Mandatory Labelling: Evidence from the French *Fromage Blanc* and Yogurt Market

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Abstract

A number of public health advocates and consumer associations urge policy makers to strengthen nutrient labelling rules, in order to help people to make healthier and better informed food choices. Yet, little is known about the effectiveness of mandatory labelling. This research evaluates the impact of a mandatory fat label policy on consumer choices in the *fromages blanc* and dessert yogurt market. While fat labels are mandatory since 1988 for *fromages blancs*, this is not the case for yogurts. This is a natural source of variation to identify separately consumer preferences for labels and for fat. We use a mixed logit discrete choice model and household scanner data collected in 2007 to estimate the distribution of the Willingness-To-Pay (WTP) for fat labels and simulate various counterfactual policy scenarios in a sample of casual *fromages blancs* and dessert yogurts consumers. The WTP is negative for about one third of this population, especially for consumers of full-fat dessert yogurts. The first simulation results suggest that a mandatory labelling policy would make these individuals switch to full-fat *fromages blancs* or to the outside option, and mandatory labelling would have more impact than a fat tax on the consumption of full-fat products. Hence, variations in labelling rules have been exploited by producers to develop dessert yogurts and increase market segmentation. We plan to refine these results, by taking into consideration manufacturers' and retailers' strategic reactions to these policies.

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1 Introduction

The growth of obesity and overweight-related chronic diseases is a major challenge for food companies and policy-makers. According to the World Health Organization (WHO), it has reached epidemic proportions globally, with more than 1 billion adults overweight in 2010. These health trends have been related to the growing share of fat in calories available for human diet. Nowadays, in most OECD countries, fat represents between 40 and 45% of daily calorie intakes, against 20-30% one century ago (Etilé 2010). The reduction of the fat content of the diet is encouraged by most health professionals and nutritionists. In particular, the WHO (2003) recommends that total fat intake be in the range of 15–30% of total energy intake. In this perspective, two market-based policy options have attracted a great deal of interest from policy-makers and public health advocates: the taxation of unhealthy food products and the mandatory labelling of key nutrients such as fat. This article wonders whether mandatory labelling is likely to dominate the fat tax in terms of impact on fat consumption and consumer welfare.

Marshall *et al.* (2000) suggested that taxing the fat content of fatty products to raise their price may help people changing the nutritional quality of their diet, with sizeable effects in terms of lives saved and health costs. Since then, most economic studies have emphasised that substitutions, by firms, between product ingredients and ingredient qualities may largely limit the impact of a fat tax (Caraher and Cowburn 2005, Mytton *et al.* 2007, Chouinard *et al.* 2007 and Allais *et al.* 2010). Nevertheless, the tax keeps on attracting the attention of administrations and policy makers in several countries (France, UK, Ireland, Spain, Romania, Norway, Denmark and several U.S. states).

The food industry, which is often blamed for the rise of obesity (Cutler *et al.* 2003), is firmly opposed to a tax. Following the "consumer sovereignty" principle, it claims that consumers would be able to reduce their dietary fat intakes by substituting standard food varieties for their reduced-fat counterparts, which are now commercialised for a large number of products. However, this claim is admissible insofar as consumers are perfectly informed about the fat content of food products. Here, fat-content labels are likely to play a key signalling role. Empirical studies of the effectiveness of labelling policies are scarce and exhibit mixed evidence. Variyam (2008) find that the U.S. Nutrition Labelling and Education Act (NLEA) has had little impact on the nutrient intake of those individuals who read the labels prior to the NLEA. Mathios (2000) analyses the salad dressing market and uncover evidence of a significant decline in the shares of products with the highest fat content. Using scanner data from a field experiment in supermarkets, Teisl *et al.* (2001) also find a positive impact of fat labels on the market share of healthy products for milk and cream cheese. The current paper adds to this literature in two important ways. First, we exploit an exogenous source of variation in labelling requirement in order to identify the causal impact of fat-content labels on consumer choices. Second, the effect of labelling and tax policies depends crucially on the substitutions between products within a food category (*i.e.* products with different fat levels) and with the outside option. As existing studies rarely allows for such substitutions, we here use data disaggregated at the product and household levels and analyse a market where products are highly differentiated and substituables.

In the empirical application, we consider the market of *fromage blanc* and its substitutes.[1] Dairy products provided 27.4% of total household fat intake in 2007, as compared to 16.6% for sugar-fat products, and 23.7% for oils. Among dairy products, the yogurts and *fromages blancs* are the third source of fat after cheese and butter (11.5% vs. 35.7% for cheese and 31.3% for butter, in 2007). There are three broad categories of yogurts and *fromages blancs*: the standard yogurts; the standard *fromages blancs*; and the dessert yogurts, which group products like the strained/greek yogurts and *fromages blancs* or yogurts mixed with cream or other animal fats.

The French legislation requires that producers signal the percentage of fat for standard *fromages blancs* by a fat-content label (like a sticker) displayed on the front of the packaging, while fat-content labels are not mandatory for dessert yogurts. In particular, producers never put a fat-content label on full-fat dessert yogurts, while they have to do so on full-fat *fromages blancs*. Using these variations in legal labelling constraints and brand labelling strategies,

[1] The *fromage blanc* is a creamy, soft, fresh white cheese made with whole or skimmed milk. In this paper, following the French legislation, we include in the *fromage blanc* category the *faisselles*, which have similar uses. Obtaining fromage blanc outside France might be difficult, as it is not fully cured.

between products with different fat contents and between dessert yogurts and *fromages blancs*, we can identify separately the consumer preferences for fat and for fat-content labels.[2]

We implement a Mixed Multinomial Logit approach, which offers a structural framework to model consumer preferences over a detailed set of products. We estimate the model on a representative sample of households, whose purchases were scanned throughout 2007 by TNS/Kantar WorldPanel. We identify the distribution of the Willingness-To-Pay (WTP) for fat-content labels and predict where each household lies in this distribution given its observed choices. We then evaluate whether and how this WTP is related to the weight status of the main shopper, to household choices, and to a series of health-related lifestyle and attitude variables. We compare the fat tax and the mandatory labelling policies by simulating their impact on the consumption of full-fat dessert yogurts.

2 Data

In our dataset, there are 13,380 households representative of the French population. The data record, on a weekly basis, all purchases of yogurts and *fromages blancs* made for home consumption made by panel households throughout the year. The Universal Product Code (UPC) of each purchase is registered through the use of a handheld scanner, as well as the quantity purchased and the associated expenditures. The data do not provide the UPC, but a large set of product attributes. We choose to divide the year into 13 periods (or time units t) of four weeks. We thus focus on representative purchase behaviors in each four-week period, *i.e.* the choices that are the most frequently observed in a sense that will be defined hereafter.[3] Moreover, in order to strengthen the identification of consumer preferences, we only keep households who purchased *fromages blancs* or dessert yogurts more than 10 weeks in the year. Since they clearly exhibit a stable taste for these products, this avoids making inference from noisy choices.

Product attributes

The data contain information on the fat content of all dessert yogurts and *fromages blancs*, as well as the flavor, texture, brand, pack size, type of milk used, whether it is organic or not, and whether probiotics (bifidus) have been added or not. These attributes are used to define the alternatives that were available on the French market in 2007.

Using the information on the fat content, we sort the products into three categories: full-fat (more than 6% of fat), half-skimmed (between 3% and 6%), or skimmed (less than 3%). Fat-content labels are mandatory for all *fromage blanc* products.[4] But our data do not provide any information about the presence of fat-content labels on dessert yogurts. We have therefore collected additional data from several sources of information. The main source is the online Mintel's Global New Products Database (GNPD), which shows for 80% of the products in the dataset high-resolution color images of the packaging, and its evolution through time. This information was completed by an examination of the monthly French review *Linéaires*, which provides a detailed description and a picture of a number of new food products launched in France every month. Last, we also visited the popular website www.flickr, which proposes more than 4 billion images; the French website of consumer network www.ciao.fr; and for a small number of products, we used old TV advertisements from audiovisual archives available on line from the *Institut National de l'Audiovisuel*.

We also control for a number of other product characteristics, which have been ultimately selected because they were significant in preliminary regressions. Differences in hedonic characteristics are captured by a set of discrete attributes that indicate whether the product is a *fromage blanc* or a dessert yogurt, and whether its texture is smooth or not. Differences in health characteristics other than the fat content are captured by a dummy variable that indicates whether the product is organic or has been supplemented with probiotics. Another binary variable shows whether the product is sold in a small packaging (200g or less), which corresponds to a one-person portion. Last, there are 15 dummy variables that control for brand heterogeneity.

[2] For cheese and milk, fat labelling must always be clearly visible on the top of packaging. For butter, labelling is voluntary. In either case, there is no substitutable product that would be subject to a different labelling regime.

[3] Griffith *et al.* (2009) choose to pick up shopping trips at random in the data. In our view, this method has the disadvantage of introducing more noise in the analysis of consumer preferences.

[4] See the *décret* 88-1206 in the *Journal Officiel de la République Française*, 31/12/1988.

There are the big national producers (Yoplait, Danone, Triballat,etc.) and the retailer brands (e.g. Carrefour, Leclerc, Intermarché). The small national brands are grouped together, as well as the small retailer brands. We also control for brand quality, with three levels (low-, mid- and high-quality brand). The lowest level includes the hard-discount and the first price retailer brand. The national brands and the high-quality retailer brands form the highest level. Combined, these attributes allow us to define 279 distinct varieties of dessert yogurts and *fromages blancs*.

Household choice set, choice and prices

These 279 products are distributed through a number of stores, supermarkets and hypermarkets. To simplify the analysis, we define 14 homogenous categories of distribution channels, according to criteria such as the retailer company (for supermarkets and hypermarkets) and the store format (hard-discount, hyper and supermarkets, grocery stores). We choose these two criteria because they are strong determinants of quality positioning and pricing strategies. For each period, we know the distribution channels that were visited by each household. Hence, the choice set of each household is made up of all products that were available in these distribution channels. The household choice set can therefore vary from one period to another. Two different households have different choice sets if they visited different distribution channels, even if they live at the same place.

For each household and each period, there are two situations. If the household did not make any purchase or did purchase a single product, then defining its choice is not a problem. However, when more than one product were purchased, we have to choose which one is the most representative of the household's preferences. In order to avoid arbitrary choices, we randomly select one of the products, with probabilities of selection that are proportional to the share of each product in the household's yearly purchases. To construct the price of each product in the household choice set, we first calculate the mean unit prices of this product in each distribution channel and for each period. Then, the price faced by the household is the average of the mean unit prices that are observed in the distribution channels that he visited during the period. As such, the prices vary over time, but also between households according to the distribution channels they visit.

Since the estimation procedure is time-consuming, we reduce somehow the data set by randomly choosing five periods for each household. To avoid having too much noise in the estimation process, we also exclude products that were purchased less than 10 times in a period. This leaves us with 224 different products. Table 1 presents summary statistics on product characteristics, in the sample of all products and in the sample of household choice sets. Note that there are much less low- and mid-quality products in the household sets than in universal set because a household set depends on the distribution channels that were visited.

The main characteristics of the market are given in Table 2. While no full-fat dessert yogurts (20 products) had a fat-content label in 2007, 12 out of the 24 half-skimmed had one. Our final sample contains $8,985$ observations describing the choices of $1,795$ households over five periods. *Fromages blancs* account for 70.8% of choices, the dessert yogurts for 23.9%, and the outside alternative of no consuming these products for 5.4%. More than 54% of the purchases of *fromages blancs* were made in the half-skimmed category, about 23% were skimmed and as much were full-fat. By contrast, 72% of dessert yogurts were purchased as full-fat. The price of full-fat products is higher than the price of other products, but there is less variation in the price of dessert yogurts than in the price of *fromages blancs*. The reason is that there are very luxury varieties of *fromages blancs*, while dessert yogurts cannot pretend to the same cachet.

Household characteristics

The empirical specification also includes household characteristics: income quartiles, household size, and three dummy variables indicating whether the head of the household is aged over 65, whether the main shopper is classified as risky overweight (BMI>27), and whether the main shopper is a man. These household characteristics will be interacted with product attributes in the regression to adjust for the effect of observable characteristics on preferences.

3 Estimation results

Consumer preferences for *fromages blancs* and dessert yogurt are modelled in the random utility framework, through a Mixed Multinomial Logit model (MMNL) (Berry et al. 1995, McFadden and Train 2000). This model presents at least two advantages: first, household preferences over product characteristics are specified in a flexible manner, as it allows for both observed and unobserved heterogeneity effects on the intercept and the slopes of the utility function; second, household heterogeneity in the WTP for fat-content labels can be precisely characterized. During the estimation, a particular attention is paid in identification issue such as price endogeneity. Preliminary results did not reject the null hypothesis of price exogeneity. Indeed, brands' and retailers' fixed effects are likely to pick up the effect of unobserved product characteristics. This section thus presents the estimates obtained without controlling for price endogeneity. All estimations are performed with 500 Halton draws.

Coefficients

Table 4 shows the coefficient estimates of the MMNL model. As outlined in the previous section, the marginal utilities of prices and labels have deterministic and random components, and have therefore a mean *and* a standard deviation. The first column reports the mean marginal utility of product characteristics for a reference main shopper who is a female, aged under 65, whose BMI is under 27 and living in a household in the top income quartile. The second column reports the estimated standard deviations of each random component. They are all significant at the 1% level, indicating that marginal utilities of prices and labels do vary with unobservable household characteristics. The remaining columns report the coefficients for a number of interactions between product characteristics, listed in the first column, and household characteristics, which appear in the first row (household income quartiles, household size, the main shopper is risky overweight, is a man, is aged over 65).

The price coefficients conform to the intuition: on average, the probability of choosing an alternative decreases with its price; this mean price effect is higher among households under the median income and those whose main shopper is under 65. The standard deviation of the price random effect is quite high (2.301), which implies that the marginal disutility of expenditure for *fromages blancs* and dessert yogurts is very heterogeneous, beyond discrepencies captured by observed socio-demographic attributes. Fat-content labels have, on average, a positive value (1.710 for the reference individual), but once again the standard deviation is high (3.881): there is a strong unobserved heterogeneity in the preferences for labels. Male and elderly main shoppers tend to dislike fat-content labels, as well as those from households in the third income quartile. The marginal utility of the label does not increase significantly when the main shopper is risky-overweight. The random effects are negatively correlated, with a coefficient of -0.790. Hence, individuals having a strong taste for labels are also the more sensitive to prices. This will limit their willingness-to-pay for a label.

Households tend to prefer half-skimmed and full-fat products to skimmed ones. This taste for fat is even more developped among low-income households and households with male or old main shoppers. Valli and Traill (2005) already noted that the French dislike low-fat yogurts, as compared to the British, Dutch, Spanish and Portuguese. It is worth noting that the risky-overweight shoppers prefer either low-fat or full-fat products to half-skimmed ones.

Willingness-To-Pay for a fat-content label

The Willingness-To-Pay (WTP) for a label is the price variation (here in Euros) that keeps utility unchanged when a fat-content label is displayed on the front and the sides of the packaging. A household-specific WTP can be computed from the estimates, conditionally on household-specific information (observed choices, product and household characteristics). The mean is negative (-0.781 Euros), but the median is positive (1.739), and the first and last deciles takes very high values (-13.348 and $+12.977$ respectively). While the WTP is positive for most households, it is negative for about 31% of the population. Given the presence of extreme values, the analysis of household-specific WTPs here focusses on the first quartile (Q25), the median and the third quartile (Q75), rather than the mean. Table 5 reports these values for all households, and for specific subgroups of the population. The WTP for a label tends to be lower (about 20 *cts* less) when the main shopper is obese or when the household is in the first quartile of income distribution (see the lines in bold). Thereby, in contrast to economic theory

predictions, fat-content labels are not always positively valued by consumers, in particular by those who would benefit the most from them in terms of health prevention: the obese and the poors. That the preference for information is lower in these population is not a good news for information-based health policies.

4 Simulations: Mandatory Labelling vs. Fat Tax

In this section, we simulate two alternative policy scenarios and compare them to the current situation. We try to answer the following questions: (i) what would be the effectiveness of a mandatory labelling policy as compared to a fat tax? Results are reported in tables 9 and 10.

Regarding public policies, we provide clear evidence that mandatory labelling would be more effective than a fat tax at reducing fat intakes. One explanation is that dessert yogurts and *fromages blancs* would stand on equal terms in market competition. Since dessert yogurts are more expensive, their consumption would drop dramatically. Some consumers would report their choice on full-fat *fromages blancs* and the market share of all full-fat products would drop by -6.5 percentage points. By comparison, a 10% rise in prices, which is the maximum that one could expect from a VAT increase, would decrease the market share of full-fat and half-skimmed products by respectively -2 percentage points only. Last, under voluntary labelling rules for all products, consumers would substitute full-fat *fromages blancs* for full-fat dessert yogurts. The slide in market shares from the latter to the former is about 9.2%, leaving to dessert yogurts only 4.3% of the market (against 14% in 2007). Hence, one conclusion is that imposing mandatory labelling only on *fromages blancs* has favoured product innovations on the segment of dessert yogurts, with unintended negative consequences in terms of fat consumption. The same labelling rules should apply to all products.

5 Conclusion

This paper uses a structural model of consumer choices and household scanner data collected in 2007 to estimate the WTP of French consumers for a fat-content label on the *fromages blancs* and dessert yogurts. Economic theory predicts that fat-content labels should always be positively valued by consumers, as they are supposed to favor the emergence of a separating market equilibrium, whereby they can easily buy products that better match their preferences for fat than when the information is unavailable (see Teisl *et al.* 2001). We find indeed that about one third of households would prefer avoid fat-content labels. Low-income households and households whose main shopper is obese are more likely to dislike this kind of information. Moreover, two pieces of evidence suggest that the development of the market for dessert yogurts has been favoured by the mandatory labelling of *fromages blancs*. First, most households who consume dessert yogurts have a negative WTP for labels. Second, a counterfactual simulation reveals that, absent the labels on full-fat *fromages blancs*, the market shares of dessert yogurts would fall dramatically. One driver of product innovation may have been the existence of a segment of consumers who want to eat fat products and avoid fat-content information. As such, a mandatory labelling policy must apply to all food products. It may have the advantage of giving to firms incentives to develop new products along other dimensions than the addition of fat (or sugar).

We also show that a fat tax policy would have much less effect than a mandatory labelling policy. However, it would not have spectacular effects on those individuals who are obese, in terms of substitutions to low-fat products. Hence, commercialising low-fat food and letting consumers decide is not sufficient to solve the obesity problem, even when information is made salient.

While mandatory labelling is an effective policy tool, it would have negative consequences for consumer welfare on the short term, because the WTP for a label is negative for 61% of the consumers of full-fat dessert yogurts. As such, a number of them would stop consuming these products, which may therefore exit from the market if they yield negative profits to the firm. Such exits can generate additional welfare losses, by reducing further the consumers' choice set (Small and Rosen 1978). Hence, it is not clear whether mandatory labelling has less consequences on consumer welfare than the fat tax.

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Table 1. **Product characteristics**

		in the universal product set	in household choice sets
Price		2.44 (1.09)	2.71 (1.22)
Products with a Label	*Label*	85%	81%
Skimmed		24%	22%
Half-skimmed		38%	35%
Full fat		37%	43%
Fromage Blanc		80%	78%
Texture	*Smooth*	75%	73%
Products with a pack size below 200g	*Portion < 200g*	54%	59%
Organic or bifidus products	*Organic/Bifidus*	4%	8%
Low-quality retailer brands & hard-discount brands	*Low quality*	20%	9%
Mid-quality retailer brands	*Mid quality*	39%	23%
High-quality retailer brands & national brands	*Reference*	40%	68%

Table 2. **Market characteristics**

	Outside option	Fromages Blancs			Dessert yogurts	
		Skimmed	Half skimmed	Full fat	Half skimmed	Full fat
Number of products (number with a label)		54 (54)	63 (63)	63 (63)	24 (12)	20 (0)
Mean price	0	1.99 (0.88)	1.98 (0.78)	2.95 (1.14)	2.88 (1.36)	3.09 (0.39)
Market shares inc. the outside option	5.4%	16.2%	38.9%	15.7%	6.7%	17.2%
Market shares exc. the outside option		17.1%	41.1%	16.6%	7.1%	18.2%

Note: the mean prices were computed in the universal product set. Results in the household choice sets are quite similar.

Table 4. **Estimated coefficients**

	Mean	Std. dev.	Risky overweight	Income: First quartile	Income: Second quartile	Income: Third quartile	Household size	Man	Aged over 65
Price	-1.763***	2.301***	0.010	-0.188***	-0.098*	0.046	0.098***	0.163	0.436***
	(0.070)	(0.243)	(0.048)	(0.062)	(0.056)	(0.056)	(0.014)	(0.102)	(0.044)
Label	1.710***	3.881***	0.196	-0.320	-0.180	-0.551**		-0.900*	-0.851***
	(0.240)	(0.130)	(0.227)	(0.282)	(0.273)	(0.278)		(0.488)	(0.216)
Half skimmed	0.201***		-0.197***	0.666***	0.437***	0.375***		0.781***	0.208***
	(0.066)		(0.071)	(0.088)	(0.086)	(0.091)		(0.185)	(0.072)
Full fat	0.180**		-0.090	0.298***	0.124	0.171		0.952***	0.195**
	(0.077)		(0.086)	(0.105)	(0.101)	(0.104)		(0.209)	(0.083)
Fromage blanc	0.931***		-0.140	0.245	-0.307**	-0.318**		1.136***	0.211*
	(0.123)		(0.120)	(0.156)	(0.142)	(0.149)		(0.342)	(0.119)
Low quality	-0.909***			0.329***	0.125	0.089	0.205***		
	(0.176)			(0.120)	(0.112)	(0.119)	(0.032)		
Mid quality	0.028			0.367***	0.436***	0.380***	0.086***		
	(0.157)			(0.084)	(0.076)	(0.078)	(0.023)		
Portion < 200g	0.899***							-0.318**	
	(0.035)							(0.151)	
Organic/Bifidus	0.042								
	(0.054)								
Smooth	-0.245***								
	(0.055)								

Note: Standard errors are in parentheses; *** = coefficient significant at the 1% level, ** = at the 5% level, * = at the 10% level; The column "Std. dev" reports the standard deviation of the random effects. The random effect on Price is distributed according to the opposite of a lognormal law, and the reported coefficients are the corresponding mean and standard deviation. The random effect on Label follows a normal law, and the reported coefficients are the corresponding mean and standard deviation. Their coefficient of correlation is for-0.790***. Other control variables are: fixed effects for the 14 distribution channels and for 15 brands or groups of brands (the results are not reported but available from the authors on request); these results were obtained with D=500 draws. The reference individual is a female meal shopper in the top income quartile, aged under 65, whose BMI is under 27.

Table 5. **Distribution of the WTP for various demographic groups (in Euros 2007)**

Population	Quantile		
	Q25	Median	Q75
All	***-0.928***	***1.739***	***3.310***
Main shopper normal weight (BMI < 25)	-1.220	1.727	3.324
Main shopper overweight (25 ≤ BMI < 30)	-0.511	1.877	4.030
Main shopper obese (BMI ≥ 30)	**-1.015**	**1.557**	**2.706**
First income quartile	**-0.958**	**1.512**	**2.531**
Second income quartile	-0.882	1.841	3.176
Third income quartile	-0.415	1.758	3.923
Fourth income quartile	-1.691	1.779	3.836
Man	**-2.731**	**0.652**	**1.814**
Woman	-0.886	1.785	3.365
Aged under 65	-1.225	1.696	2.865
Aged over 65	-0.448	1.841	6.170

Table 8. **Policy simulation – Mandatory labelling**

		Fromage Blanc			Dessert yogurts	
	Outside option	Skimmed. Fat free	Half skimmed	Full fat	Half skimmed	Full Fat
Market shares in 2007	5.4%	16.2%	38.9%	15.7%	6.7%	17.2%
Policy effect	+3.9%	+1.9%	+3.3%	+4.3%	-5.0%	-8.4%
Policy effect by demographic group:						
First income quartile	+3.6%	+1.7%	+3.9%	+3.9%	-5.9%	-7.3%
Second income quartile	+3.7%	+1.8%	+3.4%	+3.9%	-5.1%	-7.8%
Thrid income quartile	+4.1%	+2.2%	+3.7%	+5.4%	-5.6%	-9.7%
Fourth income quartile	+4.0%	+1.9%	+2.4%	+4.3%	-3.8%	-8.8%
Meal planner IMC < 27	+3.8%	+1.9%	+3.0%	+4.5%	-4.7%	-8.5%
Meal planner IMC ≥ 27	+3.9%	+1.9%	+3.4%	+4.3%	-5.1%	-8.3%

Note: in this scenario all products on the market have a label.

Table 9. **Policy simulation – Fat tax**

		Fromage Blanc			Dessert yogurts	
	Outside option	Skimmed. Fat free	Half skimmed	Full fat	Half skimmed	Full Fat
Market shares in 2007	5.4%	16.2%	38.9%	15.7%	6.7%	17.2%
Policy effect	+0.3%	+2.0%	-0.2%	-2.0%	+0.1%	-0.2%
Policy effect by demographic group:						
First income quartile	+0.3%	+1.9%	-0.1%	-2.0%	+0.1%	-0.2%
Second income quartile	+0.3%	+2.0%	-0.2%	-1.9%	+0.1%	-0.3%
Thrid income quartile	+0.3%	+1.8%	-0.2%	-1.8%	+0.0%	-0.2%
Fourth income quartile	+0.4%	+2.2%	-0.3%	-2.1%	+0.0%	-0.2%
Meal planner IMC < 27	+0.3%	+2.0%	-0.2%	-2.0%	+0.1%	-0.2%
Meal planner IMC ≥ 27	+0.3%	+2.0%	-0.2%	-2.0%	+0.1%	-0.2%

Note: in this scenario, the price of all full fat products increases by 10%, and the price of all half skimmed products increases by 5%.