

Food System Impacts of Covid-19 – Research Brief 2

The Flour Sector



SOME CONTEXT

Grist to the Mill

Although harvests vary year on year depending on a number of factors, not least of which the weather, on average the UK produces around 15 million tonnes of wheat annually. About a third of this 15 million tonnes is supplied to the UK milling industry making it the single largest user of domestic wheat production. Over the past 40 years or so the UK milling sector's use of UK grown wheat has virtually doubled. By 2018-19, 85% of the wheat used by UK flour millers was domestically produced. Of the remaining 15%, 7% was imported from Canada, 4% from Germany 4%, and 2% from France and the USA respectively. In total, the UK flour milling industry processed 6.2 million tonnes of wheat in 2018-19 producing almost 5 million tonnes of flour.¹

Our Daily Bread

Around two-thirds (66%) of this 5 million tonnes of UK flour production is supplied to bakeries to make bread. The vast majority (85% by volume) of bread in the UK is produced by what are termed Large Plant

Bakers. Supermarket ISBs (In-Store Bakeries) account for 12% of bread production, while Craft Bakers make up 3% of the market.²

Not Just Bread Alone

Flour production however is about more than just bread. About one-third of the 5 million tonnes of flour produced each year is destined for other markets. About 11% goes to biscuit making, 7% is exported, 4% gets packed into 1.5kg bags stacked on supermarket shelves and sold as household flour, 2% goes to cake making, and 10% goes to make up a key ingredient of a huge and diverse range of other foodstuffs. In fact, incredibly, around one-third of all grocery products on supermarket shelves contain wheat flour, with the industry producing more than 400 different types of flour to meet increasingly specific customer demands.³

Industry Consolidation

Like many industries, in recent years the flour milling industry has continued to consolidate. There are now 32 companies operating 51 mills. The four largest companies account for approximately 65% of UK flour production. Many of the smaller millers have developed niches ranging from pre-packed flours to those for specific uses such as flours for speciality breads.⁴

THE IMPACT OF COVID

Restructuring Demand

Covid-19's impact on the UK flour sector first manifested itself in late February / early March 2020 in the form of increasing industry concern about potential disruption to the supply of fortificants and

other ingredients from overseas. (e.g. folic acid is a mandatory addition to bread and China is a key exporter). Moreover at the outset of the pandemic there were relatively small stock levels of flour held by mills and customers. With the UK flour supply chain operating close to a just-in-time system and with typically just a few days' worth of wheat/flour in the system at any given time, the sector was potentially vulnerable to supply-side disruption. By mid-March however, it was becoming increasingly apparent that Covid's impact on the flour sector was *not* going to be felt, first and foremost, on the supply-side, but on the demand-side. As was the case across many food sectors, Covid's initial impact on the flour sector served to disrupt the usual patterns and structures of demand. Overall demand for flour across 2020 remained fairly flat, but this consistency hid a huge reduction in demand for flour from the 'out-of-home' sector, particularly hospitality, and an unprecedented increase in demand for flour, from the 'in-home' retail sector. There were also other changes such as a decline in in-store bakery products in favour of wrapped products.

Pre-Lockdown Panic Buying

As a standalone item and as a key ingredient in a variety of other store cupboard favourites, flour was one of the main food stuffs associated with the 'panic buying' episode that occurred in the UK in the days and weeks running up to the imposition of lockdown 1 on 23rd March 2020 [See COMMENTARY]. This pre-lockdown panic buying led to a huge spike in demand for flour. Research from the Institute for Fiscal Studies (IFS), for example, reported that flour sales were up 46% in the 4 week period immediately prior to the first UK lockdown compared with the same period 2019.⁵ While consumer analysts Kantar, reported that grocery sales of flour were up 92% over the same period compared with 2019.⁶

The Lockdown 1 Baking Boom

The pre-lockdown retail panic buying episode turned out to be relatively short-lived, but consumer demand for flour showed no signs of diminishing as the country entered lockdown 1. On the contrary, the industry estimated that retail demand for flour over the first few months of restrictions was in the region of five to ten times greater than would be expected normally.⁷ Behind this enormous increase in demand was a lockdown baking boom, born of both need and pleasure, as people looked for ways to become more self-sufficient, deal with stress, fill new 'spare-time',

and connect with others on social media. Evidence of this baking boom was also revealed in website enquires and social media posts. Google searches for terms like 'flour', 'baking', 'sourdough', and 'focaccia', for example, saw significant spikes during the April-July 2020 period.⁸ While the BBC Food website saw record traffic during the first month of lockdown with a 540% increase in visits to its banana bread recipe, and 875% increase in visits to its basic bread recipe.⁹

COMMENTARY – Panic Buying

Images of empty shelves and stories about panic buying, and flour and pasta shortages, which appeared in the press at the beginning of the pandemic back in the early spring of 2020 first drew the public's attention to Covid's potentially disruptive impact on the UK's food supply system.

In a [working paper](#) published in October 2020, O'Connell et al. unpacked this panic buying episode using household scanner data. Their analysis revealed that there were large spikes in spending on a range of storable products (including flour) in the four weeks preceding lockdown. Spending on staples such as canned goods, pasta, rice and grains rose sharply at the end of February, peaking on 14th March at over 80% of the January - February daily average. In the four weeks up to 23rd March 2020, soup sales, for example, were up 75% compared to the same period in 2019, rice and noodles were up 54%, and dried pasta 49%. Spending on discretionary calories such (e.g. alcohol, desserts, confectionery and soft drinks) and perishable foods (e.g. fruit, vegetables, meat, and dairy) also increased, but not to the same extent as staples. Interestingly, and contrary perhaps to press reports of the 'selfish and greedy' individual hoarder, O'Connell et al.'s analysis showed that the spike in spending in the run-up to lockdown on staples and household supplies was driven not by a small number of extreme purchasers but by many more households than usual choosing to buy these products, with only small increases in the average quantities bought per transaction.

Warnings of panic-buying and images of empty shelves became a common and recurring motif in the press throughout the pandemic, but a repeat of the pre-lockdown 1 episode examined above, never materialised. Supermarket shelves may have looked a bit sparse at times over the past couple of years but these occasions have been, thankfully, relatively rare and short-lived. Contrary to the image of the empty shelf, the UK food system, proved itself to be remarkably resilient, adaptive and adept at ensuring that, to date, the supply tap has remained on and shelves have remained [mostly] fully stocked. Food production and supply chain infrastructure, in the face of significant Covid-related challenges, has proved to be fairly robust and the vast majority of food types, flour included, have continued to be readily available in the UK. This, however, was not without cost, and considerable expenditure of time, labour and money, depleting many firms' financial and human resources.

RESPONSES

A Doubling of Flour sold in Retail Bags.

In response to this sudden and unprecedented increase in retail demand for flour, some UK flour mills pivoted production lines from wholesale to retail and many began operating 24 hours a day, 7 days a week. Despite a number of Covid-related production challenges related to requirements to establish social distancing restrictions, a shortage of specialist milling PPE, and self-isolation related labour issues, the UK milling sector was able to effectively double production from 2 million to 4 million 1.5kg bags in a matter of days.

Despite an industry wide effort, however, which saw many mills operating at maximum capacity, UK flour production was still not sufficient to meet retail demand. At the beginning of April 2020, Alex Waugh, Director of NABIM (National Association of British and Irish Millers) suggested there was only sufficient flour for 15% of households to buy a bag of flour per week.¹⁰ By June the situation was hardly any better with analysis by Shepper suggesting that flour availability was at an average of 29% across major supermarkets.¹¹ The problem was not with the supply of wheat, nor with the production of sufficient flour per se, the issue was primarily a packing and packaging one.

A Packing and Packaging Problem

The UK produces around 90,000 t of standard flour each week, but only 12 of the 50 mills in the country are geared towards retail and the production of 1.5kg bags. Most mills supply flour to big food brands and bakeries and do so in tankers or in large 25kg or 16kg bags. Adapting these packing lines to produce smaller retail 1.5kg bags was not easily done and often meant acquiring both new machines to bag the flour and stocks of the 1.5kg bags themselves, both of which were in short supply. The other major constraint on the supply of flour to the retail sector, was simply the time it took to fill small 1.5kg bags. Packing a tonne of flour into a tanker or even into 25kg or 16kg bags can be done quickly and efficiently. Packing a tonne of flour into individual 1.5kg bags takes much longer.

A Pivot to Direct Sales

To address these packing and packaging problems, many mills sought to meet demand by selling flour direct to consumers in large 25kg or 16kg bags, either from the mill gate or online. Some bakeries, including some supermarket ISBs, also adapted and started

selling flour direct to consumers from their own stocks,¹² while others acted as brokers, taking orders from local customers and buying in bulk direct from mills.¹³ NABIM also responded quickly to the national 'retail' flour shortage by developing and launching in mid-April the '[Where can I buy flour?](#)' resource, an online map designed to facilitate the direct sales process by pointing home-baking consumers in the direction of outlets (mills, local bakeries, wholesalers) that were selling commercial-sized bags of flour.

INTERVIEWEE QUOTE

"At one point I had to find a 100,000 1.5kg bags with 2 days' notice. Before the pandemic all our 1.5kg bags came from Italy, which wasn't going to happen during the pandemic, so I sourced 100,000 from elsewhere.... We normally use 100g specialist bags, but we couldn't get them, so I had to buy 80g ones from two alternative companies, that we've never bought from before"

Emily Munsey, Director, Wessex Mill

A Plea Not to Panic Buy

By mid-summer 2020, as lockdown 1 restrictions began to ease, and the hospitality sector began to reopen, and people began to venture out, retail demand for flour fell back from its spring peak. Nevertheless, demand remained significantly higher over the Q3 2020 period than it had been the previous year and many mills continued to operate at increased capacity by running retail packing lines 24/7. By the autumn, with some restrictions re-imposed, and a second lockdown looming on the horizon, and the return of *The Great British Bake-Off*, there were fears of a second episode of panic buying and shoppers emptying supermarket shelves of 1.5kg bags of flour. Keen to avoid a second run on flour, NABIM issued a statement reassuring the public that mills were reporting satisfactory wheat stocks, flour stocks, packaging and labour, and urging them to only buy flour as they needed it.¹⁴

Lockdowns 2 and 3

While flour sales did indeed spike again, up 73% during the final week in September 2020 compared with the previous year,¹⁵ there were minimal signs of panic-buying or a repeat of the discrepancy between demand and supply for retail flour that had been a feature of earlier in the year. The sector did face some end of year challenges related to a poor domestic wheat harvest and growing uncertainty over Brexit, but it nonetheless still managed to finish the year strongly.¹⁶ For many in the flour sector 2020 was a tumultuous and utterly exhausting year, but it also proved, for some, a relatively profitable one, particularly for those who already supplied, or were able to successfully pivot to, retail and/or direct sales. Largely as a result of the Covid-related home-baking boom, 2020 was, unsurprisingly, a 'bumper year' for sales of pre-packed flour, up 36% on the previous year.¹⁷ 2021 brought another lockdown (3), and some further Covid related labour issues associated with the 'pingdemic', but with retail demand settling down (albeit still above 2019 levels) and with hard lessons learnt from lockdowns 1 and 2, the impact of Covid on the flour sector, while still evident, was much diminished and more easily managed.

INTERVIEWEE QUOTE

"You'd bump in to people you hadn't seen since Covid began, and they were like: 'oh, you were on the news, it's so brilliant', and we were like: 'no, it was terrible'. The whole thing was awful, I hated it, I never want to experience that again... absolutely god awful. And people were like: 'you must've made great money', and the company did make good money, but that money is now required to replace all the things that we've run into the ground trying to keep things going and keep up with demand."

Emily Munsey, Director, Wessex Mill

CASE STUDY – Wessex Mill

Wessex Mill in Oxfordshire is a family business run by fifth generation miller Emily Munsey and her father Paul. It is the smallest roller mill in the country producing about 80 tonnes per week, 80% of which (pre-Covid) went to bakeries of varying scales, and 20% of which was packaged into 1.5kg bags and destined, via wholesalers, for the farm-shop sector. The impact of Covid was first felt in the week commencing 16th March 2020 when sales of 1.5kg bags began to increase. By the following week sales had doubled, and by the beginning of April through to July they were selling whatever they could produce.

Meeting this massively increased demand for 1.5kg bag while also managing the impacts of Covid on the business took strategic planning and some radical adaptations. For the first time in the mill's 125 year history it began operating 24 hours a day. The workforce was split into two separate, minimal contact, day and night shifts. To compensate for the loss of permanent staff who needed to self-isolate, temporary staff were hired from the local labour pool of recently laid-off construction workers. The number of lines operating and varieties of flour produced was also significantly reduced, down from 30+ to 5 key varieties. By mid-April 90% of production was focussed on strong white flour with the remainder made up of wholemeal, cobber, plain, and self-raising. Production also pivoted from supplying flour in tankers and large bags, to medium 16kg and small 1.5kg bags. Pre-Covid the mill was producing around 15 tonnes of 1.5kg bags per week. At its peak during lockdown 1 it was producing 90 tonnes.

This 6 fold increase in production, however, was still not sufficient to meet consumer demand. The mill was receiving hundreds of telephone calls a day and dozens of visits from people wanting to buy flour for home use. Due to the sheer volume of visitors to its website it was also forced to only open its online store for 10 minutes per day. This short 10 minute window was nevertheless still enough to generate 10 tonnes' worth of orders.

The intensity of production took its toll on both the workforce and the mill's machinery so it was with great relief that things started to calm down by the end of lockdown 1. The night shift came to an end, the number of lines increased again, and the number of telephone calls and online orders reduced to more manageable levels. Lockdowns 2 and 3 were busier than normal but nowhere near the extent experienced during the first lockdown. In late 2021 the impact of Covid, however, is still being felt in various ways. Masks continued to be worn and the mill shop remains closed. Demand has also not returned to pre-pandemic patterns. Sales of 1.5kg bags have stabilized at roughly twice the level they were pre-Covid, while on-line sales now account for four-time the number they did in 2019.



Wessex Mill 1 – Image Courtesy of Emily Munsey



Wessex Mill 2 – Image Courtesy of Emily Munsey



Wessex Mill 3 – Image Courtesy of Emily Munsey

KEY RESOURCES

UK Flour Millers (previously NABIM) - <https://www.ukflourmillers.org/>

Flour Advisory Bureau - <https://fabflour.co.uk/>

Winter, M. et al. (2021) Expert Panel Meeting 5 – Redacted Meeting Notes

REFERENCES

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- 4 <https://www.ukflourmillers.org/flourmilling>
- 5 O’Connell, M., de Paula, A. and Smith, K. (2020) *Preparing for a pandemic: Spending dynamics and panic buying during the COVID-19 first wave* available at <https://ifs.org.uk/publications/15100>
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- 7 Winter, M. et al. Expert Panel Meeting 5 – Redacted Meeting Notes
- 8 White, V. (2020) *Baking for stress-relief during a pandemic* available at <https://blogs.exeter.ac.uk/foodsystemimpacts/v19/blog/2020/10/22/baking-for-stress-relief-during-a-pandemic/>
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- 10 <https://fabflour.co.uk/fab-news/availability-of-flour-in-shops/>
- 11 As reported in *The Grocer* - <https://www.thegrocer.co.uk/service-and-availability/coronavirus-availability-which-supermarkets-have-the-best-stocks-of-flour/605350.article>
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