

# Online trading platforms in global commodity markets Designing successful auction-based markets for dairy and wool

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## Introduction

The two online commodity marketplaces discussed in this paper — Global Dairy Trade (GDT) and Natural Fibre Exchange (NFX) — differ in fundamental ways from most other commodity trading platforms.

One key difference is in the trading format. Most online trading platforms are electronic “bulletin boards,” where buyers and sellers announce their willingness to buy or sell a desired quantity of a product at a desired price. Interested parties contact each other essentially to initiate a negotiation process. In contrast, GDT and NFX use a more structured auction-based market design.

A second important difference is that most contracts traded online are financial futures or options settled against a pre-defined index evaluated at an agreed-upon date, and counterparties of the trade are not necessarily producers or users of the commodity. Few, if any, physical transactions actually take place to settle the financial contracts. In contrast, trading on GDT and NFX is for physical delivery of products for pre-specified contract delivery periods. Some contracts are for near-term delivery (spot contracts) and some are for later periods (forward contracts). Participants on the GDT and NFX platforms are producers of the products (or entities representing producers) and buyers who take delivery of the product (for themselves or on behalf of another party).

These and other differences are summarized in the table below.

Traditional Online Trading	GDT and NFX Online Trading Platforms
Sellers and buyers post offers and bids then negotiate	More structured, auction-based marketplace
Financial contracts	Physical delivery
Counterparties are not necessarily producers and consumers	Counterparties typically are sellers (suppliers) and buyers (customers or consumers)
Contract terms are standardized and uniform	Sellers can pre-specify any contracts for sale
Delivery terms are fixed	Sellers can pre-specify any delivery terms

Prices realized in GDT and NFX trading events are actual transaction prices. Since the launch of the GDT platform in July 2008, prices from GDT trading events have become internationally recognized benchmarks that continue to be used for settling derivative contracts on New Zealand’s Stock Exchange. GDT prices also are quoted in US Department of Agriculture (USDA) reports. The NFX platform was launched in May 2018 and currently is used by wool sellers and buyers in New Zealand.

## Global Dairy Trade (GDT)

Today Global Dairy Trade is a well-known marketplace for globally traded dairy commodities. It discovers market-based reference prices used by the industry that arise from GDT's twice-monthly auction-based trading events.

In 2007, Fonterra, the largest dairy exporter in the world, was motivated to find a better way to market, sell, and discover market-based prices for its mostly commodity dairy products. Inconsistent pricing and unreliable market indicators made it challenging for Fonterra to make planning decisions, manage risk, and invest optimally. Limited or dated market price information complicated capacity planning, transfer pricing, and herd management. There was no recognized benchmark to clearly and quickly signal market conditions. And transacting commodity products using bilateral negotiations with so many parties was not the best use of the marketing, selling, and administrative resources and budget. Moreover, without transparency, Fonterra's farmer-owners could not always verify that they were receiving the full value for providing their milk supply to Fonterra.

Buyers of commodity dairy products — Fonterra's customers — seemed most interested in securing supply at competitive market prices no higher than the prices paid by their competitors. The buyers wanted predictable prices and flexibility in sourcing supply over their preferred delivery periods, which would improve their business operations, risk management, and strategic decisions.

Fonterra approached the market-design experts at CRA International, Inc. (CRA) with this objective, and the discussions led CRA's team to recommend an online trading platform based on sound economics and business principles, similar to other CRA trading platforms but tailored to the particular circumstances of the dairy industry.

Leading up to the first GDT trading event in July 2008, industry expectations and acceptance of the concept were mixed. There was nothing comparable to the GDT trading platform, so there were some misplaced perceptions, including:

1. An auction would not work for differentiated agricultural or food products where the identity of sellers is important
2. The GDT platform would be similar to an eBay-style auction
3. Only low quality, off-spec products would be traded.

In its first 12 months (July 2008 through June 2009), about 180,000 MT of dairy products were transacted, and the only seller was Fonterra Co-Operative Group Limited (Fonterra) of New Zealand. In comparison, today more than 700,000 MT are transacted annually on GDT and there are several sellers representing the major dairy producing regions around the world including Oceania, Europe, India, and the Americas. To date, more than US\$26 billion has been bought and sold on the platform.

The use of the GDT trading platform has grown over time. Table 1 summarizes some of the indicators suggesting how widely adopted and successful the platform has become.

**Table 1: Growth of GDT: Comparison of initial and most recent 12-month periods**

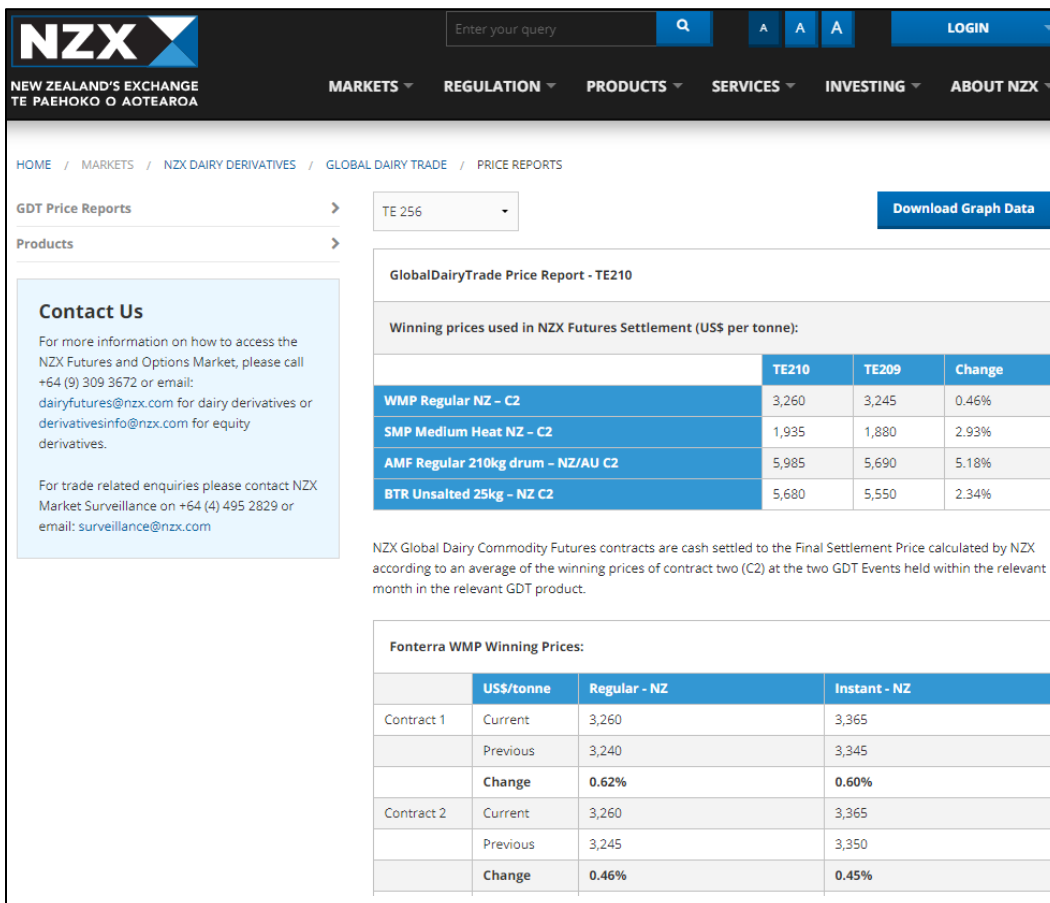
	July 2008 – June 2009 (TE-001 – TE-012)	March 2019 – February 2020 (TE-231 – TE-254)
<b>Trading event frequency</b>	Monthly	Twice per month
<b># Sellers</b>	1	5+
<b># Qualified buyers</b>	Approx. 150	Over 500
<b># Bidders per event</b>	Approx. 60	Over 200
<b># Product groups<sup>1</sup></b>	1 WMP	8 AMF, Butter, BMP, Cheddar, Lactose, RenCas, SMP, WMP
<b># Contract delivery periods</b>	3	6
<b># Products per event</b>	9	Typically > 100
<b>Metric tons sold</b>	180,000	700,000
<b>US dollars transacted</b>	US\$ 0.5 billion	US\$ 2.3 billion
<b>US dollars transacted, cumulative through February 2020</b>		US\$26.0 billion

Source: CRA analysis

Another indicator of acceptance and success is that New Zealand's Stock Exchange (NZX) offers derivative contracts based on the GDT trading platform, using GDT's clearing prices to settle against dairy futures and options contracts that NZX offers. In 2010, NZX launched the first of its three dairy futures contracts for Whole Milk Powder (WMP). This was followed by the launch of futures for Skim Milk Powder (SMP), Anhydrous Milk Fat (AMF), and Butter, as well as WMP options. Continued volume growth in NZX Dairy Derivatives supports risk mitigation in the global dairy industry into the future. Figure 1 shows the NZX Website reporting on GDT results.

<sup>1</sup> AMF = anhydrous milk fat, BMP = butter milk powder, RenCas = rennet casein, SMP = skim milk powder, WMP = whole milk powder.

Figure 1: New Zealand stock exchange reporting on GDT results



Source: [https://www.nzx.com/markets/nzx-dairy-derivatives/global-dairy-trade/210/gdt\\_price\\_report](https://www.nzx.com/markets/nzx-dairy-derivatives/global-dairy-trade/210/gdt_price_report)

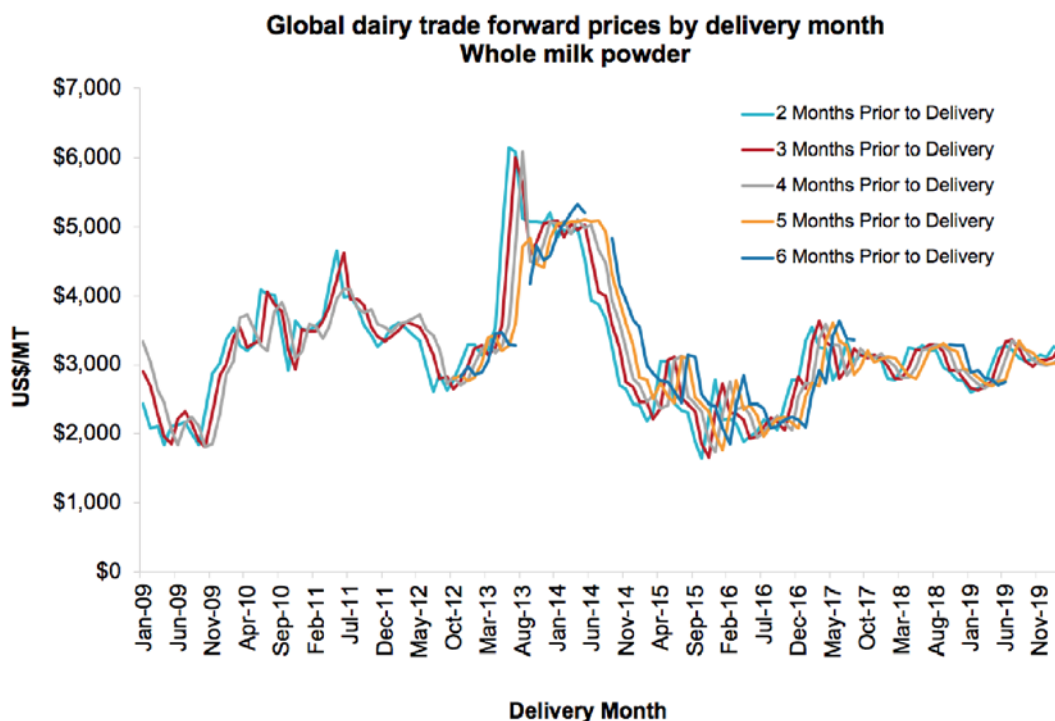
### Forward price curves from GDT-generated data

In addition to transacting physical dairy products efficiently, the GDT trading platform generates reliable, credible information about current and expected future market conditions.

Each seller can ladder the sales of their products by offering them over different delivery period contracts: starting with delivery in the calendar month following the trading event up to delivery in the sixth month following the trading event. For example, a seller may start by selling the first 10 percent of their product six months before delivery, which will allow them to sell over 12 trading events (there are two trading events each month). Most closely watched by industry and commodity traders is “Contract 2” (or C2) — delivery in the second calendar month following the trading event — for SMP and WMP products, which typically have the greatest offer volume.

Figure 2 shows forward price curves for Whole Milk Powder arising from the GDT trading events. The color graph lines show how the clearing prices for a given delivery month changed from one trading event month to the next as underlying market conditions and expectations changed.

**Figure 2: Example of forward price curves from GDT results – whole milk powder**



Source: CRA analysis

### Natural Fibre Exchange (NFX)

GDT is well known in the New Zealand business community as well as worldwide in the dairy industry. Inspired by GDT's success, New Zealand wool producers including Wools of New Zealand (WNZ), teamed up with CRA to develop the Natural Fibre Exchange (NFX).

Launched in May 2018, NFX is an online trading platform for buyers and sellers of wool and potentially other natural fibre products. Similar to GDT, this platform allows multiple sellers to offer their products to multiple buyers. The trading events occur fortnightly (every other week). All the products are offered simultaneously over multiple rounds.

Initially the NFX platform has been used by New Zealand wool market participants. NFX has the potential to bring together buyers and sellers across the globe for wool and other natural fibres.

## Conclusion

Trading platforms like GDT and NFX can bring significant economic and financial benefits to market participants. Credible prices discovered through an effective price discovery mechanism accurately reflect supply and demand conditions that are valuable signals for business planning, capital investment, and risk management activities.

Trading platforms that are designed and managed appropriately eliminate the need for middlemen and bilateral negotiations, and generate reliable market information that can be made readily available and can significantly improve economic efficiency in the industry. Lower information and transaction costs and higher quality data benefit market participants.

So why are there not more platforms like GDT and NFX? We often encounter two reasons: resistance to change and government regulation. We hear, “this is a great concept, but it won’t work for our industry,” and “the way we do things in our industry makes us different and unique.” Many industries are reluctant to change from what they are used to. Yet, the same principles apply across all industries and we have been successful in customizing trading platforms for a wide range of industries.

Government regulation often heavily impacts the trade of basic commodities such as food. For example, in the United States, Federal Milk Marketing Orders set minimum prices that processors must pay farmers for their milk. The prices are set based on a formula, using administratively collected data that do not accurately and timely reflect market conditions. Coincidentally, one of the data points published by the USDA is taken from the GDT market reports (<https://www.ams.usda.gov/market-news/dairy> — see last link in the list).

The Internet and proper application of market-design principles make auction-based trading platforms an attractive, value-added, lower-cost option for many industries. We expect trading platforms like GDT and NFX will be more prevalent in the future.

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