Libra: Fair Order-Matching for Electronic Financial Exchanges

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ABSTRACT

While historically, economists have been primarily occupied with analyzing the behaviour of the markets, electronic trading gave rise to a new class of unprecedented problems associated with market fairness, transparency and manipulation. These problems stem from technical shortcomings that are not accounted for in the simple conceptual models used for theoretical market analysis. They, thus, call for more pragmatic market design methodologies that consider the various infrastructure complexities and their potential impact on the market procedures.

First, we formally define temporal fairness and then explain why it is very difficult for order-matching policies to ensure it in continuous markets. Subsequently, we introduce a list of system requirements and evaluate existing "fair" market designs in various practical and adversarial scenarios. We conclude that they fail to retain their properties in the presence of infrastructure inefficiencies and sophisticated technical manipulation attacks. Based on these findings, we then introduce Libra, a

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