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# The semi-strong efficiency debate: In search of a new testing framework



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### ABSTRACT

This work presents an innovative framework to test for semi-strong market efficiency, with a special focus on price reactions to macroeconomic impulses. More precisely, daily market observation and empirical practice both support the view that significant deviations from equilibrium (i.e. inefficiencies) are likely to emerge under suitable volatility conditions and modelling some prior information leakages from big institutional players, so that focusing exclusively on return distribution and profit opportunities alone seems to lead only to remarkable distortions in the final results. The presented testing framework also minimizes the required initial assumptions to a very small set of conjectures, that are quite descriptive of financial market behaviours, while eliminating all needs for unrealistic market characterizations. This original methodology finally allows to test for efficiency only when the null hypothesis makes some economic sense, thus further reducing potential biases in the final outcomes.

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## 1. Introduction

“US index futures extended gains, taking their cue from Europe, after the closely-watched ZEW index of German investors' expectations rose from 22.3 to 23.4.”

The Wall Street Journal, April 17, 2012

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“Europe stocks rise as banks rally after German IFO.”

The Wall Street Journal, April 20, 2012

“Stocks fell after a surprisingly weak ISM Report reignites recession fears.”

The Wall Street Journal, July 2, 2012

“Stocks and oil prices sink on US job data.”

The Wall Street Journal, July 6, 2012

“US stocks fall on downbeat jobs data.”

The Wall Street Journal, July 6, 2012

“US stocks rise as job data offset FED stimulus concern.”

Bloomberg, November 8, 2013

“US bonds rise on disappointing jobs data.”

The Wall Street Journal, January 10, 2014

Market practitioners know it very well: among the wide set of market-moving factors, macroeconomic releases seem to have a key role to play. A few minutes before the announcements, the bid-ask spreads start to widen, as the uncertainty surrounding the data rockets and price wings become much more intense<sup>1</sup>; basically, market players try to guess what the likely outcome will be and, while some investors face the releases with a perfectly hedged position, others try to bet on the goodness of their forecasts. When actual data are finally disclosed, market prices react accordingly, thus triggering a thorough adjustment process, lasting until when all the new macroeconomic information is finally “processed” by the whole investors’ community. Everyday market observation, consequently, suggests that macroeconomic releases tend to be followed by significant market reactions, such that favourable news generally brings about upward pressures on price dynamics, while negative announcements go hand in hand with sharp falls (clearly enough, the reverse is to be admitted for fixed income markets). Stated in alternative terms, the empirical evidence resulting from market practice lifts the curtain on remarkable market reactions to information impulses that, though short-lived, are nonetheless “strong” enough to shed light on the debated issue of market efficiency, with a special focus on the broad topic of market responses to macro-informational shocks. More precisely, this is an empirical work on semi-strong market efficiency,<sup>2</sup> specifically thought to provide some original insights into the broadly investigated field of financial market<sup>3</sup> reactions to macroeconomic releases. In fact, despite the plethora of studies increasingly available on this theme starting from the late fifties, the academic debate still has not reached any sound, clear-cut conclusion so far, thus leaving the door wide-open to further discussion.

This work tries to address the foregoing topic in an original way, focusing on an innovative testing framework, purposely conceived to stress the importance of database selection criteria, information spillovers and price volatility in order to understand short term market dynamics. In particular, in the presence of some unexpected information, under the suitable volatility conditions and modelling some prior information “leakages” from big institutional players, bid-ask intra-daily price series seem to shed light on persistent (i.e. not instantaneously reabsorbed) statistically significant market responses to macroeconomic news (measured in terms of reaction consistency with the information embedded in the released indicators).

<sup>1</sup> “Some (...) traders may then prefer to pull back from the market a few seconds before (the release), resuming trading once the risk of a sharp initial price movement has passed”, Chaboud et al. (2009).

<sup>2</sup> Based on Fama (1970), a market is said to be efficient whenever its prices “fully reflect” all the “available information”. More precisely, whenever the stated information set only includes historical prices, efficiency is defined as “weak”. Any time “information” refers to publicly available data, the market is said to be “semi-strongly” efficient. If, instead, explicit reference is made to strictly private (insider) information, efficiency is deemed to be “strong”. The foregoing definition has one major practical implication: indeed, stating that prices completely incorporate all the available information amounts to allowing for the existence of equilibrium price levels to which efficient markets naturally converge.

<sup>3</sup> As far as this work is concerned, the term “financial market” will be considered in the narrow sense of “stock exchange market”, thus adopting a strict interpretation of its more general definition (i.e., market for the exchange of capital and credit, including the money market and the capital market).

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