

# The difference between price fixing and fixing competition: The Israeli “Bread Cartel”

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## 1. Introduction

We study a price-fixing agreement between the four largest industrial bakeries in Israel which took place from mid-February 2010 to the end of May 2010. The agreement involved the prices of standard bread and challah that are subject to price cap regulation.<sup>1</sup> Combined, the bakeries - Angel Bakeries Ltd., J&E Berman Group Ltd., Davidovitz and Sons Bakery Ltd., and the Dganit Group – account for 90-95% of the sales of these products. The conspiracy ended when the Israel Competition Authority (ICA) started an open investigation of the affair and conducted a dawn raid of the bakeries’ offices and arrested their CEOs at the end of May 2010. The ICA viewed the case as one of its flagship cases,<sup>2</sup> and the popular press - which referred to the case as the “Bread Cartel” - described it as “one of the most serious affairs uncovered by the Antitrust Authority” and one that came at the expense of the “weak and needy.”<sup>3</sup>

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<sup>1</sup> Challah is a special bread, usually braided and typically eaten on Shabbat. For details about the case, see Criminal Case Number 28192-08-12, *The State of Israel vs. Angel and others*, <https://www.gov.il/BlobFolder/legalinfo/28192-08-12/he/%D7%AA%D7%A4%2028192-08-12%20%D7%90%D7%A0%D7%92%D7%9C.pdf> (henceforth “*The State of Israel vs. Angel and others*”).

<sup>2</sup> See “The bread cartel: hitting the pocket and not the prison,” Avner Finkelstein, *Calcalist*, March 22, 2017, <https://www.calcalist.co.il/Ext/Comp/ArticleLayout/CdaArticlePrint1280/0,16492,3710149,00.html>.

<sup>3</sup> See “The bread cartel affair: The bakeries committed offenses under aggravating circumstances,” Ela Levi-Weinrib, *Globes*, July 9, 2015, <https://www.globes.co.il/news/article.aspx?did=1001051611> or “The serious bread cartel is well organized by senior officials - on the backs of the weak and the needy,” Ora Koren and Amit Ben-Aroya, *Haaretz*, May 25, 2010, <https://www.haaretz.co.il/misc/2010-05-25/ty-article/0000017f-dbda-d856-a37f-ffdabbc10000>

In the process of its investigation, the ICA wiretapped the phones of the bakeries' executives, including those of the CEOs of the four large bakeries, for 90 days from the beginning of February 2010 (before the agreement started) until the end of April 2010. This gave the ICA access to hundreds of phone conversations, and provides us with a unique perspective on the inner workings of the agreement, right from its inception.

Among other things, the ICA found that during the relevant period, the four CEOs had met at the offices of a leading Tel Aviv law firm, lower-level managers had met in a gasoline station on the Trans-Israel highway, and the bakeries' executives had hundreds of phone conversations about prices and customers. In these meetings and phone conversations, the executives had agreed to raise the price of sliced dark bread and challah in some stores and to stop competing for each other's customers. The evidence indicates that, by and large, the bakeries complied with these agreements.

In July 2015 and November 2017, the Jerusalem District Court found the four large bakeries and their executives guilty of conspiring to fix prices and divide the market for sliced dark bread and challah.<sup>4</sup> The Court held that "Both agreements, by their content and essence, posed a significant potential harm to competition,"<sup>5</sup> and convicted the bakeries and their executives of violating the Israeli Economic Competition law under "aggravating circumstances."<sup>6</sup> The executives were then sentenced to 4-12 months in jail, which were unprecedented criminal sentences in Israel for price fixing.<sup>7</sup>

Although the bakeries' executives admitted to most of the charges, they had a different interpretation of the events, which was relevant for determining whether the offense was committed under aggravating circumstances. In particular, the executives claimed that their agreements were intended to stop a "price war" that erupted at the end of 2009 and the beginning

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<sup>4</sup> The Berman Group Ltd., the Davidovitz and Sons Bakery Ltd., and their executives were found guilty in July 2015. Angel Bakeries, the Dganit Group and their executives were found guilty only in November 2017 following a plea bargain.

<sup>5</sup> *The State of Israel vs. Angel and Others*, Paragraph 580.

<sup>6</sup> "Aggravating circumstances" are defined in Section 47A of the Israeli Economic Competition law as "circumstances in which significant harm may be caused to business competition." The maximum sentence for criminal offenses of the Israeli competition law is five years of imprisonment rather than three if the offense was committed under aggravating circumstances.

<sup>7</sup> Mr. Angel, the CEO of Angel Bakeries and a partial owner was sent in 2017 to 5 months in jail after reaching a plea bargain, the CEO of Dganit Group got 4 months of community service, and the chairman of the board of Dganit Group got a monetary fine due to personal health circumstances.

of 2010 mainly in ultra-orthodox neighborhoods.<sup>8</sup> They also argued that the agreement to stop competition for each other's customers was incidental to the main agreement to raise prices and was intended to ensure that the price war would not erupt all over again. On these grounds, the Davidovitz and Sons Bakery (henceforth "Davidovitz"), Mr. Davidovitz, and the CEO of the Berman Group (henceforth "Berman") had appealed the District Court's decision to convict them under aggravating circumstances to the Supreme Court. The State of Israel had also appealed the sentences of the two executives, arguing that they were not severe enough.<sup>9</sup> The Supreme Court rejected the appeals in March 2017 and stated in the lead opinion that "...the present case is indeed one of those exceptional cases in which the harm to competition is particularly severe."<sup>10</sup> Nonetheless, it reduced the executives' sentences to 3 months in jail and 3 months of community services.

Several important features of this case are worth emphasizing. First, sliced dark bread and challah, which are at the center of the case, are subject to price cap regulation, which is designed to cover the bakeries' costs, including their cost of capital. However, due to the considerable market power that retail chains have vis-à-vis the bakeries, the retail prices of sliced dark bread and challah are on average 5%-15% below their retail price caps. As a result, the bakeries sell them to retailers at a loss.<sup>11</sup> The bakeries argue that these losses are a price they are forced to pay in order to sell other bread products to retailers, on which they make positive margins. Although sliced dark bread and challah were already sold at a loss, a few months before the bakeries had reached their agreements, Davidovitz had started offering them in some stores at a special deal of "3 loaves for 10 NIS," (henceforth "3 for 10"); these deals had triggered a price war.

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<sup>8</sup> Specifically, the Court mentioned Jerusalem, Bnei Brak, Beit Shemesh, Beitar, Elad, and Kiryat Sefer. See *The State of Israel vs. Angel and Others*, Paragraph 53.

<sup>9</sup> See Criminal Case Appeals Numbers 1656/16, 1665/16, and 1674/16 *Davidovitz and others vs. The State of Israel and J&E Berman Ltd.* <https://www.psakdin.co.il/Court/%D7%A4%D7%A1-%D7%93-%D7%91%D7%A2%D7%A8%D7%A2%D7%95%D7%A8-%D7%94%D7%9E%D7%93%D7%99%D7%A0%D7%94-%D7%95%D7%A2%D7%A8%D7%A2%D7%95%D7%A8%D7%99%D7%9D-%D7%A9%D7%9B%D7%A0%D7%92%D7%93-%D7%91%D7%A2%D7%A0%D7%99%D7%99%D7%A0%D7%9D-%D7%A9%D7%9C-%D7%99%D7%94%D7%95%D7%93%D7%94-%D7%A9%D7%A0%D7%99%D7%99%D7%93%D7%9E%D7%9F-%D7%9E%D7%90%D7%A4%D7%99%D7%99%D7%AA-%D7%91%D7%A8%D7%9E%D7%9F-%D7%95%D7%99> (henceforth "*Davidovitz and others vs. The State of Israel*").

<sup>10</sup> *Davidovitz and others vs. The State of Israel*, Paragraph 94.

<sup>11</sup> *The State of Israel vs. Angel and others*, Paragraph 422.

To appreciate this deal, one should bear in mind that the regulated retail price cap at the time was 6.66 NIS for sliced dark bread and 4.84 NIS for challah and the corresponding wholesale price caps, which do not include VAT (16% at the time), were 5.07 NIS for sliced dark bread and 3.72 NIS for challah. These prices reflect the bakeries' costs plus a fair rate of return on invested capital. A "3 for 10" deal implies a retail price of 8.62 NIS after VAT for 3 loaves; once a retail margin is accounted for, the effective wholesale price per loaf is then substantially below the regulated wholesale price. Importantly, the "3 for 10" deals were offered only in a limited number of stores, mainly in ultra-orthodox neighborhoods in the Jerusalem area, which is the "home turf" of Angel Bakeries (henceforth "Angel") and Berman. Angel and Berman had reacted by also offering "3 for 10" deals in some stores. The deals are attractive to ultra-orthodox families, which tend to be very large and consume a lot of bread, and are typically low income.

Second, although the bakeries agreed to stop the "3 for 10" deals on dark sliced bread and challah and raise retail prices to "2 for 10" on sliced dark bread and "3 for 11" for challah, these prices were still substantially below the regulated price caps and were also below the average retail prices across all stores in Israel at the time (6.30 NIS for sliced dark bread and 4.61 NIS for challah).<sup>12</sup>

Third, the bakeries agreed to stop the "3 for 10" deals in stores that had offered these deals, rather than raise the prices of all types of bread in all stores (or a subgroup of stores). In fact, the bakeries have argued that the "3 for 10" deals had been offered in only about 40 stores. Although the Court was unable to verify this claim, it nonetheless agreed that the number of stores that had offered these deals was not substantially different.<sup>13</sup>

Fourth, as already mentioned, the main disagreement between the ICA and the bakeries was how to interpret the price-fixing agreement. The ICA argued that prior to the agreement, the bakeries had engaged in "fierce competition" over market shares, which involved low prices, promotions, and attempts to acquire new customers. It also argued that the bakeries had formed a cartel, intended to raise prices and divide the market in order to boost the bakeries' profits at the

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<sup>12</sup> It might be argued that selling regulated bread at low prices was part of competition to get an access to stores, where the bakeries sell unregulated bread at positive margins. However, the "3 for 10" deals were exclusively offered in stores where the bulk of the demand is for regulated bread and where customer loyalty is very low.

<sup>13</sup> *The State of Israel vs. Angel and others*, Paragraph 66.

public's expense.<sup>14</sup> The ICA also claimed that, but for the cartel, the competitive actions of the bakeries would have continued for a long period of time.<sup>15</sup> The bakeries argued instead that the motivation for the agreements was to stop a price war that had erupted in some stores and prevent it from spreading to other stores and that the price war was in any event short lived and would have stopped on its own. They also argued that the agreement to stop competing for customers was an ancillary agreement, "rooted in the desire to bring about the cessation of the "3 for 10" deals"; that is it was incidental to the main agreement to raise prices.<sup>16</sup> The Court on its part, argued in its summary of events, that the "3 for 10" deals were driven by the bakeries' attempt to invade each other's territories and gain market shares, as well as by a "deterrent - punitive element" in response to the competitive initiatives of the rival bakeries.<sup>17</sup>

In this paper, we review the bread case. We begin in Section 2 by reviewing the Israeli bread market and its relevant characteristics for the case. In Section 3 we describe the price-fixing agreement in detail, and in Section 4 we discuss the possible interpretations of the events. We conclude in Section 5.

## **2. The Israeli bread market**

The Israeli bread market can be divided into three main segments.

- a) Standard bread (dark and white bread, sliced and unsliced) and challah, which are subject to price cap regulation at the wholesale and retail levels by the inter-ministerial price committee of the Ministry of Finance and the Ministry of Economy and Industry which operates under the 1996 Supervision of Prices of Goods and Services Act.
- b) Other types of bread (e.g., whole-grain bread, multigrain bread, light bread, and rye bread) and various types of challah (e.g., sweet challah, light challah, and spelt challah) which are not

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<sup>14</sup> See the prosecution's Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraphs 6, 28, 58, 703, 732.

<sup>15</sup> See the prosecution's Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraph 299.

<sup>16</sup> *The State of Israel vs. Angel and others*, Paragraph 134-136.

<sup>17</sup> *The State of Israel vs. Angel and others*, Paragraphs 32 and 473.

subject to price controls and sold at about twice or even three times the price of price-controlled bread.<sup>18</sup>

c) Pita bread and rolls.

There are strong indications that price-controlled bread is a distinct market, including the large gap between its price and the price of other types of bread and various indications for a limited degree of substitutability between these breads (Price Committee, 2021). Indeed, the Court determined that price-controlled bread is the relevant market for the case.<sup>19</sup> In what follows, we will therefore focus on this market.

## 2.1 The market for price-controlled bread

Similarly to traditional rate of return or price cap regulation, the price cap on standard bread and challah is set to cover the firms' costs and ensure investors a fair return on their investment. By design then, the wholesale price cap reflects the average total cost of bread (including its cost of capital), and the retail price cap is equal to the wholesale price cap plus a normal retail margin and VAT.<sup>20</sup> Table 1 shows the wholesale and retail price caps on dark bread (sliced and unsliced) and challah, which account for nearly all sales of price-controlled bread. As the table shows, the regulated price caps were adjusted several times during the 2009-2011 period due to exogenous cost shocks such as changes in the price of flour or energy, or due to changes in VAT.<sup>21</sup>

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<sup>18</sup> For instance, an Excel sheet in "The Consumer Council's Inspection: Where are the Best Deals on Bread?" June 26, 2016, [https://www.consumers.org.il/item/semel\\_030716](https://www.consumers.org.il/item/semel_030716) shows that on average, the price of special breads within the same supermarket chain was 2.1-2.9 times higher than the price of price-controlled bread.

<sup>19</sup> *The State of Israel vs. Angel and others*, Paragraphs 309-321.

<sup>20</sup> An important caveat is that the price cap is based on data that is averaged across bakeries and hence may exceed the average cost of one bakery, but be below the average cost of another.

<sup>21</sup> The rate of VAT was raised from 15.5% to 16.5% on July 1, 2009 and was lowered to 16% on January 1 2010.

**Table 1: The regulated price cap of sliced dark bread in NIS, 2008-2013**

Effective date	Sliced dark bread		Dark bread		Challah	
	Wholesale price (excl. VAT)	Retail price (incl. VAT)	Wholesale price (excl. VAT)	Retail price (incl. VAT)	Wholesale price (excl. VAT)	Retail price (incl. VAT)
December 4, 2008	5.33	6.96	3.60	4.64	3.91	5.07
March 12, 2009	5.10	6.66	3.44	4.44	3.74	4.84
June 22, 2009	5.26	6.88	3.56	4.59	3.86	5.00
July 1, 2009	5.26	6.94	3.56	4.63	3.86	5.05
October 29, 2009	5.07	6.69	3.43	4.46	3.72	4.86
January 1, 2010	5.07	6.66	3.43	4.44	3.72	4.84
August 5, 2010	5.25	6.90	3.55	4.60	3.86	5.02
October 3, 2010	5.44	7.15	3.68	4.77	3.99	5.20
February 8, 2011	5.63	7.38	3.80	4.92	4.13	5.37
August 14, 2012	5.99	7.87	4.05	5.24	4.40	5.72

As we discuss below, due to the considerable market power that retail chains have vis-à-vis the bakeries, the price caps are not binding: in 2009-2011, the retail prices of dark bread and challah were 5%-15% below their retail price caps, which suggests that these products were sold at below cost (including a fair rate of return on investments).

Based on data from Israel's Central Bureau of Statistics, as of 2012, price-controlled bread accounted for 15% of the total sales of bread in Israel in NIS (Price Committee, 2021, Table 1).<sup>22</sup> The share of price-controlled bread in the total sales of the four large bakeries is much higher though. For instance, in 2010, price-controlled bread accounted for 38%-43% of the total sales of bread in NIS at Angel - the largest bakery in Israel - and 35%-40% of its total sales in NIS; this share had dropped to 30%-34% by 2015.<sup>23</sup> The share of price-controlled bread in the total sales of Berman and Davidovitz – the second and third largest bakeries in Israel - was similar.<sup>24</sup>

A breakdown of sales in tons of price-controlled bread by store type, based on data from StoreNext,<sup>25</sup> indicates that in 2008-2013, sliced dark bread accounted on average for 65% of the

<sup>22</sup> The figures for earlier years should probably be somewhat higher, as the share of price-controlled bread in the total sales of bread in NIS had declined steadily over time and dropped from 15% in 2012 to 8.2% by 2018.

<sup>23</sup> See Salomon A. Angel Ltd., Financial Statements for 2010, Sec 26.1 (in Hebrew), and Salomon A. Angel Ltd., Financial Statements for 2015, Sec 27.2 (in Hebrew).

<sup>24</sup> *The State of Israel vs. Angel and others*, Footnote 55.

<sup>25</sup> StoreNext is a market research company that collects data directly from the cash registers of over 3,000 stores, mainly in the Jewish sector. The data covers around 80% of the market, including most of the major supermarket chains, as well as about 60% of all minimarkets. The data is extrapolated to reflect sales in the entire market.

sales of price-controlled bread, challah accounted for 19%, and dark loaves of bread for 15%. The sales of white bread are negligible and indeed, the agreements between the bakeries did not directly involve the price of white bread.

Table 2 below shows a breakdown of the sales in tons of sliced dark bread and challah by store type, again based on StoreNext data. There are four store types in our data: the first two, “main local chains” and “main hard discount (HD) chains,” belong to the main supermarket chains. HD stores are large and carry a large assortment of products; local stores are smaller, carry fewer products, and tend to charge higher prices. The third category, “other HD chains,” refers to HD stores that belong to smaller HD supermarket chains. The last category, “small stores,” includes minimarkets, grocery stores, and convenience stores. Table 2 shows that most of the sales are in the main supermarket chains and especially their HD stores. It should be noted that most stores that offered the “3 for 10” deals were in the small stores category.<sup>26</sup>

**Table 2: The distribution of sales in tons of sliced dark bread and challah by store type, 2008-2015**

	Main local chains	Main HD chains	Other HD chains	Small Stores
Dark bread	35%	60%	2%	3%
Sliced dark bread	22%	45%	12%	21%
Challah	25%	59%	8%	8%

Since the late 1980s, the price-controlled bread market in Israel has gone through a consolidation process that involved a series of mergers and acquisitions. As of the early 2000’s, Angel, Berman, Davidovitz, and Dganit are the largest industrial bakeries in Israel and account for about 50% of the total sales of bread in Israel, and 90%-95% of the sales of price-controlled bread.<sup>27</sup> The consolidation of industrial bakeries is not unique to Israel: a similar process took place in the U.S. and the UK (see Appendix 7.2 in Sutton, 1991), and in South Africa (Mncube, 2013).<sup>28</sup>

<sup>26</sup> Sales at “small stores” may be biased downward however as small stores are underrepresented in the StoreNext data.

<sup>27</sup> The only other bakery that supplies price-controlled bread is the Agami Bakery, located midway between Tel Aviv and Haifa. See *The State of Israel vs. Angel and others*, Paragraph 335. The market for non-industrial bread is much more fragmented and even today there are “hundreds of bakeries” in Israel (RIC, 2022).

<sup>28</sup> Interestingly, Block, Nold and Sidak (1981) report that during the 1960’s and 1970’s, bread cases were the most common among DOJ’s food price-fixing cases.



As we will discuss in detail below, the bread market has an important geographic dimension. At a national level though, the largest bakery in Israel is Angel, with an estimated market share of around 20% as of 2010.<sup>29</sup> Angel owns bakeries in Jerusalem, Lod (the center of Israel), and Netivot (the south of Israel), 50% of a bakery in Kfar Hahores (south east of Haifa), and a pastry factory in Beit Shemesh (near Jerusalem). Berman is the second largest group and owns bakeries in Jerusalem, Ramat Hasharon, Holon, and Bat Yam (the last three are in the Tel Aviv metropolitan area). The third largest group is Davidovitz; it owns bakeries in Kiryat Ata (east of Haifa) and Holon (the Tel Aviv metropolitan area). The fourth largest bakery is Dganit, which owns the Dganit Ein Bar bakery in Kibbutz Einat (center of Israel) and the Merhaviv Bakery in Kiryat Shmona (upper Galilee in the north of Israel). The last two bakeries have cross ownership links: Davidovitz holds 50% of the voting rights and 33% of the cash flow rights in the Merhaviv Bakery, which in turn holds 50% of the Dganit Ein Bar bakery (the remaining 50% are held by Kibbutz Einat).

## **2.2 Important characteristics of the bread market**

The Israeli price-controlled bread market has several characteristics that are important for understanding the case. First, the market is highly competitive because standard bread and challah are homogeneous products and consumers are price sensitive with little brand loyalty (Price Committee, 2021, p. 10-11).<sup>30</sup> In addition, the supply of price-controlled bread is highly elastic because the four large bakeries have excess capacity and can easily expand their production levels (Price Committee, 2021, p. 11), and because bread is delivered to stores on a daily basis, so the bakeries observe the retail prices of breads produced by competing bakeries and can respond to these prices in real time.<sup>31</sup> Another factor that makes the industry highly competitive is that most retailers source bread from only one or two bakeries (Price Committee, 2021, p. 10), so if a bakery is not selected by a given store as a designated supplier, it cannot sell bread at all at that store. Moreover, absent long-term supply contracts, retailers can fairly easily switch bakeries.

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<sup>29</sup> See Salomon A. Angel Ltd., Financial Statements for 2010, Sec 1.2 (in Hebrew).

<sup>30</sup> For instance, Mr. Davidovitz testified that at least in ultra-orthodox neighborhoods where price competition is intense and products loyalty is low, “I cannot sell for even one minute after I raise the price.” *The State of Israel vs. Angel and others*, Paragraph 399.

<sup>31</sup> Although the bakeries cannot observe the wholesale prices of competing bakeries, our understanding is that they can infer them fairly reliably from the retail prices.

A second important characteristic of the bread industry is that the four large bakeries produce and sell both standard bread and challah, which are subject to price controls, as well as other types of bread that are not subject to price controls. Although the agreements between the bakeries involved only the prices of sliced dark bread and challah, it is conceivable that other segments of the market may have also been affected due to unilateral effects.<sup>32</sup> However, since the Court did not address this possibility explicitly, we will restrict our attention only to the price-controlled bread market.

Third, evidence presented in court indicates that retail chains have considerable market power vis-à-vis the bakeries.<sup>33</sup> Similarly, the Price Committee report (Price Committee, 2021, p. 10) argues that:

“The bakeries have difficulty negotiating with the retailers and are required to give them large discounts, in order to ensure that the supply agreements, which can be canceled at any time without reservations or preconditions, are not cancelled.”

Indeed, the large bakeries have complained for years that due to the discounts that they are forced to give large supermarket chains, standard bread and challah are sold at a loss at prices that are well below their regulated price caps. The bakeries claim that they are willing to sustain these losses because supermarket chains require them to offer all types of bread. That is, the losses on standard bread and challah are in effect a price that they are forced to pay in order to be able to sell other bread products in supermarket chains. In fact, the inter-ministerial Price Committee found that the bakeries’ profitability is low or even negative (Price Committee, 2021, p. 13), and the committee’s head from 1995 to 2011, Mrs. Zvia Dori, testified in court that during her entire time in office as a government official, standard bread and challah were always sold at a loss to retailers.<sup>34</sup> Moreover, an audit by an accountant hired by the Price Committee found that in 2010, Berman lost “millions of NIS” on sales of standard bread a challah.<sup>35</sup>

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<sup>32</sup> There is no evidence that the bakeries had discussed any bread types other than those involved in the “3 for 10” deals, i.e., sliced dark bread and challah.

<sup>33</sup> *The State of Israel vs. Angel and others*, Paragraphs 193-194.

<sup>34</sup> *The State of Israel vs. Angel and others*, Paragraph 422.

<sup>35</sup> *The State of Israel vs. Angel and others*, Paragraph 426.

Fourth, historically, the bread market tended to be localized. This tendency was driven by the need to deliver fresh bread to stores early in the morning on a daily basis. Moreover, when serving a particular store, closer bakeries have a cost advantage over more distant bakeries due to lower costs of distribution which gives them a strategic advantage. Thus, the bakeries' cost functions depend not only on their output levels, but also on structure of the network of retailers that each of them supplies. Not surprisingly then, Angel and Berman, which were originally located in Jerusalem, dominated the Jerusalem area and the south of Israel; Davidovitz, which is located near Haifa, was the dominant industrial bakery in the north of Israel; and Dganit, which is located in the center of Israel, operated mainly in that area.

Over time, however, the industrial bakeries expanded into new geographic areas. This geographic expansion was driven by several factors. First, the bakeries started using an enzyme that preserves the freshness of bread for several days and allows them to ship it over longer distances. Second, the four large bakeries increased their production facilities and had excess capacity; moreover they acquired bakeries in other geographic areas, which made it possible to serve larger geographic areas. In particular, Angel and Berman have started to expand in the north of Israel, where Davidovitz had been the dominant bakery. Angel entered the Haifa market following a merger with Oranim Bakery in 2001, and Berman started expanding in the north and made low price offers to some of Davidovitz's customers. Davidovitz in turn, tried to expand in the Jerusalem area, which was the "home turf" of Angel and Berman, as part of a strategy that began about five years before the "bread cartel."<sup>36</sup> A third factor that contributed to the geographic expansion of the bakeries was the geographic expansion of supermarket chains that had exclusive deals with some of the bakeries. For example, Rami Levy, which is by now the second largest supermarket chain in Israel, and at the time was selling exclusively Angel's bread, expanded into the Haifa region in 2009 and started selling Angel's bread in an area that was until then dominated by Davidovitz.<sup>37</sup>

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<sup>36</sup> *The State of Israel vs. Angel and others*, Paragraphs 35-36.

<sup>37</sup> Based on private communication with Yaron Angel.

### 3. The bakeries' agreements

In this section we describe the bakeries' agreements; in doing so, we rely on the decisions of the Jerusalem District Court and the Supreme Court.<sup>38</sup>

#### 3.1 The background to the agreements

As mentioned earlier, historically the bread market tended to be localized, but over time, the industrial bakeries had started to "invade" each other's territories. A number of executives testified in court that while the bakeries had constantly been trying to acquire new customers, competition in the industry featured "ebb and flows" with waves of intense competition, followed by periods of less intense competition.<sup>39</sup> It appears from the evidence that at the end of 2009 and the beginning of 2010, competition for new customers was at a peak and was especially intense between Davidovitz and Berman. In fact, a contractor of Davidovitz testified that competition during that period was "the longest and most difficult war we have ever had."<sup>40</sup>

Specifically, it appears that in January-February 2010, Berman made extensive efforts to expand in the north and transferred two additional salesmen to the north to support these efforts.<sup>41</sup> Berman's CEO testified that these "aggressive" efforts to penetrate dozens of stores that were previously served mostly by Davidovitz were a retaliation against Davidovitz, after Davidovitz "took" from Berman 17 stores in the north. He also testified that while these efforts were costly, they were meant to convey a message to Davidovitz that "there is a price for every harm done to us."<sup>42</sup> A sales and marketing manager at Berman testified that the motivation for these efforts was twofold:

"If someone has slapped me, he will receive a slap, so things are focused in the direction of Davidovitz.... It is both a desire to expand and the desire to retaliate."<sup>43</sup>

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<sup>38</sup> We rely mainly on *The State of Israel vs. Angel and others* and on *Davidovitz and others vs. The State of Israel*.

<sup>39</sup> *The State of Israel vs. Angel and others*, Paragraph 49. Although the ICA has argued that these fluctuations in the intensity of competition were not necessarily natural and entirely spontaneous, the Court did not have sufficient evidence to substantiate the argument at the level required in a criminal trial, see *The State of Israel vs. Angel and others*, Paragraph 52.

<sup>40</sup> *The State of Israel vs. Angel and others*, Paragraph 29.

<sup>41</sup> *The State of Israel vs. Angel and others*, Paragraph 27.

<sup>42</sup> *The State of Israel vs. Angel and others*, Paragraphs 28.

<sup>43</sup> *The State of Israel vs. Angel and others*, Paragraphs 28-29.

The manager also testified that Berman's CEO gave an instruction to recover the sales that were lost to Davidovitz from "another place," and explained that the efforts were focused on Davidovitz rather than other bakeries, because "it is impossible to fight with everybody." Moreover he testified that this was competition at full force and hence he instructed his own men to "charge ahead."<sup>44</sup>

Davidovitz decided to retaliate and expanded its operations in the Jerusalem area and started offering "3 for 10" deals on sliced dark bread and challah (and in some cases "4 for 10" deals on challah) in ultra-orthodox neighborhoods. Mr. Davidovitz testified that:

"[Berman] will understand once and for all that there are no strong and weak here ... there is a limit to everything... They [Angel and Berman] need to understand that Jerusalem ... is not another fortress of Angel and Berman and that's it .... they need to understand it like it took me years to realize that I was alone in and around Haifa and all of a sudden you come and see the shelves stocked with everyone's [bread]."<sup>45</sup>

Moreover, Mr. Davidovitz testified that as far as the "3 for 10" deals are concerned,

"I'm not in a hurry. I have intended to invest millions. I have no intention of stopping until they give me back what they took from me in the north."<sup>46</sup>

A regional manager at Davidovitz testified that had Berman not penetrated areas that were dominated by Davidovitz, she probably wouldn't have gone after "every other" customer of Berman. She added that although she is always interested in new customers, the normal mode of operation is to offer new customers "prices that are a little lower than what you usually offer in the

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<sup>44</sup> *The State of Israel vs. Angel and others*, Paragraph 29.

<sup>45</sup> *The State of Israel vs. Angel and others*, Paragraph 30.

<sup>46</sup> *The State of Israel vs. Angel and others*, Paragraph 398.

current market.” However, during the relevant period, “Berman offered unprecedented prices and discounts ... so what do you do? Counterattack.”<sup>47</sup>

The Court concluded that Davidovitz’s aggressive actions in Jerusalem, including the “3 for 10” deals, were part of a strategy to penetrate the Jerusalem market in order to strike a competitive balance against Angel and Berman - which had penetrated the Haifa region and the north - and prevent Davidovitz from being pushed out of the market.<sup>48</sup> There was evidence that Angel and Berman had also offered “3 for 10” deals in some stores.<sup>49</sup>

Importantly, the “3 for 10” deals had been offered mainly in ultra-orthodox neighborhoods in Jerusalem, Bnei Brak, Beit Shemesh, Beitar, Elad, and Kiryat Sefer.<sup>50</sup> In these neighborhoods, families tend to be very large, so buying 3 loaves of bread (which weigh 750 grams each) at once is natural, and over half of the community is below the poverty line (Israel Democracy Institute, 2016, Ch. 1 and 3).<sup>51</sup> Indeed, in ultra-orthodox communities like Bnei Brak, price-controlled bread accounts for 70% of the sales of bread, while in Tel Aviv, where the ultra-orthodox community is very small, it accounts for merely 30%.<sup>52</sup>

There are also indications that the “3 for 10” deals had been offered only in a limited number of stores. For instance, Davidovitz argued that the “3 for 10” deals had been offered in only 40 stores.<sup>53</sup> Although the Court was unable to verify this claim, it did point out that the totality of the evidence suggests that the actual number of stores that had offered the deals was not significantly different. In particular, the Court held that the “3 for 10” deals had not been offered in the large supermarket chains.

The concern that the “3 for 10” deals would spread to other stores, and especially retail chains, led to the executives’ meeting.<sup>54</sup> According to the ICA, the CEOs of the four large bakeries first met on February 23, 2010 at the office of a leading law firm in Tel Aviv. The first part of the

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<sup>47</sup> *The State of Israel vs. Angel and others*, Paragraphs 40-46.

<sup>48</sup> *The State of Israel vs. Angel and others*, Paragraph 31.

<sup>49</sup> For instance, see *The State of Israel vs. Angel and others*, Paragraph 91.

<sup>50</sup> *The State of Israel vs. Angel and others*, Paragraph 65.

<sup>51</sup> Between 2012-2014, the total fertility rate (number of children potentially born to a woman during her childbearing years) averaged 6.9 children per woman in the Haredi (i.e., ultra-orthodox) community. A majority of Haredi families are living in poverty, and the share of Haredi children defined as poor is 67%. See Israel Democracy Institute, 2016, ch. 1 and 3.

<sup>52</sup> This finding is not surprising since standard bread is a classic example of an inferior good.

<sup>53</sup> *The State of Israel vs. Angel and others*, Paragraph 66.

<sup>54</sup> *The State of Israel vs. Angel and others*, Paragraph 392.

meeting was legitimate and lasted for about an hour; the rest of the meeting, however, took place without the presence of lawyers and lasted for several hours.<sup>55</sup> Eventually, the CEOs reached two agreements.

### 3.2 The first agreement

The first agreement reached by the CEOs was to stop the “3 for 10” deals. They had also agreed that in stores served by more than one bakery, the dominant supplier will raise its prices first (“the strong one raises first”) and that the other suppliers will not use this price increase to increase their own sales at the expense of the dominant supplier.<sup>56</sup>

More specifically, the CEOs had agreed that, as a first step, the minimal price of sliced dark bread and challah would be “3 for 10” as of February 28, 2010.<sup>57</sup> In later meetings between various executives from the different bakeries, that were held a few days after the CEOs’ meeting, the minimal price was raised to “2 for 10” for sliced dark bread and “3 for 11” for challah as of March 3 or in some cases as of March 10, 2010.<sup>58</sup> There is evidence that the bakeries kept discussing the implementation of the first agreement until the agreement ended in late May 2010.<sup>59</sup>

Following the first agreement, prices started to increase at the beginning of March 2010 to “3 for 12,” “2 for 8,” or even “2 for 10.”<sup>60</sup> This was true especially after Passover 2010 (March 29-April 6).<sup>61</sup> There is even evidence that Davidovitz committed to stop supplying stores that did not raise prices and that Berman conditioned its wholesale price on the stores’ retail prices in order to induce them to raise prices.<sup>62</sup>

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<sup>55</sup> See the prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraphs 12-13. According to the press, the purpose of the meeting was to discuss regulatory matters. See “After the intervention of the ‘system’ Davidovitz did not deliver bread and the customer remained frustrated,” Tomer Ganon, Anat Roeh, and Zohar Shahaar-Levy, *Calcalist*, January 30, 2014, <https://www.calcalist.co.il/local/articles/0,7340,L-3623013,00.html>

<sup>56</sup> *The State of Israel vs. Angel and others*, Paragraph 76.

<sup>57</sup> *The State of Israel vs. Angel and others*, Paragraph 75.

<sup>58</sup> *The State of Israel vs. Angel and others*, Paragraph 75.

<sup>59</sup> The last meeting on record was held on May 20, 2010 between a sales manager at Angel and a marketing manager at Davidovitz in a gasoline station on the Trans-Israel highway. See *The State of Israel vs. Angel and others*, Paragraph 126.

<sup>60</sup> *The State of Israel vs. Angel and others*, Paragraphs 78, 82, 91, and 113. Note that these offers are retail prices and include VAT. Accounting for VAT and retail margins, the associated wholesale prices are still substantially below the regulated wholesale price.

<sup>61</sup> During Passover, which is celebrated for 8 days, bakeries do not produce nor supply bread. Passover is then a natural break in the bread market.

<sup>62</sup> *The State of Israel vs. Angel and others*, Paragraphs 98 and 114.

Although the Court found that the agreement to raise prices was substantially implemented and led to a significant increase in retail prices in the relevant stores,<sup>63</sup> it did point out difficulties in implementing the agreement, at least before Passover. For example, Mr. Davidovitz was quoted in court as complaining that “To tell you the truth, I’m tired of these meetings. Nothing comes out of them.”<sup>64</sup>

One obstacle to implementing the agreement was the fact that it involved retail prices, which are set by retailers, who were not parties to the agreement. For instance, some retailers had already advertised the “3 for 10” deals and were unable or unwilling to raise prices,<sup>65</sup> while others decided unilaterally to offer these deals.<sup>66</sup> A possible reason why the bakeries’ agreement concerned the retail price of bread (rather than its wholesale price), despite the fact that the bakeries do not control it directly, is that the retail price is easily observable. By contrast, wholesale prices, including discounts and various payments between the bakeries and stores, are confidential and hard to verify.

### **3.3 The second agreement**

Apart from agreeing to stop the “3 for 10” deals, the bakeries had also agreed to stop competing for one another’s existing customers; the Court referred to this agreement as “the second agreement.” The Court accepted the bakeries’ claim that the second agreement was triggered by the desire to stop the “3 for 10.”

The Court held that the overall picture that emerges from the evidence is that the bakeries had actively and vigorously implemented the second agreement and developed an effective mechanism for investigating complaints about violations of the agreement.

For example, Yellow, which is a large chain of 250 convenience stores served by Berman, had negotiated a supply contract with Davidovitz just before the agreement was reached. Berman’s CEO had complained to Dganit’s CEO, who also served as the chairman of the bakers’ association, and had demanded that Davidovitz stop selling to Yellow. Although Mr. Davidovitz had argued

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<sup>63</sup> *The State of Israel vs. Angel and others*, Paragraph 132.

<sup>64</sup> *The State of Israel vs. Angel and others*, Paragraph 206, Footnote 46.

<sup>65</sup> *The State of Israel vs. Angel and others*, Paragraph 94.

<sup>66</sup> *The State of Israel vs. Angel and others*, Paragraph 56 and 364.



that the relationship with Yellow began prior to the second agreement and that he could not break the contract with Yellow, he nonetheless asked Dganit's CEO to tell Berman's CEO that "if I take something from him, then I will give him something somewhere else."<sup>67</sup> When Dganit's CEO delivered this message, Berman's CEO replied

"No, we don't have such an agreement, it's not true, and I have also signed all sorts of things and didn't come to anyone with any demands; I folded like a shmock, that's all."<sup>68</sup>

In a later conversation, Mr. Davidovitz asked Dganit's CEO to remind Berman's CEO that Berman also took a chain from Davidovitz after the agreement was reached, and that he, Mr. Davidovitz, "didn't say anything to him, and I didn't call you or anyone."<sup>69</sup> Moreover, a marketing manager at Davidovitz said that he has a list of stores that he can enter as a retaliation in case Berman will react to Davidovitz's sales to Yellow.<sup>70</sup> The Court's decision does not mention how the dispute over Yellow ended.

It is worth noting that Davidovitz argued that the evidence presented in court shows that the bakeries have settled at most 14 disputes over customers, and that most of them were in March 2010, when the agreement was still new, but that later on in April 2010, many disputes were not settled. Davidovitz also argued that half of the settled disputes concerned customers in the ultra-orthodox sector, where the "3 for 10" deals had been offered.<sup>71</sup>

#### **4. Possible interpretations of the bakeries' agreements**

Price fixing is illegal according to Israeli competition law. Hence, the illegality of the bakeries' agreements was not disputed. Still, there is an open question regarding the interpretation of the two agreements.<sup>72</sup> There are at least two possible interpretations. The first, advanced by the ICA,

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<sup>67</sup> *The State of Israel vs. Angle and others*, Paragraphs 161-171.

<sup>68</sup> *The State of Israel vs. Angle and others*, Paragraphs 167.

<sup>69</sup> *The State of Israel vs. Angle and others*, Paragraphs 167.

<sup>70</sup> *The State of Israel vs. Angle and others*, Paragraph 170.

<sup>71</sup> *The State of Israel vs. Angle and others*, Paragraphs 252 and 254.

<sup>72</sup> As mentioned earlier, the interpretation was relevant for the criminal sentences imposed on the bakeries' executives.

views the bakeries' agreements as a standard textbook cartel aimed at stopping "concrete competitive actions that the various bakeries were about to take" and that "would have lasted for a long time" but for the cartel.<sup>73</sup> While the ICA did not make this argument explicit, it essentially made the case that the bakeries had engaged in "normal" competition prior to the price-fixing agreement, which was then intended to raise prices above their "normal" level.

The second possible interpretation is that the price-fixing agreement was intended to end a price war in the form of the "3 for 10" deals. The question, of course, is why did the price war erupt? The standard view of price wars is that they are part of some dynamic collusive arrangement (Slade, 1990). In our case, the arrangement could have been a market division agreement, according to which the bakeries had agreed not to invade each other's territory. This possibility, however, is inconsistent with the ICA's claim that the bakeries had started colluding only after the CEOs meeting.<sup>74</sup> Another possibility is that the price war was part of a non-collusive market competition and the bakeries' agreement was intended to stop it. While this possibility is less standard in the IO literature, we believe that it is highly plausible and one of the reasons why the case is particularly interesting.

Although the Court mainly emphasized the ICA's interpretation of the bakeries' agreements as a standard textbook cartel, it also acknowledged the second:

"The overall picture is that both the Berman Bakery and the Davidovitz Bakery had two motives for their competitive actions. On the one hand, there was a competitive element of market penetration, by lowering prices and increasing market share. Alongside it, there was also a deterrent - punitive element, whose purpose was to respond to the competitive actions of the opponent."<sup>75</sup>

Before we continue to discuss the two interpretations in more detail, it is worth noting that the two interpretations imply a different pattern of prices. According to the standard cartel story - the ICA's interpretation - prices are initially at some competitive level. When firms form a cartel,

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<sup>73</sup> See the prosecution's Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraphs 167 and 200. In fact, the ICA relied on Carlton and Perloff (2005) to make the case that the bakeries' agreement had features that made it stable and would have helped it to last for a long time.

<sup>74</sup> *The State of Israel vs. Angel and others*, Paragraph 52.

<sup>75</sup> *The State of Israel vs. Angle and others*, Paragraph 32.

prices increase and stay high as long as the cartel is in effect. Once the cartel ends, either due to antitrust enforcement or because it internally breaks down, prices drop.<sup>76</sup> The alternative interpretation – the agreement was intended to end a price war in the form of the “3 for 10” deals – implies a different pattern of prices. Initially, prices are at some level which could be competitive or collusive. Then, prices drop when a price war erupts. When firms reach a price fixing agreement, prices increase, but then drop again once the agreement breaks down.

#### 4.1 The ICA’s cartel interpretations

The ICA argued that the bakeries formed a “cartel” which “significantly harmed competition.”<sup>77</sup> It described the events of the case as follows: “At the end of 2009 and the beginning of 2010, a fierce competition had developed among the bakeries.”<sup>78</sup> As part of this competition, Berman “had expanded the marketing of its products in the north,” while Davidovitz had started competing “more intensively in the Jerusalem area and the center.” Moreover, “by its very nature” competition would have spread to other areas. According to the ICA,

“The purpose of the competition that took place prior to the cartel was clear and simple - to increase the bakeries’ market share by lowering prices, using promotions, and trying to attract customers in a variety of ways.”<sup>79</sup>

The ICA also argued that the lower wholesale prices offered by the bakeries in order to gain market share allowed retailers to offer sliced dark bread and challah at “prices of 3 or 4 loaves for 10 NIS (or at a cheaper price),”<sup>80</sup> and that these deals would have continued for a long period of time, but for the cartel.<sup>81</sup> The ICA then claimed that the purpose of the CEOs’ meeting was “to

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<sup>76</sup> Interestingly, there are well-documented episodes of prices remaining at supracompetitive levels even after a cartel had been shut down by the antitrust agency. For example, Figure 2 in Harrington (2023) shows that the price of Beta Carotane remained high even after guilty pleas were submitted in the vitamins cartel. By contrast, Figure 1 in Harrington (2023) shows that the price path of Vitamin A was typical: starting with the official birth date of the vitamins cartel, price gradually climbed, stabilized, and then drastically fell in association with the investigations by antitrust agencies in Europe and the U.S.

<sup>77</sup> The prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraphs 1 and 58.

<sup>78</sup> The prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraph 4.

<sup>79</sup> The prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraph 6.

<sup>80</sup> The prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraphs 4-5.

<sup>81</sup> The prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraph 200.

stop the competition and the retail price decreases,”<sup>82</sup> and that the bakeries’ cartel “ended competitive processes that were in their infancy,” and “prevented low prices from reaching additional locations and retailers.”<sup>83</sup>

The ICA’s interpretation of the bakeries’ agreements begs at least three different questions. First, if the bakeries already took the trouble and risk associated with fixing the prices of sliced dark bread and challah, why did they fix them only at “2 for 10” or “3 for 11” and not at higher levels? After all, the “2 for 10” or “3 for 11” deals still imply a per-unit retail price which is signi

First, if the bakeries already took the trouble and risk associated with fixing the prices of sliced dark bread and challah, why did they fix them only at “2 for 10” or “3 for 11” and not at higher levels? After all, the “2 for 10” or “3 for 11” deals still imply a per-unit retail price which is significantly below the retail and even wholesale price caps (6.66 NIS and 5.07 NIS for sliced dark bread and 4.84 NIS and 3.97 NIS for challah), and accounting for VAT and retail margins, are most probably substantially below the bakeries average costs. In fact, StoreNext data that we use below to generate Figures 1 and 2 shows that in March-April 2010, the average retail prices across all stores were 6.30 NIS for sliced dark bread and 4.61 NIS for challah. At the very least, it seems odd that the bakeries decided to fix prices in some stores at a level that was substantially below the average price across all stores.

The second question is why fix only the prices of sliced dark bread and challah, which account for only a third (or less) of the bakeries’ sales, and not also fix the prices of other types of bread? Indeed, the evidence does not indicate any conversations between the bakeries’ executives about breads that were not subject to price controls and were sold at a profit.

A third question is why did the bakeries agree to fix the prices of sliced dark bread and challah only in the relatively small number of stores that had offered them at the “3 for 10” deals, rather than fix prices in all stores, including the supermarket chains, which in any event account for the bulk of the sales of bread?

In other words, if the bakeries had been trying to form a cartel, then it is not clear why they had reached a limited agreement that fixed the prices of only two types of bread, in only a small

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<sup>82</sup> The prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraph 12.

<sup>83</sup> See the prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraph 703 and 732.

number of stores, and at a level substantially below the average retail price across all stores, rather than fix the prices of more types of bread, in more stores, and at higher prices.

Apart from these questions regarding the nature of the agreements, there is also a question about the interpretation of the “3 for 10” deals. The ICA interprets the deals as “fierce competition” aimed at gaining market shares. But then, had the deals been part of competition rather than a price war, one would have expected to observe them again in the 13 years since the cartel was exposed. The bakeries, however, never offered such deep discounts again since 2010.

Unfortunately, the ICA did not present any evidence about prices at the store level either before the “3 for 10” deals were offered, nor after the bakeries’ agreements stopped.<sup>84</sup> From the court’s case then, it is impossible to tell how prices have evolved over time in stores that have offered the “3 for 10” deals, in neighboring stores, and in more distant stores. The evolution of prices however is important because it speaks to the motivation for the agreements. To examine the evolution of prices, before, during, and after the bakeries’ agreements we resort to public information on sales using StoreNext data. In particular, we use StoreNext data to examine the prices of sliced dark bread and challah from the beginning of 2009 to the end of 2011. If we divide the monthly sales in NIS by the sales in tons, and note that sliced dark bread weighs 750 grams, while challah weighs 500 grams, we get the monthly per-unit average prices.<sup>85</sup>

Recall from Table 1 above that the regulated price cap was adjusted several times during the 2009-2011 period due to exogenous cost shocks (e.g., changes in the price of flour or energy) or changes in VAT.<sup>86</sup> To control for such cost shocks and changes in the VAT rate, we present in Figures 1 and 2 below the ratio of the retail prices of sliced dark bread and challah and their respective retail price caps. Since the price caps are by design set to cover the bakeries’ costs, including their cost of capital, one can think of the ratios in Figures 1 and 2 as proxies for the price-cost ratios of sliced dark bread and challah.<sup>87</sup> We show the ratios separately for the 4 store types

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<sup>84</sup> In a criminal case it is enough to show that the bakeries’ agreements led to a price increase once the “3 for 10” deals had stopped.

<sup>85</sup> Unfortunately, the data does not allow us to distinguish stores that were affected by the agreements (mostly stores in ultra-orthodox neighborhoods in the Jerusalem area) and stores that were not, and also does not allow us to distinguish between prices in different submarkets (e.g., the ultra-orthodox submarket), or different geographic areas (e.g., the Jerusalem area).

<sup>86</sup> The rate of VAT was raised from 15.5% to 16.5% on July 1, 2009 and was lowered to 16% on January 1 2010.

<sup>87</sup> One should bear in mind that price cap regulation in Israel, like in many other countries, is imperfect and may involve political considerations. The price cap then is an imperfect proxy for costs. Nonetheless, during the 2009-2011

in our data: “Main HD,” “Main local,” “Other HD,” and “Small stores.” The period between the left and middle vertical lines refers to the price war between the bakeries (November 2009-February 2010).<sup>88</sup> The period between the middle and right vertical lines refers to the bakeries’ agreements (end of February 2010-May 2010).

**Figure 1: the ratio of the retail price and the retail price cap of sliced dark bread, by store type, 2009-2011**

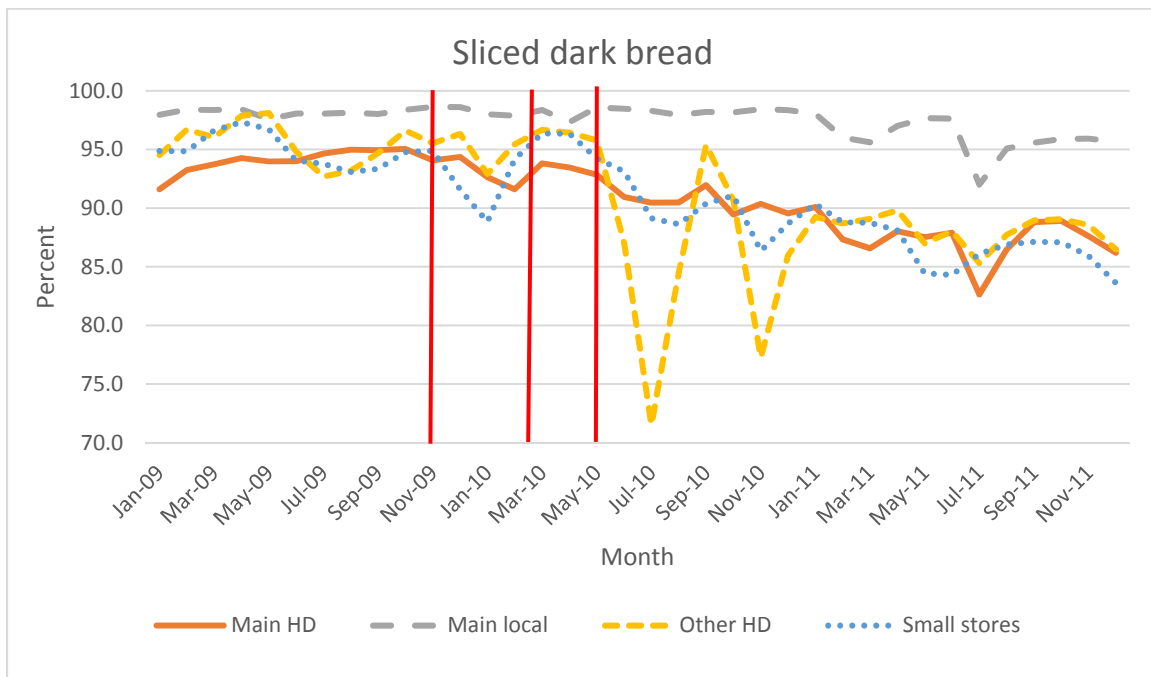


Figure 1 shows that the retail prices of sliced dark bread were below the retail price cap and their ratio declined from around 95% at the start of 2009, to close to 85% at the end of 2011, with the exception of prices at the main local supermarket chains (the dashed line) which stayed above 95% of the price cap. More importantly, the figure shows that retail prices at the main local supermarket chains were not affected by the price war, nor by the bakeries’ agreements. Prices at

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period, prices were adjusted on the basis of an indexation mechanism (rather than full-blown regulatory hearings) which is why we believe that it is a fairly reasonable proxy for costs.

<sup>88</sup> Notice though that the ICA did not establish when the price war broke out exactly; it merely stated that “intense competition” had developed among the bakeries “at the end of 2009 and the beginning of 2010.” See the prosecution’s Summary of Arguments in *The State of Israel vs. Angel and Others*, Paragraph 4. Although the “3 for 10” deals probably started only at the beginning of 2010, we will also include November and December 2009 in the price war period.

the main HD chains (the solid line) seem to have declined steadily over time and as in the case of prices at the main local supermarket chains, they do not seem to have been affected by the price war or the bakeries' agreements. These results are not surprising given that the evidence presented in court indicates that the price war and the bakeries' agreements involved mostly stores in ultra-orthodox neighborhoods, which do not belong to the main supermarket chains. The results are also inconsistent with the idea that Davidovitz had been trying to expand its operations in the Jerusalem area, otherwise he would have probably tried to also penetrate the main supermarket chains, where the bulk of sales are. The evidence presented in court, however, does not indicate that this had been the case.

One might argue that prices at other HD chains (the square dotted line) and small stores (the round dotted line) had dipped at the beginning of 2010, but then recovered on February 2010-May 2010, before declining after May 2010. However the pattern of prices after May 2010 does not seem to be very different than that at the main HD chains, so it is hard to tell if the decline after May 2010 is due to the end of the bakeries' agreements or to more fundamental reasons. Importantly though, retail prices at other HD chains, and small stores during February 2010-May 2010 do not seem very different than they were before November 2009, which is consistent with the idea that the bakeries' agreements only eliminated the deep discounts that were offered during the price war period rather than increasing prices to a supracompetitive level.

**Figure 2: the ratio of the retail price and the retail price cap of challah, by store type, 2009-2011**

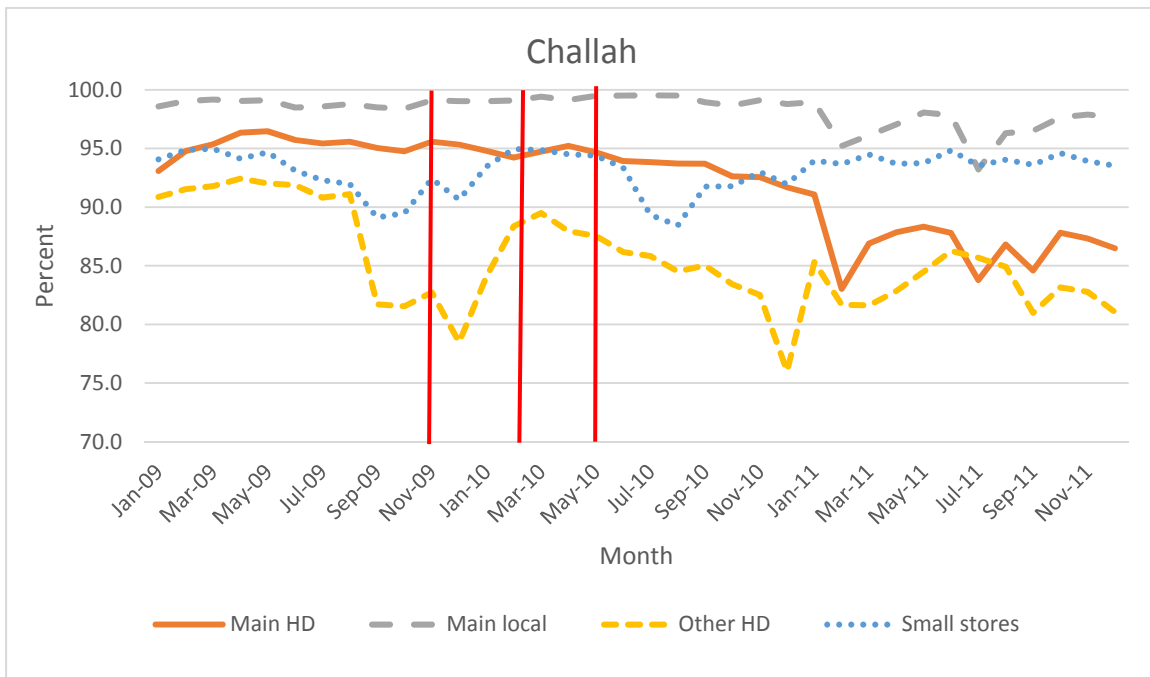


Figure 2 shows that, similarly, to sliced dark bread, the retail prices of challah were below the regulated retail price cap, and their ratio had declined over time, albeit only at the main HD stores and other HD stores. Moreover, retail prices at the main local supermarket chains (the solid line) and in small stores (the round dotted line) do not seem to have been affected by the price war, nor by the bakeries' agreements. If anything, the retail prices of challah at the main HD chains and at other HD chains have only increased from the end of 2009 until March 2010, and then seem to have decreased over the March 2010-May 2010 period. This price pattern is inconsistent with the ICA's interpretation of the bakeries' agreements as a "bread cartel."

#### 4.2 The agreements were intended to stop a price war

An alternative interpretation of the events is that the agreements were meant to stop a price war between the bakeries. As mentioned earlier, there are at least two possible reasons why a price war might have erupted. The first is that the price war was a part of some collusive arrangement, and the second is that competition in the bakery industry has unique features which are conducive to



occasional price wars which can erupt even without collusive agreements. We now discuss the two reasons in detail.

The traditional view of price wars in the IO literature is that they are part of a collusive equilibrium of an infinitely repeated game (e.g., Slade, 1990).<sup>89</sup> However, while the Court mentioned that the bakeries had discussions about customers even before 2010, the ICA did not present the court with sufficient evidence to establish that collusion started before the CEOs' meeting on February 23, 2010.<sup>90</sup> Moreover, the ICA explicitly argued that the bakeries started colluding only after the CEOs met.

Although there is no evidence for overt collusion before the CEOs' meeting, it is possible that the bakeries had already engaged in tacit collusion even before 2010, say in the form of geographic market division and possibly price coordination. The price war that erupted at the beginning of 2010 could have then been, for example, a punishment phase of such a collusive agreement and the price-fixing agreement could have been a renegotiation of this punishment phase.

There are indeed some indications that the price war was a result of some geographic market division. The price war had erupted when Davidovitz started offering the "3 for 10" deals mainly in ultra-orthodox neighborhoods in Jerusalem in order to show Berman and Angel that "there is a limit to everything" and that if they invade Haifa, he will show them that Jerusalem "is not another fortress of Angel and Berman." Moreover, he was quoted by the court as saying that he has "no intention of stopping" the deals until Berman and Angel "give me back what they took from me in the north" and that he plans to continue with the "3 for 10" deals because "I want them to understand one thing, we are just as crazy as they are."<sup>91</sup>

This interpretation though has an obvious weakness: if the price war had been part of an existing collusive agreement, then once the agreement was exposed by the ICA, we should have observed some change in market behavior. However, we do not observe such a change: market shares and prices in the second part of 2010 and in 2011, were similar to those during 2009 when presumably the bakeries colluded.

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<sup>89</sup> Slade (1990) classified models of price wars into *imperfect-monitoring* models, in which players' actions cannot be observed; *learning* models, in which structural parameters are unknown to the players; and *cyclical* models, in which observability is perfect but business cycles affect the difficulty of colluding.

<sup>90</sup> *The State of Israel vs. Angel and others*, Paragraph 52.

<sup>91</sup> *The State of Israel vs. Angel and others*, Paragraph 413.

An alternative interpretation is that competition between the bakeries naturally involves geographic market segmentation due to the bakeries' different locations and the logistic costs of supplying stores across different geographic areas. It is plausible that in such a setting, the bakeries occasionally invade each other's territories, incumbents retaliate, and periodic localized price wars erupt. Although we are not aware of an existing model that has these features, we can nonetheless discuss how such a setting might be formalized.

Specifically, we can think of each bakery as a network, with the production facilities being the hubs, and the retailers being the nodes.<sup>92</sup> Due to the logistic costs of delivering bread to the stores across different geographic locations, the cost of each bakery naturally depends on the entire spatial structure of its network. For instance, due to economies of density, it may be cheaper to supply bread to retailers that are clustered together than to retailers that are spread over a large area. A candidate for an equilibrium in such a setting should prescribe a distribution network for each bakery (i.e., which stores are linked to the network) and a vector of prices, one for each retailer. The equilibrium conditions should then be (i) it is not profitable to link a retailer that is currently not part of the firm's distribution network, and (ii) it is also not profitable to unlink a retailer that currently belongs to the network. Clearly, such an equilibrium may feature price dispersion and a network with some degree of clustering in certain geographic areas.

It is conceivable that over time networks may expand or contract due to external shocks, such as shocks to logistical costs, or to the demands of different retailers (either in the firm's network or outside it). Expansions in turn may trigger "local" price wars, which do not necessarily have to propagate to the entire network. For example, a higher demand in a certain area may induce a bakery to add trucks and perhaps salesmen to that area; this lowers the cost of supplying retailers in neighboring areas and the bakery may offer these retailers lower prices. These offers in turn may trigger retaliation by incumbents and may lead to a local price war. The bakeries' agreements were perhaps an attempt to stop such a price war.

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<sup>92</sup> Recall that each of the large four bakeries has several production facilities located in different geographic areas. Angel owns bakeries in Jerusalem, Lod (the center of Israel), Netivot (the south of Israel), and holds 50% in a bakery in Kfar Hahoresht (south east of Haifa); Berman owns a bakery in Jerusalem and three others in the Tel Aviv metropolitan area, Davidovitz owns bakeries in Kiryat Ata (east of Haifa) and in the Tel Aviv metropolitan area, and Dganit Ein Bar bakery is located in Kibbutz Einat (center of Israel) and owns a bakery in Kiryat Shmona (upper Galilee in the north of Israel).

Given this setting, it is plausible that the price war was caused by Mr. Davidovitz's decision to strike a competitive balance against Angel and Berman, and show them that he will not tolerate their expansion in the north.<sup>93</sup> There are indications that the price war had escalated quickly and the bakeries feared that it would spread to the "entire market," including the large supermarket chains.<sup>94</sup> In fact, a manager in the Davidovitz group even described the price war as a "catastrophe on a global scale."<sup>95</sup> It is also possible that the bakeries were concerned that if bread is sold at very low prices, there would be a pressure on regulators to decrease the regulated price further, thereby increasing the bakeries' losses from selling price-controlled bread. With this interpretation in mind, the first agreement – to stop the "3 for 10" deals – can be viewed as a "cease fire" agreement, whereas the second agreement – to stop competing for existing customers – can be viewed as a "cessation of hostilities" agreement.

More specifically, the bakeries were interested in stopping a costly price war that was about to go out of control. However, in and of itself, the first agreement did not eliminate the cause of the price war, which was the incentive to invade the "home turf" of other bakeries and win some of their customers. It is then plausible that the bakeries had realized that a "cease fire" agreement would not hold for a long time, and in order to prevent the price war from erupting all over again, they needed a second agreement that would eliminate the reason for offering retailers deep discounts. It is also plausible that the bakeries feared if they raise their prices, they may lose some retailers to rival bakeries. They then needed the second agreement to reassure them that raising prices will not induce retailers to switch to rival bakeries.

We believe that this interpretation is consistent with the evidence. First, Davidovitz had offered the "3 for 10" deals mainly in the Jerusalem area, which is the "home turf" of Angel and Berman. Obviously then, the "3 for 10" deals were particularly damaging for Angel and Berman, as the "ripple effect" on nearby stores forced them, as Mr. Davidovitz argued, "to lower prices in all of Jerusalem."<sup>96</sup> At the same time, these deals were not very damaging to Davidovitz due to its limited presence in Jerusalem. In a sense then, the "3 for 10" deals are akin to a Judo strategy,

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<sup>93</sup> Slade (1990) argues that price wars can also be driven by "anger and irrationality." This could also explain Mr. Davidovitz's willingness to "invest millions" in the "3 for 10" deals until Angel and Berman "give me back what they took from me in the north." *The State of Israel vs. Angel and others*, Paragraph 398.

<sup>94</sup> *The State of Israel vs. Angel and others*, Paragraph 392.

<sup>95</sup> *The State of Israel vs. Angel and others*, Paragraph 386.

<sup>96</sup> *The State of Israel vs. Angle and others*, Paragraph 68.

whereby a smaller player chooses low prices, which the big player finds unprofitable to match because matching them translate into a large loss of revenue due to the big player's large market share (Gelman and Salop, 1983).<sup>97</sup>

Second, if the "3 for 10" deals were aimed at gaining market share, as the ICA argued, then it is not clear why they had been offered only in ultra-orthodox neighborhoods and not elsewhere, and in particular at the main supermarket chains, where the bulk of price-controlled bread is sold.<sup>98</sup> Moreover, the "3 for 10" deals were easily reversible because they had not been offered through formal contracts with the relevant stores. It is hard to see how gaining market share only while selling at deep discounts (without a prospect for recoupment) can be a profitable strategy.

Third, in a typical price-fixing case, prices increase from the static equilibrium level,  $p^*$ , to some higher level  $p^{**}$ , and then return to  $p^*$  after the cartel ends. In Figure 1, this pattern can be observed only in the case of other HD chains and small stores. However, if one starts at the beginning of 2009, it seems that prices were at a level of  $p^*$  until around November 2009, then they dropped to  $p^{**}$  from November 2009 until February 2010, and then returned to  $p^*$  from March 2010 to May 2010. Although the ICA interpreted the increase from  $p^{**}$  to  $p^*$  as a sign of a cartel, once we take a longer perspective, the price pattern is consistent with the idea that  $p^{**}$  represents a price war, while the return to  $p^*$  seems like a "cease fire" agreement.

Fourth, it is typically hard to know what the state of mind of decision makers is. Here, however, we have direct evidence on the motivation behind the bakeries' actions. For example, Berman's CEO testified that Berman's "aggressive" efforts to penetrate dozens of stores in the north were intended to convey a message to Davidovitz that "there is a price for every harm done to us," whereas Mr. Davidovitz testified that the motivation for the "3 for 10" deals was to ensure that Berman "will understand once and for all that there are no strong and weak here ... there is a limit to everything."<sup>99</sup> He also testified that he had no intention of stopping the "3 for 10" deals

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<sup>97</sup> There is an important difference however: an entrant playing a judo strategy intentionally sets a low price to deter the incumbent from matching it. Here, it seems that Mr. Davidovitz was aware that Angel and Berman would be forced to lower their prices, but was still interested in offering the "3 for 10" deals in order to send Angel and Berman a message that they should not expand in the north.

<sup>98</sup> And as we already mentioned, the "3 for 10" deals are particularly attractive to ultra-orthodox families which on average have 6.9 children per family. It is hard to imagine that non ultra-orthodox families with 2-3 children will need to buy 3 loaves of bread at once.

<sup>99</sup> *The State of Israel vs. Angel and others*, Paragraph 30.

until Angel and Berman “give me back what they took from me in the north”<sup>100</sup> and that “I want them to understand one thing, we are just as crazy as they are.”<sup>101</sup> Berman had indeed perceived the “3 for 10” deals as retaliation by Davidovitz for its “combative initiative” in the north.<sup>102</sup>

## 5. Conclusion

There is no dispute that the bakeries had engaged in price fixing: the hundreds of wiretapped phone conversations obtained by the ICA indicate clearly that the bakeries’ executives agreed to raise the price of sliced dark bread and challah in some stores and to stop competing for each other’s customers. Yet, although the executives admitted to most of the charges, the motivation for the price-fixing agreement remains an open question.

In principle, there could be different motivations for price fixing. The most common is the textbook cartel motivation: firms collude by setting prices above their static Nash equilibrium level. But there are other possibilities. For instance, firms may be engaged in a price war, perhaps due to a “punishment phase” which is part of an existing collusive agreement, and wish to negotiate a shorter, or less severe, punishment. Another possibility is that the price-fixing agreement is intended to stop a price war that is not part of a collusive agreement, but nonetheless erupted in an otherwise competitive market. Interestingly, the Court in the Israeli bread cartel case stated in its summary of events that the bakeries’ price war had both “a deterrent - punitive element, the purpose of which is to respond to the rival’s competitive actions,” which is consistent with the second motivation, as well as “a competitive element of market penetration, by lowering prices and increasing market share,” which is consistent with the third motivation.<sup>103</sup>

The main difference between the different motivations is the price level before and after the price-fixing agreement. According to the first interpretation, the agreement is intended to raise prices from the static Nash equilibrium level,  $p^*$ , to a higher level. According to the second and third interpretations, prices before the agreement are below  $p^*$  and the agreement is intended to raise them to  $p^*$  according to the third interpretation, and a level which is possibly still below  $p^*$  according to the second interpretation. The fourth interpretation is agnostic about the initial price level, but states that prices move to  $p^*$  once the agreement is reached.

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<sup>100</sup> *The State of Israel vs. Angel and others*, Paragraph 398.

<sup>101</sup> *The State of Israel vs. Angel and others*, Paragraph 413.

<sup>102</sup> *The State of Israel vs. Angel and others*, Paragraph 30.

<sup>103</sup> *The State of Israel vs. Angel and others*, Paragraphs 32 and 473.

Although it is hard to tell which of these possibilities is the most relevant for the bakeries' case, the first possibility – firms were trying to collude on prices above the static Nash equilibrium – does not account for the fact that prior to the agreement, the bakeries had engaged in a price war that involved “3 for 10” deals in a limited number of stores. It also overlooks the fact that the agreement merely restored the prices that prevailed before the price war, rather than leading to higher prices.

The possibility that the agreement was a renegotiation of a punishment phase that was part of an existing collusive agreement – is at least in principle plausible, as the bakeries could have engaged in some tacit collusive agreement before 2010; the price war that erupted in early 2010 could have then been a “punishment phase” associated with that agreement. This interpretation, however, is inconsistent with the fact that market shares and prices after the price-fixing agreement was discovered by the ICA in May 2010 were similar to those prior to the price war in early 2010 when firms were presumably colluding with each other.

It therefore appears that the possibility that the agreement was meant to stop a price war which was part of the competitive process in an industry that features a network structure seems the most plausible one. As already mentioned, the agreement to eliminate the “3 for 10” deals could then be interpreted as a “cease-fire” agreement, while the agreement to stop competing for each other's customers seems like a “cessation of hostilities” agreement intended to eliminate the incentive to give deep discounts.

We believe that the main takeaway from the Israeli bread case is the idea that price fixing can be an outcome of different types of competitive processes and not necessarily part of cartel behavior, which is meant to fix competition. The distinction between “fixing competition” and “price fixing” is not obvious or simple, but the two may have different motivations and implications for consumers and should be part of a detailed analysis of markets.

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