Price Discovery Share-An Order Invariant Measure of Price Discovery with Application to Exchange-Traded Funds∗

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Abstract

Price Discovery is the process by which new information is impounded into asset prices through trading activity. A market is considered to contribute more to price discovery if it is the first to capture new information regarding the fundamental value of an asset. Hasbrouck’s (1995) information share (IS) is the most widely used measure for price discovery contribution even though there is a well-documented concern with identification: its dependence on the ordering of the variable in the price vector and its non-uniqueness. We propose a new measure, “Price Discovery Share” (PDS) that is closely related to IS and resolves the identification problem inherent in the IS method. PDS is motivated by a widely used method in risk management literature called the “risk-budgeting” or additive decomposition of portfolio volatility. Using simulated data based on different structural asset pricing models, we find that PDS measures the structural price discovery contribution more accurately than IS. We also apply PDS to investigate the “duplication of Exchange-Traded Funds (ETFs)” phenomenon, a recent institutional trend in financial markets. We show that although there are multiple ETFs tracking the S&P 500 index, one specific S&P 500 ETF (‘SPY’) always contributes more to price discovery than the rest. We also find that PDS, unlike IS, is robust to the use of intra-day market price data sampled at different frequencies.

Keywords: price discovery, information share, Exchange-traded Funds (ETFs)
JEL classification: C32; G10

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