreements and other participants have access to the RTGS System; this makes the RTGS System the core of the Peruvian payment system.

The following operations are settled through the RTGS System:

- Participants' own operations
- Operations to and from Clients of the RTGS System participants
- Operations by settlement of funds from CCE
- Operations by settlement of funds from SLMV, and
- Operations by settlement of funds from PDP.

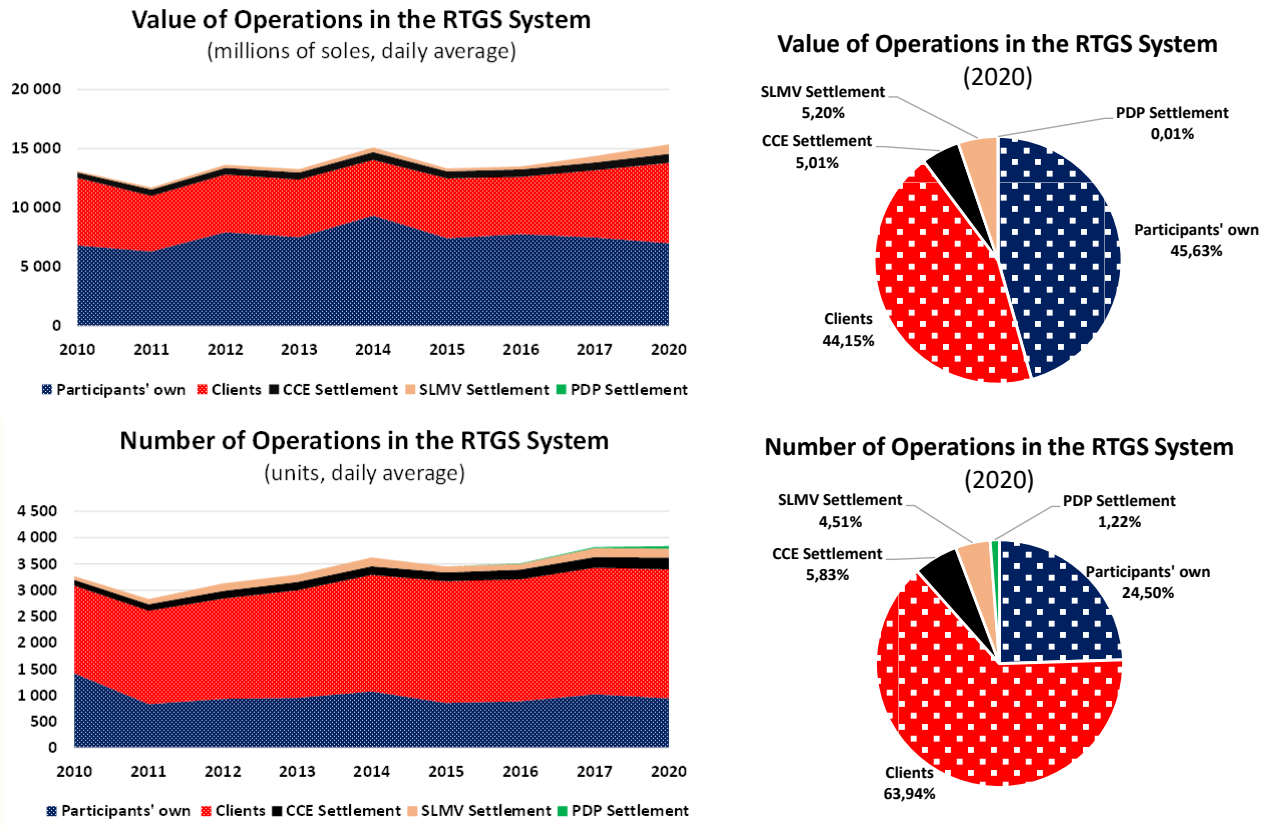
Participants' own operations can be divided into operations for fund transfers (transfers, loans, loan cancellations, repayments, and transfers to COFIDE), operations for the purchase and sale of foreign currency, and other operations (primary issuance of government bonds and cancellations of purchases and sales of foreign currency). Transactions to and from clients have a minimum limit to the amount to be transferred of S/ 5 000 and US$ 2 000.

The CCE funds settlement operations can be divided into the three instruments that are cleared in this infrastructure: settlement of checks, settlement of credit transfers and settlement of immediate transfers.

The funds settlement operations of the SLMV can be divided into operations through the Stock Exchange and operations with Government Securities.

Information for all operations is available since January 2010, except for PDP funds settlement (available since March 2016). Also, for each transaction, information on the entity originating the transaction, the entity receiving the funds and the type of currency is available. The daily average of the value and number of operations in 2020 was S/15 368 million and 3 839 operations.

Figure 2. Value and Number of operations in the RTGS System



5.2. Intra-day Facilities Data

To allow greater operational fluidity in the transfers of funds made through the RTGS System, BCRP makes available to the Participants of the RTGS System, Intraday Repo Operations of foreign currency or securities. Which allows participants to obtain liquidity in soles (PEN) in exchange for foreign currency or securities with a commitment to repurchase at the end of the day.

The funds obtained from these operations will be credited to the Participants' Accounts. The repurchase operations must be carried out no later than the end of the hours corresponding to the closing operations and interbank financing.

In the last 12 years, before the state of emergency due to the global health crisis, the highest levels of intraday facilities were registered, mainly from October 2018 to March 2020. Likewise, excess liquidity since April 2020 reduced the need of intraday facilities by financial entities. The following

table shows that intraday facilities have increased drastically in recent years with respect to obligations.

Table 2: Intraday Facility

Year	Monthly Average (millions)		Ratio
	Intraday Facility	Obligations (soles)	
2010	33 762	123 771	27%
2011	26 692	142 313	19%
2012	10 488	165 263	6%
2013	6 733	165 282	4%
2014	36 101	191 693	19%
2015	76 803	163 356	47%
2016	86 481	174 731	49%
2017	83 620	188 078	44%
2018	117 685	251 821	47%
2019	147 300	271 761	54%
2020	121 088	204 430	59%
2021	95 896	200 391	48%

Note: Obligations include payments from clients, own liabilities, and settlement operations of funds from other systems.

5.3. Indicators

A. Ratio of liabilities to liquid resources (RRL)

This ratio is a risk indicator that compares banks' daily obligations (customer, proprietary and settlement operations of funds from the CCE and SLMV) in the RTGS system with respect to the resources held at the BCRP: current account, securities, and overnight deposits. BCRP uses this indicator to monitor the liquidity in the whole payment system. It indicates at ratio levels close to or above one that payment system presents a liquidity slackness. This indicator is calculated for both currencies (PEN and USD).

In 2021, the risk of payment default in the RTGS System has remained constant. The RRL ratio is at a very low level (below 0.2), despite a slight growth of the participants' obligations in May, June, and July of this year (associated to the increase of Clients' operations). Likewise, banks had a slight reduction in their holdings of CDs and deposits at the BCRP.

Figure 3. Evolution of the RRL indicator for the entire system

Ratio of bank liabilities to liquid resources

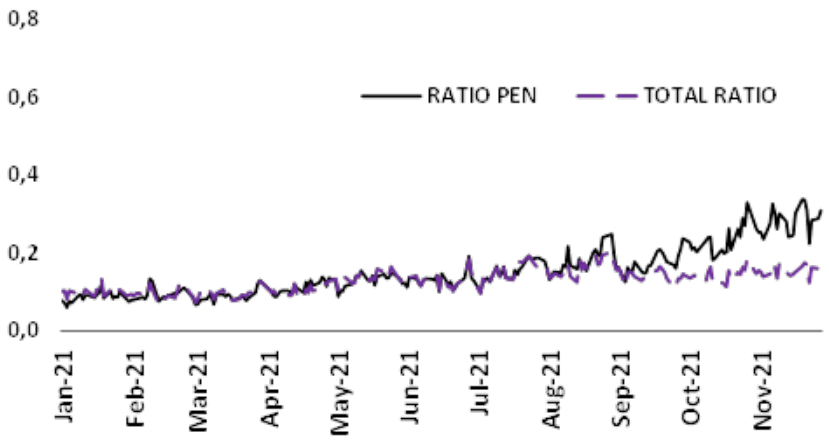
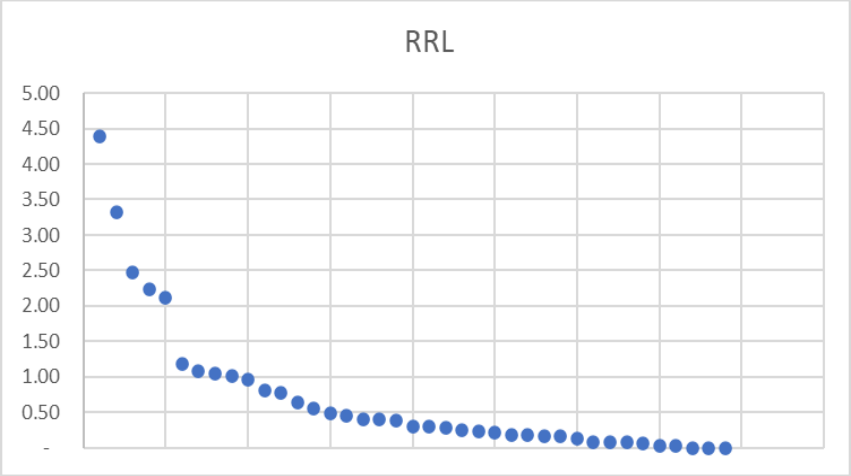


Figure 4 shows for an example date (2017/06/21, this is a date with higher number of participants with higher value of intraday facilities, see Table 3), how all participants are ranked according to this indicator, participants with an RRL above 1 have a high need for liquidity.

Figure 4. Participants ranked by RRL



This indicator has the advantage of simplicity in its implementation also helps to identify which financial institutions have low liquidity resources at the central bank with respect to its obligations. It needs to be complemented with other indicators in order to have a better assessment of the connections and effects that each entity has on others.

B. Connectivity and dependence indicators

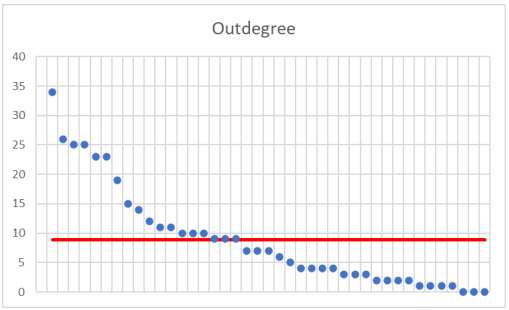
In addition, there are other indicators related to the interconnection among participants so they may point to the existence of a potential systemic risk. For this purpose, specific indicators can be constructed to monitor fund dependence, degree of connectivity, degree of diversification of funds, etc.:

- *Degree* indicates the number of connections (sending or receiving funds) with other entities in the selected period.
- *Strength* indicates the amount of funds sent to other entities in the selected period.
- *Flow* indicates the amount of funds sent net with respect to funds received from other entities in the selected period.
- *Unified Centrality Index* (UCI) is the weighting of the degree and strength indicators standardized for each of the entities. A high value indicates that the entity sends very high funds (strength) to many other entities (degree), which makes it a central entity for the functioning of the system in the selected period.

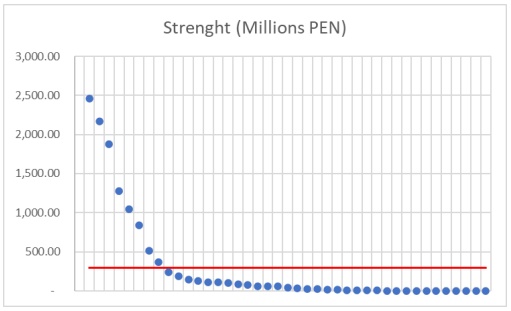
Figure 5 shows, for the same example date as in Figure 4, how all participants are ranked according to these indicators.

Figure 5. Connectivity and dependence indicators

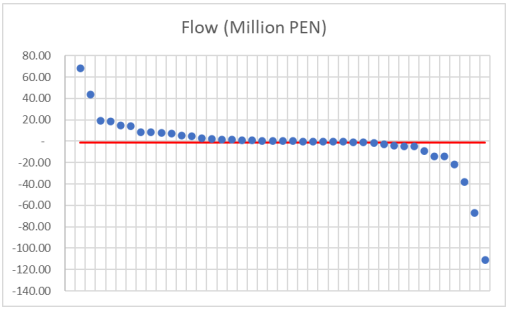
a) The out-degree is the number of connections to which funds are sent. The average for this day was 9, but banks are the ones with the highest out-degree above the average, compared to other smaller financial institutions such as rural banks and microfinance institutions.



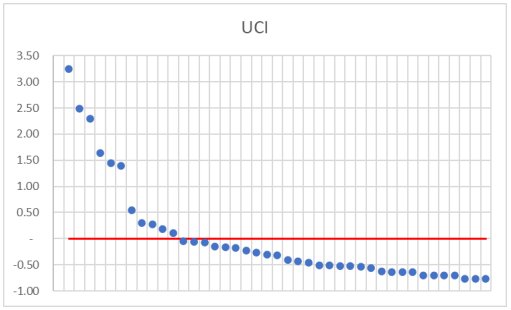
b) The largest banks are the ones that send the largest amount of funds to other participants, although this indicator depends on the day, but it is always the same when banks make a higher volume of transfers compared to other types of participants.



c) we observe that most participants have a net flow close to zero, except for those who have a high value for strength.



d) This indicator shows the most important participants for this day considering the grade and strength for each of them.



● Participants --- Average

C. Total Risk Indicator (TRI)

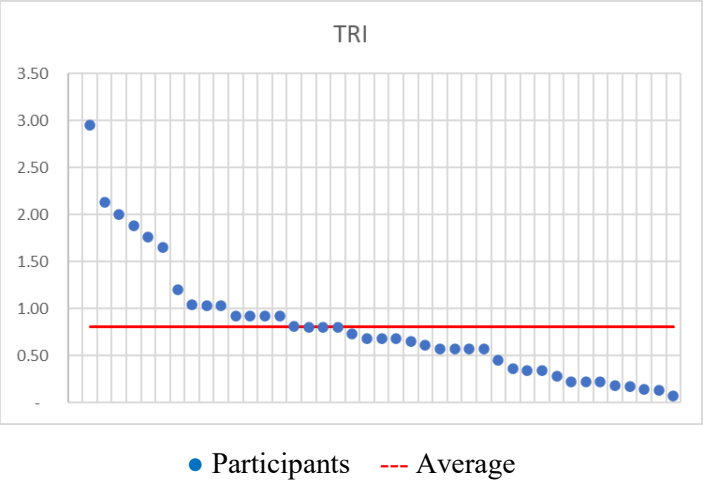
We have seen that there are liquidity indicators and interconnection indicators, Heijmans and Wendt (2020), propose a composite indicator, which combines liquidity risk and systemic risk to identify critical participants in payment systems:

$$\text{Total Risk} = \sqrt{\left(\left[\!\left[(\text{Liquidity Risk})\right]\!\right]^2 + \left[\!\left[(\text{Systemic Risk})\right]\!\right]^2\right)}.$$

The first indicator is defined as the risk that a participant will not be able to fully meet its obligations on the maturity date (strength), this includes payments from clients, own liabilities, and settlement operations of funds from other systems in RTGS System. The second indicator is defined as the number of banks that a participant can affect due to its connectivity (degree). Knowing which participants are critical, as measured by the proposed indicator, gives regulators a priori indication of the potential impact on the system and can lead to different actions to prevent a failing participant from causing major damage to other participants and the financial system in general.

Figure 6 below compares the result of the different indicators for each participant at the same date sample as in previous figures.

Figure 6. Total risk indicators



6. Results

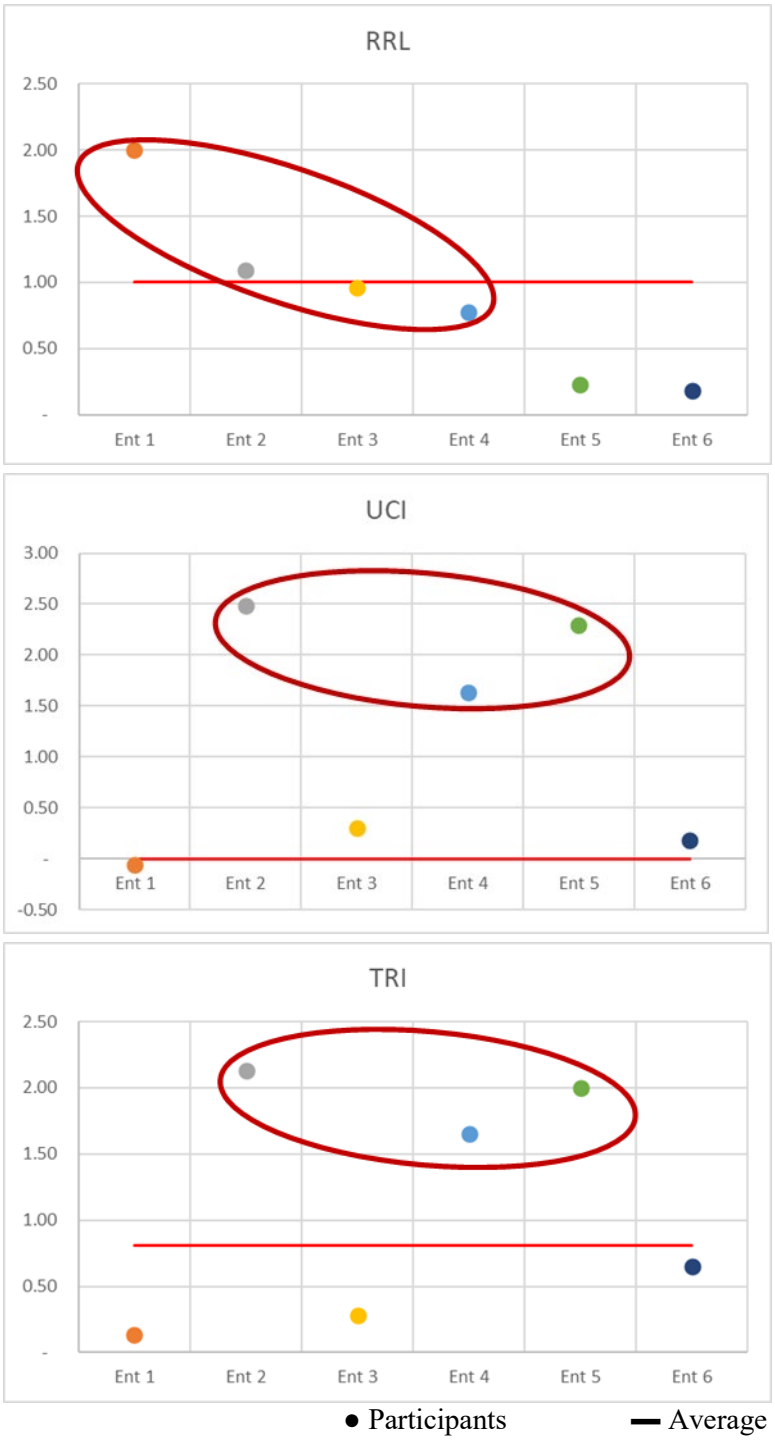
With the information on intraday facilities for each participant, we select the dates with the highest number of participants that significantly exceeded their normal levels of intraday facilities (above the 90th percentile). These high amounts of intraday operations indicate that the entities needed liquid resources on these dates to cover their obligations.

Table 3. Dates with the highest number of participants with high levels of intraday facilities

Date	# of Entities with high Intraday financing
2017/06/21	6
2021/08/25	6
2018/06/05	5
2021/06/22	5
2021/06/23	5
2021/06/24	5
2021/06/25	5
2021/06/28	5
2021/07/07	5
2021/07/08	5
2021/07/09	5
2021/07/12	5
2021/07/13	5
2021/07/14	5

At 2017/06/21, six participants exceeded their normal level of intraday facilities. With the indicators of RRL, UCI and TRI, the liquidity risk and potential systemic consequences can be described as in Figure 7 below:

Figure 7. Results and interpretation of indicators at 2017/06/21



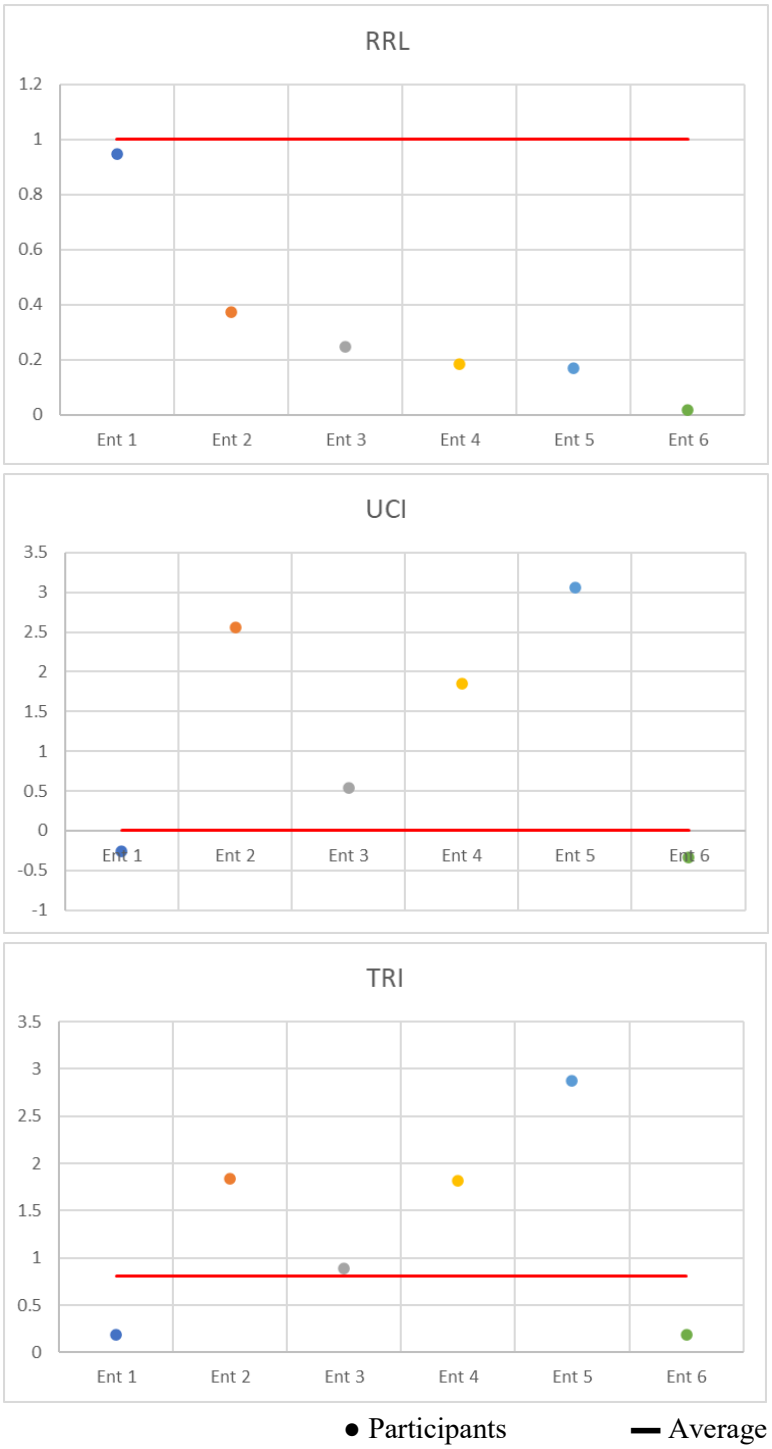
Of the 6 participants, 4 of them had very high values in the RRL ratio, which indicates that their resources did not allow them to cover their obligations. That is the main cause for entities to do high level of intraday facilities.

Of the 6 participants, 3 of them are important for the payment system due to the amount in soles they send and the number of participants that are connected. A scenario of default on payments by these participants would affect the entire system.

Of the 6 participants, 3 of them are important for the payment system due to the amount in soles they send (net of what they receive) and the number of participants that are connected. A scenario of default on payments by these participants would affect the entire system.

At 2021/08/25, also six participants exceeded their normal level of intraday facilities, these ones are not necessarily the same as the previous date described. The results of the indicators for this scenario are described in Figure 8.

Figure 8. Results and interpretation of indicators at 2021/08/25



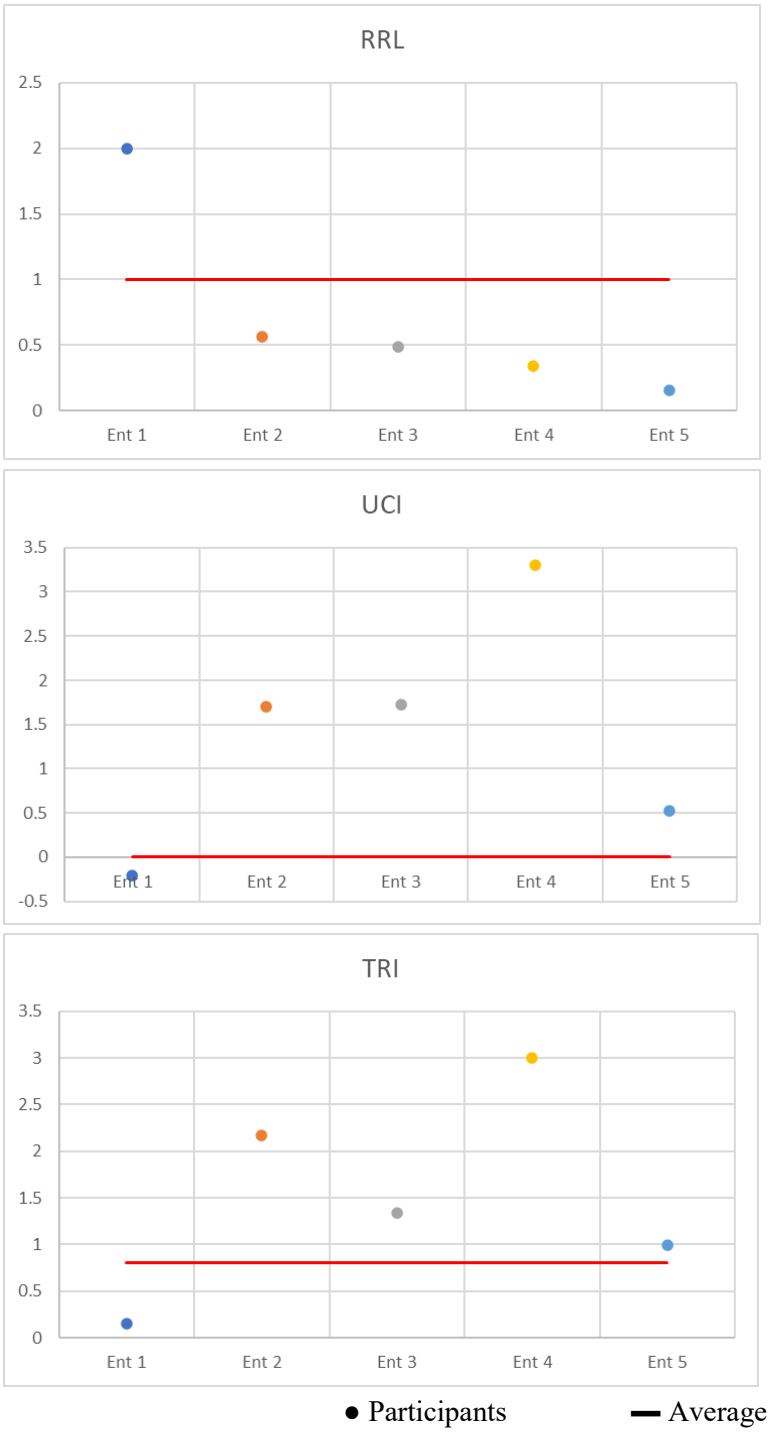
All participants have RRL well below 1, except "Entity 1" which has an RRL close to 1, so all other participants were able to cover their obligations with their liquid resources on this date.

Although UCI indicator shows that most of the participants were important for the financial system, the only participant with high RRL, is not very important for the system on this day so if there was a default, it would not affect other participants.

TRI indicator shows the same result as the UCI, since this indicator also measure importance of the participants in the financial system. Again, the only participant with a high RRL is not very important to the system on this day so if there were a default, it would not affect other participants.

Finally, we select the date 2018/06/05 as third scenario to analyze the results of the indicators for the five participants who exceeded their normal level of intraday facilities. The results of the indicators for this scenario are described in Figure 9.

Figure 9. Results and interpretation of indicators at 2018/06/05



All participants have RRLs under 1, except for "Entity 1", this entity would be the only one that would not be able to cover its obligations on this date with their resources.

However, entity 1 was not important for the system, as it has a lower-than-average UCI indicator. A possible default on this entity's obligations would not generate a risk in the rest of the system.

We can reach the same conclusion by analyzing the TRI indicator. Entity 1" would not be the most important for the system that day.

7. Conclusions

Studies with different approaches to analyze payment systems were reviewed to measure and monitor different types of risks such as liquidity and systemic risks, as well as studies to define indicators that can be used to monitor the liquidity risk of payment system participants.

Based on the nature of the Peruvian RTGS system, the intraday operations may be an indicator of possible liquidity problems and it should be monitored to be able to identify and foresee the liquidity and systemic risks of a participant in case of default on payments, especially on days in which many participants face a high value of intraday facilities. For this we use intraday facilities as a proxy variable for identifying Financial Institutions that may have a liquidity problem. This variable is easily accessible and immediate, which allows for better monitoring. Once the intraday indicator reaches certain value, the participant becomes a candidate to have a liquidity problem, so it is needed to use other indicators of liquidity and systemic importance to review the situation of the participant.

Dates were identified between 2010 and 2021 where there was a high number of participants requiring high amounts of intraday facilities in the Peruvian RTGS system. On these dates, participants that exceeded their 90th percentile of the amount of intraday facilities in that period were analyzed with the reviewed indicators. The RRL indicator allowed us to check if the entities, on that day, could not effectively cover their obligations with their own liquid resources (ratio close to or above 1), which could indicate a possible risk of non-payment (default). The UCI and TRI were also used to verify the importance of the entities in the payment system. An entity with the possibility of default and with high importance for the payment system could generate an effect on the rest of the payment system and induce the rest of the entities to default on their payments.

Based on this work, the natural next steps are the following:

- Evaluate the use of both currencies (soles and dollar) transfers of funds for the indicators.
- Correlate indicators by participant that require high value of intraday facilities, with other indicators, with the objective of finding levels of statistical significance and causality for liquidity problems.
- Generate projections of flows and the need for intraday facilities to obtain leading indicators and anticipate future scenarios.

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Appendix

Value of Operations in the RTGS System
(millions of soles, daily average)

	2019		2020	
	PEN	USD	PEN	USD
Participants' own	7 649	803	4 610	687
- Interbank Transfers	4 170	163	2 157	223
- Buy and Sell USD	2 137	640	1 622	464
- Others	1 342		831	
Clients	4 896	830	4 353	696
CCE Settlement	637	52	668	30
SLMV Settlement	688	7	774	7
PDP Settlement	1		1	
Total	21 519	2 496	15 016	2 107

Number of Operations in the RTGS System
(units, daily average)

	2019		2020	
	PEN	USD	PEN	USD
Participants' own	807	433	608	332
- Interbank Transfers	431	78	329	63
- Buy and Sell USD	354	354	270	270
- Others	22		10	
Clients	1 728	981	1 608	847
CCE Settlement	126	97	126	98
SLMV Settlement	171	21	149	24
PDP Settlement	34		47	
Total	3 673	1 965	3 146	1 633

Value of an average operation (Value/Number)
(Thousand of soles)

	2018		2019		2020	
	PEN	USD	PEN	USD	PEN	USD
Participants' own	9 202	2 254	9 475	1 856	7 580	2 067
Clients	2 509	747	2 833	846	2 707	822
CCE Settlement	4 849	381	5 073	536	5 295	303
SLMV Settlement	3 691	176	4 024	339	5 199	296
PDP Settlement	27		16		25