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INFORMATION PAGE ON NEW ACADEMIC AND THEORETICAL CONTRIBUTIONS OF THE DISSERTATION

Dissertation title: RESEARCH ON THE NONLINEAR DEPENDENCE STRUCTURE AND RISK SPILLOVER BETWEEN THE VIETNAMESE STOCK MARKET AND INTERNATIONAL STOCK, GOLD AND ENERGY MARKETS

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New contributions in terms of theory and practice of the dissertation:

1. Theoretical contributions

The dissertation makes several important theoretical and methodological contributions to the study of dependence structures and risk spillovers among financial markets, specifically:

First, the dissertation develops an integrated analytical framework that combines the conditional copula model coupled with GJR-GARCH and the Diebold-Yilmaz spillover index approach, applied to the same dataset and the same three consistent research sub-periods. While the conditional copula clarifies nonlinear dependence, tail dependence and asymmetry at the level of individual market pairs, the Diebold-Yilmaz approach simultaneously employs nine Value-at-Risk series to measure total connectedness and the net transmitting or receiving position of each market from a network perspective. This combination addresses a common limitation of prior studies, which typically rely either on a single bivariate correlation model or on a single system-wide spillover model.

Second, the dissertation provides empirical evidence for the theory of financial interdependence in the specific context of a frontier market in transition toward emerging market status, such as Vietnam. The results show that the international linkages of the Vietnamese market are neither constant over time nor homogeneous

across stock, gold and crude oil markets; consequently, conclusions drawn from a single sub-period or a single asset group can hardly be generalised to the whole system.

Third, the dissertation reinforces the argument that average correlation measures are insufficient to describe joint risk among financial markets. The difference between lower and upper tail dependence, the changes in the optimal copula family across pairs and sub-periods, together with the movement of the total connectedness index and of the net spillover positions over time, jointly provide a more complete picture of both bivariate extreme co-movement and system-wide risk spillover.

Fourth, the dissertation formulates and tests two sets of hypotheses corresponding to the two methodological branches, namely three hypotheses GT1 to GT3 for the conditional copula branch and four hypotheses H1 to H4 for the Diebold-Yilmaz branch. The empirical results support all seven hypotheses, thereby confirming that the dependence structure is nonlinear, exhibits tail dependence, is asymmetric for several pairs and varies across sub-periods, while the connectedness of the system increases and the spillover position of the Vietnamese market changes over time.

Fifth, from a methodological standpoint, the dissertation uses Value-at-Risk series at the 95% confidence level, instead of raw returns, as the input variables of the Diebold-Yilmaz system. This design orients the entire connectedness analysis toward potential extreme losses rather than average volatility, which is more consistent with the risk management objectives of supervisory authorities and financial institutions. The VaR series are constructed from marginal models that have passed residual diagnostic tests and stationarity tests before entering the VAR system.

Sixth, the finding on the reversal of the net spillover position of the VNIndex, from a net risk receiver before COVID-19 to a net risk transmitter during and after this period, adds a specific empirical case to the international literature on financial connectedness in Asia, which has so far focused mainly on larger emerging markets such as China, Korea or the ASEAN-5 group.

2. Practical contributions

The study offers several important practical contributions for market regulators, financial institutions, and investors.

For regulators, the dissertation provides a set of quantitative indicators that can be applied directly in cross-market risk supervision, including tail dependence coefficients, which help identify the risk of diversification failure precisely when markets enter extreme states; Value-at-Risk, which quantifies potential losses for each market pair and each confidence level; and the set of indicators comprising total connectedness, directional spillovers received (FROM), directional spillovers transmitted (TO), net spillovers (NET) and net pairwise spillovers, which identify the sources and recipients

of risk within the system. The results show that the total connectedness index rises continuously from 39.89% before COVID-19 to 48.52% during COVID-19 and 53.01% after COVID-19; supervision therefore needs to shift from single-market monitoring toward system-wide risk monitoring in both the transmitting and receiving directions.

For financial institutions and investors, the findings indicate a need to move from asset allocation based on average correlation toward portfolio management based on tail dependence and system-wide spillover positions. Tail dependence between the VNIndex and Asian stock markets increases markedly during COVID-19, as illustrated by the VNIndex-TWII pair, whose tail dependence rises from 0.098 to 0.185 and then falls to 0.070, indicating that diversification benefits weaken precisely when markets are under stress. By contrast, tail dependence between the VNIndex and international gold is close to zero in all three sub-periods, suggesting a potential for conditional diversification and hedging, although this is not sufficient to conclude that gold is an absolute safe-haven asset in all market states.

For early warning purposes, quantifying the distinct role of each partner market allows supervisory resources to be allocated according to the actual risk of each linkage channel rather than uniformly. The results show that TWII consistently maintains a net transmitting position and records the highest net spillover in the system in the first two sub-periods, whereas after COVID-19 this position belongs to the S&P 500; conversely, international gold is consistently a net risk receiver with increasing intensity across the three sub-periods. The VaR backtesting results based on the Kupiec test, with 142 out of 144 tests passing, equivalent to 98.61%, confirm the reliability of the risk estimates underlying the above conclusions.

PhD candidate

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