

ECB on Network Linkages to Predict Bank Distress

■ European Central Bank (ECB): Network linkages to predict bank distress (Working Paper No 1828).

■ Abstract

■ Building on the literature on systemic risk and financial contagion, the paper introduces estimated network linkages into an early-warning model to predict bank distress among European banks. The paper uses multivariate extreme value theory to estimate equity-based tail-dependence networks, whose links proxy for the markets' view of bank interconnectedness in case of elevated financial stress.

■ The paper finds that early warning models including estimated tail dependencies consistently outperform bank-specific benchmark models without networks. The results are robust to variation in model specification and also hold in relation to simpler benchmarks of contagion. Generally, this paper gives direct support for measures of interconnectedness in early-warning models, and moves toward a unified representation of cyclical and cross-sectional dimensions of systemic risk.

■ Conclusion

■ Building on the literature on systemic risk and financial contagion, the paper introduced estimated network linkages into an early-warning model to predict bank distress. The approach applied in this paper estimates tail-dependence networks (Poon et al., 2004) from equity returns of 171 European banks in 1999Q1-2012Q3 and combines that with a bank-level early-warning model (Betz et al., 2014).

■ Beyond standard bank-level risk drivers and macro-financial indicators, a tail-dependence network provides additional information about market's view on bank interconnectedness in situations of elevated financial stress. Thus, it can provide information of potentially vulnerable banks following an early-warning signal or a bank failure, and the potential for financial contagion and a systemic banking crisis.

■ For more information (37 pages), please [click here](#).

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Regulatory & Accounting Briefing

- The paper finds that the early warning models including estimated tail dependencies consistently outperform the benchmark models, which cover solely vulnerabilities coming from bank-specific, sector-level and macro-financial imbalances in order to predict bank distress events. These results highlight the importance of including measures of interconnectedness and proxies for contagion when building early-warning models.
- From a policy perspective, they underline the necessity for including information on the structure of the banking system to complement macro and micro-prudential analysis of individual bank's risk. Overall, the paper provides early steps toward a unified representation of cyclical and cross-sectional dimensions of systemic risk and contagion risk.
- For future work, it is worth noting the general nature of the framework for combining networks and distress models. While this study is at the bank level, the same procedures would equally well apply at the country level or for another industry, such as insurers and other financial institutions. Another line of future work could focus on the use of the provided framework with a range of interconnectedness measures.
- In contrast to the classification task performed by early-warning models, for which "ground truth" exists and ex-post evaluations are possible, bank networks and interconnectedness measures do not have similar outcome data to steer modeling. Hence, the framework presented in this paper provides an ideal setting for testing the extent to which interconnectedness measures are proxying for the true channel of distress contagion.
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- [Click here for full details.](#)
- **(Source: European Central Bank – ECB).**

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ACAFF	10/03/2015	Restricted	EXOIM	05/05/2015	Buy	PBBGR	10/03/2015	Marketweight
ANNGR	23/03/2015	Restricted	EXOIM	26/02/2015	Hold	PBBGR	12/01/2015	Restricted
ANNGR	30/10/2014	Marketweight	EXOIM	07/11/2014	Marketweight	SRENVX	06/11/2014	Marketweight
ASSGEN	06/11/2014	Restricted	EXOIM	30/09/2014	Restricted	SRENVX	27/08/2014	Restricted
BACRED	07/11/2014	Restricted	HSHN	31/03/2015	Underweight	WFC	26/05/2015	Restricted
BPEIM	13/01/2015	Restricted	INTNED	03/06/2015	Restricted			
CABKSM	24/10/2014	Marketweight	INTNED	05/02/2015	Marketweight			
CRH	26/01/2015	Overweight	INTNED	06/11/2014	Restricted			
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