Chapter 9
Implementation Aspects of Indicators Related to Payments Timing

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ABSTRACT

Timing analysis in an RTGS payment system offers input to operators, overseers and supervisors about the behavior of the system or individual participants. Timing related indicators can be used as a monitoring tool to identify liquidity circulation problems. Study of the behavior of participants may help identify changes due to business practices shifts, reactions to unexpected events or even to various types of stress. Furthermore, the indicators can be used in simulation studies, where the impact to timing of different levels of induced stress to a system or changes of its institutional features may be measured and compared. This chapter explores the experiences and challenges while setting up and evaluating two payments timing indicators for the European RTGS TARGET2. The indicators are the "value weighted average settlement time" as well as a form of payments "delay" indicator. The goal is to present specific aspects of a methodological framework for implementing such indicators, for possible replication based on granular transaction level data of other RTGS payment systems.

INTRODUCTION[1]

Real-Time Gross Settlement Systems effecting the final settlement of individual payments continuously during their business hours are predominant in settling high value and time critical payments (Kokkola, 2010, p. 48ff.). The various times of payment processing within an RTGS (i.e. submission time, settlement time, earliest/latest debit times) represent useful pieces of information for payment system operators as well as oversight and supervision authorities, because they may have a significant impact

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on the liquidity flows for the system as a whole. They also have the potential of being correlated to various business practices of participants or to reflect financial stress faced by single participants or groups sharing a common characteristic (i.e. country level, corporate groups).

This chapter presents two indicators related to payments timing, the "value weighted average payment settlement time" and a form of a payments "delay" indicator. The indicators have been selected based on the existing literature and they are under evaluation with respect to their quality and usefulness as part of the research activities in the context of the Eurosystem large value RTGS TARGET2 (Kokkola, 2010, p. 178) . The two indicators capture the most important time-related aspects of payments: the time when they are settled and the time they spend in the system before being settled. These aspects are important when analyzing the liquidity management behavior of the entity under monitoring (i.e. system, single participant or group of participants).

Setting up and implementing indicators that are based upon granular transaction level data to produce a composite output requires the adoption of a relevant methodological framework answering to several questions:

- Which types of payments should be taken into account by the indicators?
- What payment attributes (shared commonly in RTGS systems) should be addressed when implementing the indicators?
- What levels of aggregation are useful for monitoring (at platform/group/participant levels)?
- Which types of transaction flows are available based on the aggregation level?
- What graphical representations offer a concise visualization of the indicator output?
- What types of output characteristics can be considered as significant signals?

The answers to these questions depend on the type of monitoring agent (infrastructure operator or oversight authority) and the objectives of the use of the indicators. Such objectives are the following:

- Analysis of system performance and participant behavior for the purposes of financial stability and prudential supervision. This objective requires explorative in-depth analysis of specific periods, events or groups of participants.
- Setup of continuous monitoring, where a predefined indicator is continuously calculated as close to real time as possible. This involves the definition of thresholds of signaling indicators and the development of monitoring tools.
- Evaluation and comparison of the output data of different scenarios in simulation results.

The technical specificities of the payment system involved might have an impact on the methodological principles, but overall these types of indicators are applicable to any RTGS system. This paper aims to answer the above questions for the set of indicators selected based on the experience of the implementation for TARGET2, to showcase how similar indicators based on granular transaction level data may be designed and implemented.