

The Price and Risk Effects of Option Introductions on the Nordic Markets

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With the opening of the Chicago Board Options Exchange (CBOE) in 1973 a new era of derivative trading started. CBOE revolutionized the option trading by creating standardized, listed stock options. In the same year Black and Scholes published their work on option pricing. They assumed that options are redundant assets and could thereby derive a pricing rule for derivative securities. This was done by applying a so called no-arbitrage argument and by constructing a dynamic hedge portfolio. Since then academics have questioned the assumption of redundancy. Researchers recognize that financial markets are not complete. Therefore, introducing derivative securities could increase the opportunity set of investors, which in turn could make markets more efficient, lead to welfare effects, and make the derivatives market interact with the underlying securities market.

This study empirically investigates the effects of option introduction on the prices and risk of the underlying securities. The data used come from the stock markets in Denmark, Finland, Norway, and Sweden as well as from the option market in Sweden. The study is motivated fourfold:

- 1) One reason is to check the results and implications of theories regarding option introduction presented in the academic literature.
- 2) So far most studies concerning the impact of option listing on the underlying stock has been based on data from the United States. To confirm the results from these studies evidence from other data sets are needed.
- 3) Studies based on US data have found time-varying price and risk effects. These, from most other findings divergent, results are compared with those based on data from the Nordic markets.
- 4) Policy questions arise, because there is a fear that derivative trading adds to the instability of the underlying assets market. Not rarely such trading gets the blame for increased uncertainty. The proposed solutions to the presumed problem include introducing frictions into the market, such as turnover taxes on short-term positions, to reduce the speed of transactions. Although no explicit conclusions can be drawn, it is worthwhile checking if the allegation of adding instability has any empirical support.

There are several arguments suggesting that there exist effects on the underlying stock returns related to the listing of options. The structure, magnitude or even the directions of these effects are debatable, but they are potentially of great interest, not only to academics but also to practitioners and market regulators. However, a better understanding of the effects involved can only be determined empirically.

In the Nordic countries, the introduction of standardized options with stocks as underlying securities has reached a volume, and has covered a time span long enough to generate data for a statistical analysis of the effects of option trading.

The introduction of options has proved to render the underlying stocks a significant price increase, and a persistent excess return compared to an index indicating normal return. The positive effect is strong and similar in magnitude to those in studies based on data from other countries. Contrary to the experiences from other studies, however, the observed increase in return seems to be associated with the date of announcement of the option program, rather than the date of introduction. Further, there is no evidence of a trend in the size of the price effect, as found in recent work based on option introductions made in the US. The findings in this study are therefore in harmony with the market efficiency hypothesis and the expectations that prices should be promptly adjusted when additional information reaches the market participants.

The positive price effect could be explained by a change in the risk of the underlying stock. An increased systematic risk or an increased idiosyncratic risk can lead to a price increase, assuming that the Capital Asset Pricing Model (CAPM) holds. As the results show, no statistically significant support can be found for this argument. It can also be argued that options expand the opportunity set of investors and promote risk reallocation, which can be beneficial to market participants. To the degree that the investors experience a better control of the financial risk when options are introduced, the required yield can be reduced.

The impact on the total risk is also favourable, and in line with findings in other studies. No influence on the systematic risk could be verified. The volatility in the underlying stocks is found to decrease continuously for ten months after the introduction of the option program. Further, there is no evidence of a trend in the size of the volatility effect, as found in recent US studies. These results support the notions that derivatives widen the investment choices of the market participants, decrease risks, and provide improved hedging opportunities.

The reduced total risk could be explained by a reduction in the systematic and/or idiosyncratic risk. However, the last mentioned two types of risks have not significantly changed. One reason may be the power of the methodology used, and given the amount of data. It is also possible that the total risk will shift without a change in the systematic risk, since an introduction of options should not affect the balance sheet of a company. In this case the different risk levels can be attributed to a change in the idiosyncratic risk, although this has not been possible to verify at conventional significance levels.

In all, this study supports the idea that option introductions make markets more efficient. Nothing in the analysis gives any indication that derivative trading should contribute to financial unrest. On the contrary, option programs seem to add increased stability to the market.