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## **Hedging Risks in a Duopoly Framework**

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# Abstract

The thesis extends the literature which is concerned with decision makers that face uncertain profits and are able to hedge the risk. Whereas the competitive case is examined in countless papers, starting with the seminal work of Sandmo (1971), the duopolistic and oligopolistic ones are only considered in few studies. Therefore, the current thesis deals with a Cournot duopoly that faces uncertain exchange rates and has a hedging opportunity via currency forwards. Additionally, the statements which are found in that model are generalized within a noncooperative two-player game with player-specific risky parameters which can be traded forward. That is, the results of this thesis can be applied to a wide range of duopolistic models. In such frameworks, we have to distinguish whether the hedging positions are chosen simultaneously to or before (sequentially) the outputs/strategies. The simultaneous setting exhibits some similarities to the competitive case. For example, the well-known separation result of the competitive case is found in the simultaneous setting, too, but its strength depends on whether the hedging opportunity is made available to one or both decision makers. Furthermore, the hedging decision is also only driven by risk managing motives so that the qualitative characteristic of the optimal hedging position solely depends on the situation on the corresponding forward market. However, whereas a decision maker in the competitive case cannot be harmed by receiving the hedging opportunity, this may happen in the simultaneous setting. The reason for this is that the hedging decision is constricted as the decision maker cannot credibly commit to deviate from the hedging position its competitor supposes it to choose. In the sequential setting, no separation result can be found. Instead of that, it is shown that the decision maker can impact the outputs/strategies via its hedging position. This link enables it to use its hedging position not only to manage its risk exposure but also to use the position in a strategic manner. For example, in the Cournot model, a firm utilizes the strategic impact of the sequential hedging opportunity as it chooses an overhedge on the unbiased forward market. If a decision maker exclusively receives this kind of hedging opportunity in the uncertain framework, it can never be harmed by this. The reason for this is that unlike in the simultaneous setting, the hedging decision is not constricted, but the decision maker can credibly commit to any hedging position. Therefore, the decision maker prefers the sequential setting to the simultaneous one in the case of an exclusive hedging opportunity. However, if the sequential hedging opportunity is given to both decision makers, the hedging decisions are constricted as they have to be taken simultaneously to each other. In this case, the strategic usage of hedging may result in decreasing expected utilities for both of them.