Recent vertical mergers such as in healthcare (CVS-Aetna) and telecommunications (ATT-Time Warner) have brought the competitive effects of vertical integration into the spotlight for policy makers and regulators. Vertically integrating firms often claim to be able to achieve efficiencies that otherwise would be unfeasible if they were separate. However, whether or not these efficiencies can be achieved without offsetting anticompetitive effects is a popular area of research.

The Chicago School pioneered leading theories of antitrust and vertical merger theory in the 1970s, showing that many previously accepted theories of vertical mergers underestimated the gains in efficiencies. A new school of thought emerged in the late 80s that focused on oligopoly market structures. These papers such as \cite{salinger1988vertical} and \cite{hart1990vertical} generally focused on the effects of vertical integration on market foreclosure of upstream or downstream rivals. Following \cite{ordover1990equilibrium}, the focus in this literature shifted towards equilibrium outcomes and the prevalence of anti-competitive effects in these equilibria. Foreclosure and raising rivals’ cost remained a prominent area of study through the turn of the century; papers like \cite{chen2001vertical} analyzed such effects while introducing tweaks in market structure or upstream-downstream bargaining into the models.

More recently, the vertical integration literature has branched out into many other relevant areas of antitrust and regulatory interests. \cite{nocke2007vertical} studies the effect that vertical arrangements can have on sustaining collusion in an oligopoly market structure. Partial vertical integration, where upstream and downstream firms only share some of the joint profits, has also become more researched in the literature. One commonality across all these recent results is that the products in the market are now assumed to be differentiated in both the upstream and downstream markets. Product differentiation comes in a variety of manners; some papers adopt Hotelling type models \citep{matsushima2009vertical} while others use some parameter or function for substitutability \citep{zanchettin2017vertical}. Such innovations in methodology have enabled vertical integration models to demonstrate the subtle effects that vertically integrating firms have on pricing, market structure, and competition

This paper simulates an equilibrium in a vertical market structure similar to the dual upstream-downstream oligopolies in \cite{salinger1988vertical} and \cite{hart1990 vertical}. Unlike \cite{ordover} or \cite{chen}, equilibria are found numerically via simulation rather than solved with an analytical model. We enable product differentiation in both the upstream and downstream firms, and firms compete in prices in both the intermediate good and the final good market. For downstream consumers, we assume a logit or nested logit demand model; parameters across a range of values are chosen and the effects of vertical integration are analyzed. Our model can be thought of as a “supermarket” model, where each of the upstream firms stock goods that the downstream retailing firm attempts to sell. Therefore, the model is not traditional in the sense that there are four total downstream goods rather than two.

We focus our attention on parameters and market settings in which the price of a good produced wholly by an integrated firm increases post integration. This phenomenon happens when the “horizontal integration effect” outweighs any elimination of double marginalization effect (EDM). The idea of the horizontal integration effect is described in \cite{moresi} – the downstream subsidiary of the vertically integrated firm has an incentive to *raise* prices post-merger because substitution drives consumers into purchasing another downstream good that is supplied by the integrated firm. In essence, the vertically integrated firm can behave as if horizontal integration has happened, because one of the four intermediate markets is eliminated with vertical integration. The horizontal integration effect is an under-studied negative effect of vertical mergers, and in some sense, it is more important than the commonly reviewed foreclosure or raising rivals’ cost (RRC) effects. This is because in cases where the horizontal integration effect dominates EDM, welfare of the downstream consumer is directly impacted. Whereas it is possible that if the downstream firms are affected by foreclosure or RRC, the impacts may not be completely passed through to the consumer.