OXFORD JOURNAL
OF STUDENT
SCHOLARSHIP

Using Models of Market Structures to Understand the Dairy Industry Restructuring Act's Impact on Fonterra's Domestic and International Activity

Hankai (Alex) Shao
ashao2007@gmail.com

ABSTRACT

The dairy industry is a cornerstone of New Zealand's economy. Within this sector, Fonterra processes over three-quarters of all the milk production and also serves as the nation's leading exporter. However, this dominance does not go without regulation. The Dairy Industry Restructuring Act 2001 (DIRA) was implemented to pursue two conflicting objectives: enabling Fonterra to be competitive on the international market while protecting domestic consumers from excessive prices. This research paper analyses and evaluates the effectiveness of DIRA in achieving these objectives through the application of three microeconomic market structures: monopoly, Cournot duopoly, and threat of entry. The findings support that a monopoly would provide Fonterra with sufficient profit to fund international expansion but would be at the expense of domestic consumers. On the contrary, a Cournot duopoly would hinder Fonterra's global competitiveness but generate better prices for domestic consumers. Finally, the threat of entry model emerges as the most balanced outcome, as it preserves Fonterra's capacity to compete internationally while incentivising lower prices to deter new entrants. In combination, these findings illustrate how DIRA has shaped a regulatory equilibrium within the dairy industry in New Zealand and why DIRA has opted to create the market structure with the threat of entry.

INTRODUCTION

This paper addresses the research question: Is Dairy Industry Restructuring Act 2001 (DIRA) successful in empowering Fonterra's international competitiveness while protecting domestic consumers? To answer this question, three market structures will be analysed. They include monopoly, Cournot duopoly, and threat of entry. Monopoly and Cournot duopoly are alternative market structures that can be achieved naturally and through intervention. The threat of the entry model is the current market situation. The three market structures will be analysed through microeconomics and compared to form a conclusion.

New Zealand's dairy industry plays a significant role within the nation's economy. For example, in 2021, New Zealand's dairy exports were valued at $18.6 billion NZD. Alone, this portion of international trade contributed to 5.3% of nominal GDP (Anderson, 2022). At the heart of New Zealand's most significant

industry is Fonterra, which is a cooperative owned by local farmers. In the 2024/25 season, Fonterra processed the majority of the nation's total milk production, amounting to 77.7% (edairy News, 2025).

In order to facilitate the creation of the cooperative Fonterra, DIRA was enacted by the New Zealand government. This act intended to create international competitiveness for dairy through economies of scale, while simultaneously ensuring domestic consumers are protected and unharmed (Ministry of Primary Industries, 2018). The balance between these partially conflicting objectives is crucial to the success of the dairy industry as a whole. Selling to the international market is proven to be beneficial for Fonterra. With higher prices and a larger market, Fonterra can significantly benefit from economies of scale. They will be able to draw in more revenue and profit. However, for this study, there will be an assumed cost of entry into the international dairy market that Fonterra must pay.

The international market entry fee for Fonterra consists of additional costs the firm must pay when attempting to sell products to foreign countries. This includes tariffs, export duties, regulatory compliance costs, and any fees associated with meeting international trade standards.

Currently, DIRA employs one main method of regulation on Fonterra. This is the compulsory provision of raw milk to local competitors for a regulated price. It is stated that up to 5% of the raw milk Fonterra collects from dairy farmers across the nation must be sold to competitors for a regulated or agreed price (Cossar, 2012). Fonterra is still dominant with 77.7% of all milk production in the 2024/25 season (edairy News, 2025).

THEORY

In this analysis with various models, there will be a regulator who must decide whether the dairy market will be a monopoly, a Cournot duopoly, or a large firm with the threat of entry. This regulator is the New Zealand Government. The regulator aims to balance two objectives. The first goal is to allow a firm, Fonterra, to be large enough to pay the fixed cost of entering the international market and earn some fixed profit from that market. The second conflicting objective is to keep prices reasonably low for the domestic market. The profit from the large firm will be analysed in the three different market structures for an assessment of the first objective. On the contrary, the domestic prices will be analysed to determine the achievement levels of the second objective for each market structure. Finally, the two results can be synthesised to determine what market structure best balances both objectives of the regulator.

MONOPOLY

The implications of allowing Fonterra to become a monopoly in the domestic market will be analysed. The two areas of analysis are the profits as it relates to the ability to pay for Fonterra to pay the international market entry fee and the domestic prices as it directly affects local consumers.

As a monopoly, Fonterra is able to make supernormal profits. In this monopoly model, average cost (AC) increases when marginal cost (MC) becomes greater than AC.

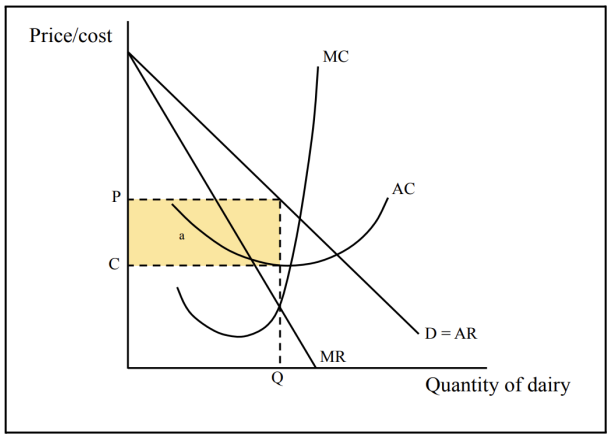

Diagram 1: Monopoly

Normally, monopolies maximise profit by producing the output quantity at the point where marginal revenue (MR) equals MC. Being the most dominant firm in the industry, Fonterra would be price makers. This would cause the price of dairy products to be set above the MC. This causes the cost (C) to be less than the price (P), resulting in supernormal profits from Fonterra. These profits are represented by the area a, which shows the difference between total revenue (P × Q) and total cost (C × Q). With high profits, Fonterra can easily pay for the international market entry fees and compete outside of the domestic market.

The market structure as a monopoly leads to high prices for consumers in the domestic market. Being the most dominant firm with a lack of competition, Fonterra are free to act as price makers. Due to self interest, the prices will be high to maximise profit for Fonterra. Given that dairy products have a high necessity within the lives of domestic consumers, this high price is extremely harmful.

COURNOT DUOPLY

Next is the Cournot duopoly model which demonstrates a market structure. In this scenario, two firms choose quantities of output simultaneously. For this study, the two competing entities will be Fonterra and other competitors such as Synlait or Open Country Dairy.

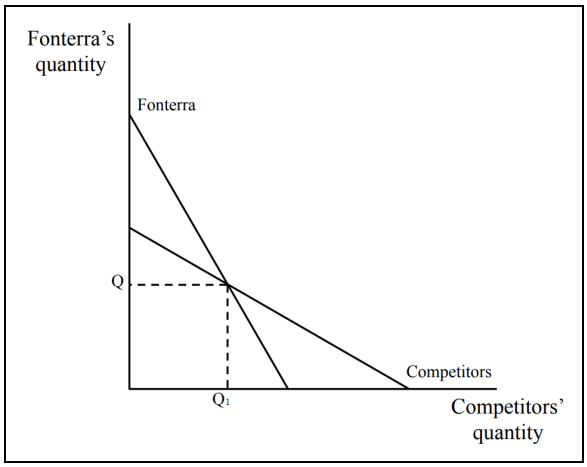

Diagram 2: Cournot Duoply

In the market structure of Cournot duopoly, Fonterra will make a relatively low amount of profit. This model assumes that firms compete on output, independently make decisions simultaneously, and total market output determines total price. The horizontal axis represents the competitors' output, while the vertical axis represents Fonterra's output. The downward-sloping reaction functions show how each firm adjusts its quantity based on the assumed output of the other. The point where the two reaction curves intersect is (Q_1, Q), which represents the Cournot Nash equilibrium. Here, neither firm can increase profits by changing output, resulting in negligible incentives. As Fonterra is unable to freely set prices, their profit is reduced significantly. This hinders Fonterra's ability to pay the international market entry fees.

Under a Cournot duopoly, domestic prices will be lowered significantly. The competition within the market applies downward pressure on prices as firms compete with the quantity produced. Thus, consumers will have more choice and be required to pay lower prices.

THREAT OF ENTRY

Another possible regulatory outcome is the threat of entry situation. In this model, there are market entry opportunities for competitors. The barriers of market entry are limited but not negligible. Thus, Fonterra are forced to act strategically, setting prices low enough to disincentivise competitor entry. Under the threat of entry, full market dominance is contestable, even if actual large-scale entry remains unlikely.

For Fonterra's profit, it will be moderately limited. As other firms can enter the market with relative ease, high prices will attract more competition, negatively affecting Fonterra's dominance. With the threat of entry of other firms, Fonterra will lower prices to remain competitive and attract consumers. The decrease in prices will then cause Fonterra's profits to fall, weakening its ability to pay the international market entry fees.

This market structure represents the optimal situation and outcome because it protects domestic consumers and encourages Fonterra to be efficient while the firm keeps its dominant position. The presence of potential competitors ensures that Fonterra cannot exploit its market power by charging consumers with excessively high prices. At the same time, Fonterra will be forced to increase operational efficiency to deter entry. The balance between competitive competitive pressure and market dominance promotes efficiency and consumer protection.

Under the threat of entry, domestic prices will also be lowered. Fonterra will be unable to set high prices to earn supernormal profits, as doing so would risk attracting new competitors into the market. Instead, the firm must adopt a more cautious pricing strategy to deter entry. This practice, known as limit pricing, helps maintain Fonterra's dominant position by making market entry less appealing to potential rivals. For domestic consumers, this leads to lower prices and improved affordability of dairy products.

COMPARISON

A comparison of the three different market structures caused by possible regulation will be compared. The comparison between Fonterra's profits and domestic prices can be made to reveal the different regulatory outcomes. The profits are evidently the highest for Fonterra under a monopoly market structure as Fonterra faces no competition. This allows the firm to charge high prices and earn maximum profits as Fonterra has total market power. The profits are the lowest in a Cournot duopoly model. The presence of one competitor forces both firms to compete on price and output, reducing profit margins and leading to lower domestic prices. Finally, the profits are in between that of a monopoly and Cournot duopoly with the threat of entry. This is because Fonterra faces potential competition which causes lowered prices to deter entry while still earning moderate profits. By comparing and analysing the three models, the differences in profits and prices are a result of the intensity of competition and the strategic responses of Fonterra under each regulatory scenario.

The results from the comparison suggest that the threat of entry market structure is the most optimal result of regulation. The New Zealand government would be able to balance the dual objectives of enabling Fonterra's international competitiveness while keeping domestic prices low. In this model, Fonterra can earn moderate amounts of profit, enabling it to enter the international market. However, with low barriers to entry, Fonterra lowers prices to disincentives competitors from entering the market, maintaining its dominant position.

CONCLUSION

The current regulation of Fonterra by Dira positions Fonterra in a dominant position. This is represented by the large milk processing Fonterra undergoes, including 77.7% of all milk production in the 2024/25 season (edairy News, 2025). However, Fonterra does not operate as a monopoly and is unable to set prices freely. DIRA lowers the barriers of market entry for competitors by forcing Fonterra to sell up to 5% of its raw milk supply to competitors for a regulated price (Cossar, 2012).

Out of the three market structures analysed, this current situation aligns most with the threat of the entry model. This is because DIRA is lowering the barriers to market entry and pushing Fonterra to lower prices to discourage competitors from entering the dairy market. The threat of the entry model encourages Fonterra to continuously improve efficiency and innovate in production and operations to maintain its dominant position while keeping prices moderate. This is to again deter competitors from entering the market. As a result, DIRA archives a balance between the two objectives of allowing Fonterra to gain enough profit to pay the international market entry fee while maintaining reasonably low domestic prices.

This analysis shows that DIRA has successfully crafted a regulatory framework that positions Fonterra between monopoly and Cournot duopoly, preserving New Zealand's dual objectives. The threat of the entry model achieves a pragmatic compromise, deterring anti-competitive behavior and sustaining global competitiveness. In a globally competitive industry with significant fixed entry costs, this regulatory equilibrium is essential not only for Fonterra's success but for the broader health of the national economy. The threat of the entry model explains why the regulation of DIRA was chosen and implemented. With DIRA, the New Zealand government can effectively balance and meet its dual objectives within the dairy industry.

REFERENCES

Anderson, J. (2022). *FEU Special Topic: Medium-term outlook for dairy exports*. The Treasury New Zealand. https://www.treasury.govt.nz/publications/research-and-commentary/rangitaki-blog/feu-special-topic-medium-term-outlook-dairy-exports

Cossar, I. (2012). *Regulatory Impact Statement: Dairy Industry Restructuring (Raw Milk) Regulations – options for amendments to ensure objectives are met*. Ministry of Regulation. https://www.regulation.govt.nz/assets/RIS-Documents/ris-mpi-rrmr-nov12.pdf

edairy News. (2025). *Fonterra hits milk collection high; market share slips*. eDairy News. https://en.edairynews.com/fonterra-hits-milk-collection-high-market-share-slips

Ministry of Primary Industries. (2018). *Terms of reference for the review of the Dairy Industry Restructuring Act 2001 and its impact on the dairy industry*. Interest. https://www.interest.co.nz/sites/default/files/embedded_images/Dairy%20review%20terms%20of%20reference%20May%202018.pdf

RNZ. (2021). *Agriculture Minister Damien O'Connor 'not yet assured' by Fonterra's proposed capital restructure*. RNZ. https://www.rnz.co.nz/news/country/455931/agriculture-minister-damien-o-connor-not-yet-assured-by-fonterra-s-proposed-capital-restructure