Chapter 8
Managing Intraday Liquidity: The Mexican Experience

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ABSTRACT
The present chapter calculates the liquidity usage of the Mexican Real Time Settlement Payment System, SPEI, during a one month period. In particular, the authors' interest is to give insight about how payment systems participants manage the settlement of low and large value payment transactions in real-time. To that end, they create an artificial environment, in which they use historical data from April 7 to May 7, 2010, and reproduce the operational conditions of SPEI. All payment instructions that arrived from 9:00 a.m. to 17:00 p.m. each working day are included. For each of these days, the authors arrange the transactions in four sets, delimited according to their value: all payments; payment orders with value higher than 100,000 MXN; transactions with value higher than 1,000,000 MXN; and payments with value higher than 10,000,000 MXN. The authors use a simulation environment to reproduce SPEI's operational conditions in order to measure the liquidity usage in different settings of settlement speed requirements.

1. INTRODUCTION
In the last three decades, payment systems have been subject to an extensive transformation process, as the services they provide have been becoming a part of everyday life in the modern economies. Historically, their key role was to settle large payment obligations between banks. Today, this role is evolving to become an important intermediary trade platform among individuals, as stated in Kokkola (2010). Like many other service industries, the main drivers for creating new payment methods, as well as refining processes and payment settlement methods is technological innovation. In the last decade, we have been witnessing new payment types competing on consumer
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service level alongside with a prominent growth in the volume of electronic retail payments. The possibility to have real time telecommunication-based services has changed our everyday life activities and shaken the payment industry (Bolt & Chakravorti, 2010). Consequently, there is an increasing demand for more processing and settlement of low value payments in real time. For instance, Faster Payments in the United Kingdom is now offering low value payments settlement services in near real time.

Alternatively, as taken in consideration by the Australian Payment Clearing Association (2008), integrating the settlement of high value and low value payments in real time could also be feasible. To achieve this, settlement engines need to ensure that retail payments do not use available liquidity in a way that delays time sensitive payment orders that settle important financial market obligations. To this end, payment systems may incorporate a Liquidity Saving Mechanism and establish timely and liquidity efficient operational rules.

The best-known example of a Large Value Payment System (LVPS) that settles both high value financial market payments and retail payments is the SIX, Interbank Clearing SIC, the Swiss interbank clearing system. This system settled 394.7 million payments for 2010, many more than those settled in other developed countries like Germany (43.80 million) and France (8.22 million) (BIS, 2011). Other countries like the Czech Republic, Serbia, Slovakia, Turkey, Ukraine, and Mexico also settle large value payments together with retail payments in the same system (Allsopp, Summers, & Veale, 2009). In Mexico, most low value payments between banks go through a Real Time Settlement Payment System, SPEI, and are settled together with large value payments.

The Mexican Central Bank operates SPEI, and participants are charged less than a 0.05 USD per transaction. SPEI processes, on average, around 500,000 operations daily. More than 80% of these transactions have a value lower than 10,000 USD, and only around 1.3% of the transactions have a value above 1,000,000 USD. These characteristics of SPEI allow us to study the effects of settling a large number of low-value payment transactions on large value payments.

In this context, in the analysis of how low value payments could affect the speed of settlement of wholesale payments, we need to take in consideration that, in the near future, the volume of electronic retail payments could rise significantly. In 2002, there were in Mexico 884 million non-cash transactions, which include checks, card payments (credit and debit cards) and electronic transactions (direct credit and direct debit), while in 2010 these number rose to 2,300 million transactions\(^1\), a 160% increase. To be prepared to settle a larger number of low value electronic transactions in real time, RTGS operators require a deeper understanding to maintain or, better yet, improve settlement efficiency.

In order to get further insights on the way participants manage their intraday liquidity under normal operational conditions, in the present study we analyze payment instructions sent during a period of one month. We calculate the average liquidity usage per day and per participant. We use transactions from April 7 to May 7, 2010 sent to SPEI from 9:00 a.m. to 17:00 p.m. The data for each payment transaction includes the identification numbers of the payer and the payee, the amount of the transaction, the time of reception, and the time of settlement. For each day, we arrange the transactions in four sets, delimited according to their value. The idea is to evaluate the impact on liquidity usage of the low value payments by extracting them from the whole set of transactions. Given that there is no convention regarding the specific size of payments considered as low value, the structure of the transactions sets are determined as following: all payments, payments with value higher than 100\(^2\); transactions with value higher than 1,000 and payments with value higher than 10,000\(^3\).
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