

Hardwiring of investment decisions to ratings and the information content of asset prices

Non-technical summary

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"We need to make sure that, as far as possible, we do not have a large pool of investors, whether they are pension funds or others, who have built into their portfolio decisions mechanical responses to changes in ratings, which you can see from time to time"

Sir Mervyn King, Governor of the Bank of England, appearing before the Treasury Select Committee, January 17, 2012.

The use of credit ratings in financial markets extends beyond the mere updating of investor beliefs in making informed decisions. Credit ratings are used to facilitate monitoring the risks of investments by regulated entities, such as SEC Rule 2a-7 that restricts money market funds from investing in commercial paper below a rating threshold.¹

Similar rules apply to insurance companies and pension funds. Ratings have also been used extensively in determining capital adequacy buffers for banks, insurance companies, broker-dealers and other regulated entities (e.g. Basel II Capital Accord, EU Solvency II Directive, SEC Rule 15c3-1) and to set collateral requirements by central banks for the provision of liquidity to the banking system. Many institutional investors are also forced by their own charter to sell securities whose rating has crossed some critical threshold.

Building mechanical responses of investment decisions to ratings (so called ratings hardwiring) could materially impact on demand and supply of rated securities, affecting information pooling and the signalling role of prices. That could be especially true when the market for rated securities is dominated by investors that are subject to ratings-based rules and regulatory restrictions.²

Ratings hardwiring could also result from inclusion of a security in an index of highly rated securities (e.g. Barclays U.S. Corporate IG Index), leading to a mechanical increase in

¹ A notable dichotomy is between investment grade (IG) and high yield (HY) credits, defined by the BBB rating threshold in Standard & Poor's ratings scale, or the Baa rating by Moody's.

² On the basis of Federal Reserve Flow of Funds accounts, Campbell and Taksler (2003) calculate that more than 50% of the market for corporate bonds in the U.S. is dominated by institutional investors that face ratings-based restrictions.

demand by index-tracking funds, while dropping the security from the index would lead to a mechanical increase in supply.

A number of policymakers and market participants, including the rating agencies themselves, have pointed to the fact that ratings hardwiring could destabilise markets, distort information discovery and impede the efficient allocation of financial resources. Empirical evidence also suggests that the regulatory use of ratings has a material impact on the market price of rated securities, which is distinct from the impact of information that is conveyed into ratings. However, asset pricing implications that arise from ratings hardwiring have received scant attention in theoretical literature, which focuses primarily on equilibrium bias in produced and in reported ratings.

In this paper we examine the potential impact of ratings hardwiring on the information content and volatility of asset prices. We address this issue within a rational expectations framework, considering a model for trading a simple asset in a market with informed and uninformed agents.

In the model, informed traders specialize in different driving factors of asset payoffs. Yet, they rationally anticipate changes in all factors that affect future income and capital gains from holding the asset. There is also a residual class of uninformed (noise) traders that do not independently assess the risky asset, but rely exclusively on ratings and increase the supply of the asset when its rating falls, while reduce it when its rating increases. We use such a mechanical response of the supply of the asset to changes in ratings as a proxy for ratings hardwiring. In addition to ratings hardwiring, we assume that noise traders also trade for non-fundamental (liquidity) purposes.

The analysis shows that hardwiring of investment decisions to ratings leads to less informative and more volatile asset prices. Our results also show that such an effect becomes more pronounced as traders' risk aversion increases. In order to ensure comparability of results for various levels of ratings hardwiring, we make sure that we do not induce additional volatility in the supply of the asset due to noise trading. Consequently, the extent of ratings hardwiring in the model translates into a proportion of noise-trading volatility that is due to hardwiring.

Ratings hardwiring results in less informative and more volatile prices because the noisy supply of the asset becomes correlated with fundamentals and, to a certain extent, predictable. As a result, informed traders react more aggressively to any item of information that could potentially be relevant to their trading decisions, creating a channel through which fundamental and non-fundamental shocks are amplified. More specifically, we show that hardwiring induces a stronger price reaction to fundamental innovations compared to the situation without hardwiring, overshooting even the hypothetical scenario with complete information. Hardwiring also leads to a larger misinterpretation and overreaction by traders to errors in their private information. The same effect obtains for any other non-fundamental and non ratings-related shock in the model, indicating that informed traders become more prone to misinterpret any item of news as information about fundamentals. That leads to prices becoming less informative and more volatile in equilibrium. [full pdf](#)