IMPACT OF THE EUROPEAN MARKET INFRASTRUCTURE REGULATION ON HEDGING STRATEGY AND INDUCED COSTS FOR ENERGY COMPANIES

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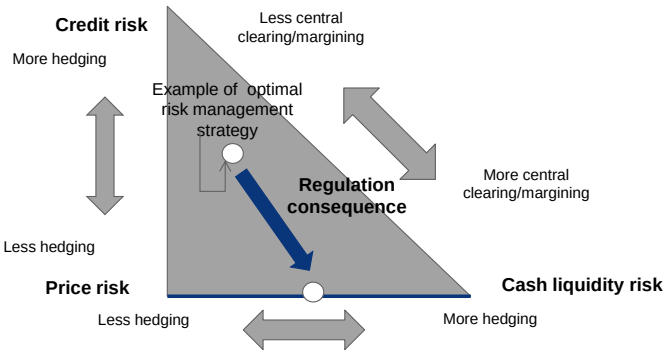
Overview

In order to prevent from systemic risk, the EMIR (European Market Infrastructure Regulation) project aims at imposing central clearing on over-the-counter (OTC) derivatives, energy derivatives among others. For energy companies, this may lead to the obligation to go through central clearing mechanism. The impact of any regulation must be estimated through its consequences on the global economic welfare (companies and consumers). Here, the paper does not develop an equilibrium approach but the focus is made on the effect of the regulation for the targeted energy companies. These companies use energy derivatives mainly for the hedging of their energy portfolio, by balancing between organized market and OTC transactions in order to keep their liquidity risk at an acceptable level. Indeed, they decide their optimal hedging strategy based on the trade-off they manage between three risks: market, counterparty and liquidity risks. Then, this regulation might impose to energy companies to change their hedging strategy to a suboptimal one leading to higher costs. For instance, it has been evaluated at € 2.4 to €3 billion in Netherlands [1]. Therefore, when comparing this effect with the systemic risk reduction, we show that the regulation might increase systemic risk in the energy sector contrary to its initial purpose.

Methods

In order to be able to draw conclusions on the impact of the regulation for different types of energy companies, we use a rather simple model : companies have a volume of energy to sell in the future and they can decide to hedge themselves by selling it forward on OTC market or on organized market. On the one hand, OTC market reduces price risk of the portfolio but increases counterparty risk. On the other hand, organized market also reduces price risk but at the same time increases the liquidity risk, due to margin calls. In our model, we are able to determine the optimal hedging strategy the company should undertake and hence to price the impact of the regulation that imposes a modification of the hedging strategy. The following figure shows an example of optimal hedging strategy and the potential impact of the regulation in terms of risk mitigation.

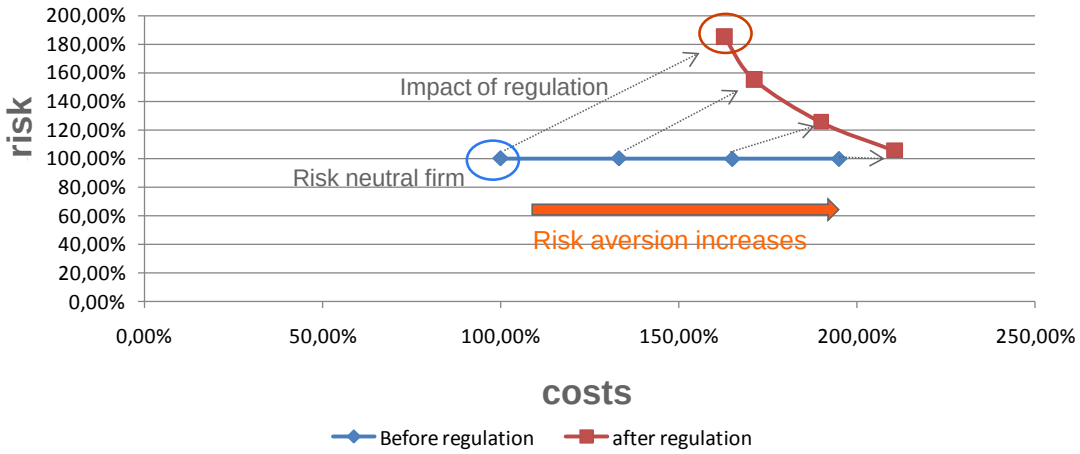


The different types of companies represented in our study are based on true European energy companies. Every firm is modeled as a pure producer that sells its power in the wholesale market. They are featured by a certain fixed cost of production, a financial rating and some cash in treasury. Their risk aversion is represented by the

fact that the company chooses its optimal hedging strategy based on a mean/variance criterion minimization. Optimization of our model is performed through Monte-Carlo simulations.

Results

The results of our study show that regulation has a strong impact on energy companies. As a consequence, companies tend to hedge less, their hedging costs increase such as their risk profile. For cash-constrained companies, this cost increase can reach 65%, but varies a lot depending on the size, the structure and the rating of the company. The hedged position can decrease by 40%. It entails a significantly higher risk supported by the firms. The following figure represents the impact of the regulation in terms of normalized risk and costs for a given energy company, and for different risk aversions.



Our results are valid whatever the risk aversion value of the firm: the regulation makes the costs and the risk increase, and this result is more marked for less risk-adverse companies. Indeed, in this context, companies tend to hedge less because they could not cope with liquidity costs induced by margin calls (this is also verified in the theoretical model proposed by [2]). This implies that whereas it aims at reducing systemic risk, at the same time the EMIR directive project pushes up the price risk of energy companies. Regulation also makes hedging costs increase because companies have to borrow money to cope with margin call and with price risk increase.

Conclusions

Regulation implies a global rise of the risk of the energy sector as energy companies will hedge less their energy portfolio and at the same time will suffer an increase of their hedging costs. Indeed, because of the regulation, companies would not be able to mitigate anymore their risks between price, counterparty and liquidity risks but only between price and liquidity risks. Firms are forced to allocate more cash for the initial and variation margins than they currently do. Therefore less cash remains for further investments and the portfolio positions are less hedged. Thus, by constraining energy companies in their risk management, the regulation makes the energy sector weaker and more sensitive to a systemic crisis.

References

[1] Tieben, B. Kerste, M. Akker, I. (2011) “Curtailing Commodity Derivative Markets – What are the consequences for the energy sector?”, SEO economic research, SEO-report nr. 2011-62.

[2] Bolton, P. Chen, H. Wang, N. (forthcoming) “A unified theory of Tobin’s q, Corporate Investment, Financing, and Risk Management”, Journal of Finance.