

# Some Results and Propositions from a French Experiment with Energy Labelling

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## Synopsis

A model was developed for monitoring the sales of partner dealers. It gives a clearer understanding of dealer strategy, opportunities and barriers in market transformation.

## Abstract

A pilot operation aimed at accompanying the introduction of the new EU energy labelling regulation was carried out in France in 1995 - 96. The objective of the operation was to test the potential influence of the label on the dissemination of more efficient appliances. To complete the qualitative evaluation, a model was developed to follow actual sales based on sales data from the distributors.

Designed to measure the energy savings generated by the labelling campaign (and the cost of the kWh saved), the model also permitted an in-depth analysis of the various parameters of market transformation and the strategies of the various actors. It was thus demonstrated that the impact of labelling varied from one product category (- large chest freezers, small refrigerators) to another. This can be explained by large variations in the supply structures of the manufacturers, price levels, commercial strategies and consumer behaviours.

Results also underlined the necessity of an active participation of the retailers : success depends on whether they anticipate the market and create demand by introducing more efficient appliances. An unanticipated result was that the model permitted retailers to gain a clearer image of the advantages they could expect from this strategy.

Important lessons can be drawn for public policy. The analysis also permits a more productive dialogue between manufacturers and retailers. It can easily be replicated at national or European level using existing data bases.

## Introduction

In 1995, ADEME (French Agency for Environment and Energy Management) and EDF (French Electricity Utility), along with the Nord Pas de Calais Region, initiated a promotional campaign for energy efficient refrigerators and freezers. Taking advantage of the recent application of the European Energy Label, this project paid particular attention to the role played by electric household appliance distributors (1). Amongst nearly 4000 references which manufacturers exposed in international fairs such as Domotechnica or Confortec, only 100 to 150 are in fact marketed in the largest retail outlets. It thus appeared essential to be able to develop active partnership with distributors, based on the following themes:

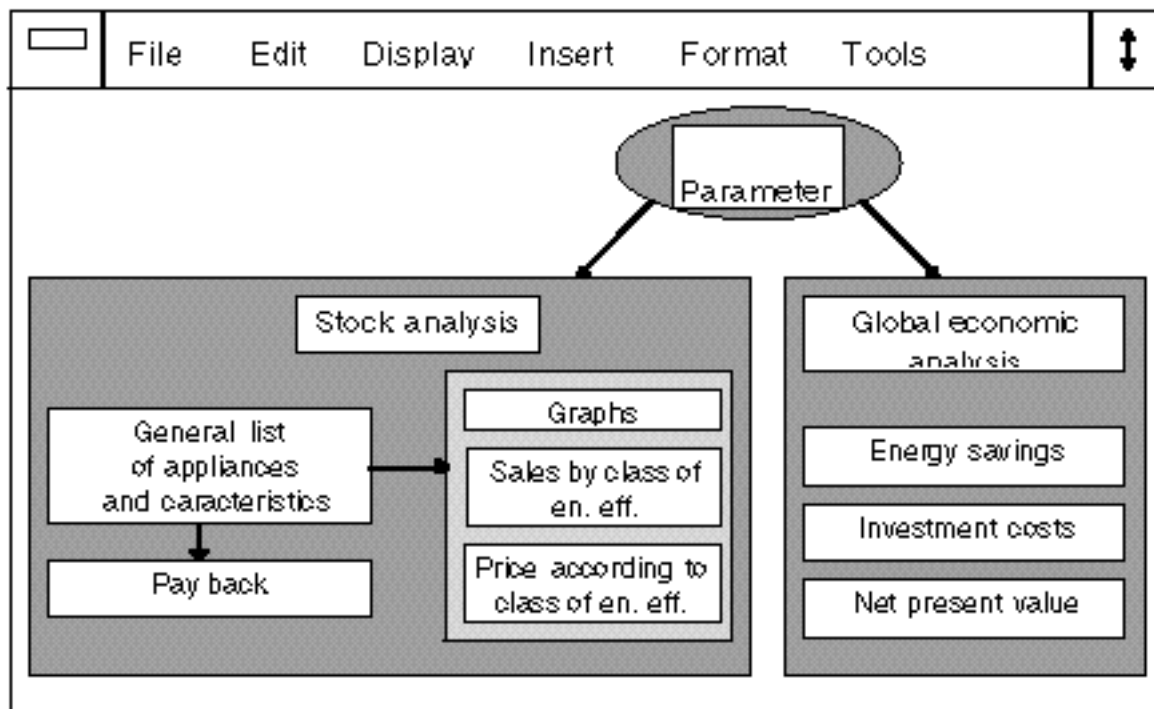
- distributors' motivation to develop sales of energy efficient products (image, turnover, clientele loyalty...),
- revising distributors' lines to broaden the variety of products on sale and assure a better quality/price coherence,
- elaboration of a coherent marketing strategy with this new line,
- training and motivation of sales force,
- finally, the implementation of the Energy Label as a prop for this new strategy (2).

As soon as the project was introduced, the need for quantitative follow-up appeared to reply to a number of problems:

- analyse in detail - and for each category of products (3) - the lines offered by distributors, and facilitate their reformulating by integrating criteria of energy efficiency to those which are usually used to set up product lines (trade marks, presentation, price, reliability, etc.),
- offer distributors who are partners in the project a follow-up of the experience, in order to reinforce their motivation, and to improve the selection of products and marketing strategy,
- identify a certain number of indicators so as to progressively interest other distributors,
- provide a tool of economic evaluation in order to evaluate - from the consumer and community viewpoint - the real impact of the project: real electricity savings, overcosts paid for by customers and costs of launching the campaign.

We thus developed - for ADEME and EDF - a model which provides answers to these different questions using a database composed of two series of information available at all distributors: the list of appliances on sale in the stores (along with their technical characteristics) and sales follow-up.

Figure N° 1 presents, synthetically, the structure of this model:



1. The “Price of Appliances According to their Class” Module visualises on graphs all available and comparable models (250-300 litre chest freezers, for instance). It makes it possible for the person in charge of purchasing for the distributor to identify deficiencies in the stock, or on the contrary the appliances to be eliminated, thus facilitating discussions with suppliers. It should be noted that the class of efficiency (A to G) is recalculated using technical data provided by the manufacturer, which allows for immediate detection of potential labelling incoherences.
2. The “payback calculation” module refines this analysis by stocking - for all comparable products - an analysis of the ratio “energy overcosts/savings” between appliances of different performance levels.
3. The “Classification of Sales of Appliances by Class of Efficiency” Module allows for regular follow-up of sales in all of the chain’s retail outlets, and thus a control of the adaptation of the stock to consumers’ choice.

4. Finally, the “Global Economic Analysis” Module offers an economic evaluation of the savings generated by sales fluctuations, overcosts of purchases paid for by the customers, calculation (for each category of products) of the cost of kWh actually saved, and the overall economic evaluation of the project by integrating the costs of the campaign financed by the public budget (ADEME, EDF and the Region). All of these calculations can be carried out by correcting the raw data of the project’s independent fluctuations: variations, from one year to the next, of the sales structure (more freezers for instance), of the average capacity of appliances sold, etc. In the same vein we can establish a comparison with the average national trends (calculated on the basis of follow-up data of national sales by the Nielsen Group) in order to see if the distributors who are partners in the project have undergone a fluctuation which is significantly different from the general market tendency.

We are now proposing an examination of the first months of the implementation of this operation, based on elements which have been made available to us by the Boulanger Group (the first distributor to undertake the partnership offered). We are interested essentially in the overall economic analysis (fourth module) and will take up the other aspects very briefly (they will be presented in Spindleruv Mlyn).

## 1. Trends in Stock of Appliances on Sale in Retail Outlets

The need to have the stock of products evolve to align it more with the new strategy appeared with the first analysis of the lines carried out in 1995. And yet it should be recalled that Boulanger, as a specialised distributor, already offered a rather efficient line in comparison with the national average. We can see on figure N° 6 (Evolution of the Energy Efficiency Index by Category) that the 1994 Boulanger line is significantly more performant than the average national supply on freezers, comparable for “Larder/No Freezer” fridges (Category 1) and “-Fridge-Freezers” (Category 7), but not as good as the “One Door” fridges (Categories 3 to 6) due to the presence of loss leaders.

Having the stock evolve implies considering two criteria: the composition of the stock, i.e. the relative proportion of appliances correctly or incorrectly classified from the point of view of European Labelling, but also its structure, that is the relation established between energy efficiency and price. Indeed, the introduction of the label tends to disqualify certain products, whose efficiency/cost ratio becomes difficult to justify.

It may appear simple to “pack” the line with energy efficient products. But in fact, the distributor (Boulanger) is confronted with a double constraint:

1. firstly, constitute a line in a competitive context where, it is to be recalled, Boulanger was in the vanguard and therefore could not take the risk of having a considerable price difference for its products in relation to the other dealers;
2. secondly, limit risks of losing sales due to product substitution. Indeed, to introduce new models, linears have to be eliminated from other ones, thus running the risk that the loss entailed on the substituted products will not be compensated. This is even more the case as customers are very receptive to the makes on sale, and it is thus essential to keep certain brand names on sale regardless of their objective quality from the energy criteria viewpoint.

*Table 1*

*Compared distribution of the 1994 and 1995 stocks according to the classes of energy efficiency*

%	A	B	C	D	E	F	G
1994	0,4	11,2	19,4	24,4	22,1	15,1	7,4
1995	2,7	21,6	24,6	25,9	11,1	9,4	4,7
difference	+575%	+93%	+27%	-	-50%	-38%	-37%

Given these constraints, what could Boulanger do? Trends in stock on sale are resumed in Table N° 1:

The evolution is thus very sensitive, and we can observe a “shift” towards more efficient classes in the distribution of these products: Class E is caving in, while Class B is attaining the same level of representativeness as Classes C and D. Class A is becoming significant.

Figures N° 2 and 3 allow for the analysis of trends in stock in greater detail for two major categories: Category 7 (- Fridge Freezers) and Category 9 (Chest Freezers). We can see that the dynamic is absolutely not comparable.

In the case of Category 7, the 1994 line was built around Classes D (32% of the stock) and E (27%), Class C coming in third position with 23% of the stock. Stock is distributed according to the bell curve. This category, which represents a third of sales, is undergoing fierce competition between large retail outlets: the margin of manoeuvre is thus limited by the absolute necessity to remain competitive, and to hold on to the big name brands on sale (- known to the clientele and thus in demand, but which do not all offer good performance energy wise). It is however obviously on this category - for which the “energy efficient” criteria was absolutely not taken into consideration up until now - that the manufacturers made the major improvements in energy efficiency. The 1995 line confirmed a progressive trend of the whole selection, Class C becoming dominant, and Class B significant (quadrupling the number of products), while A Products made their appearance.

Figure n°2 **Structure of the Stock - Boulanger - Category 7**

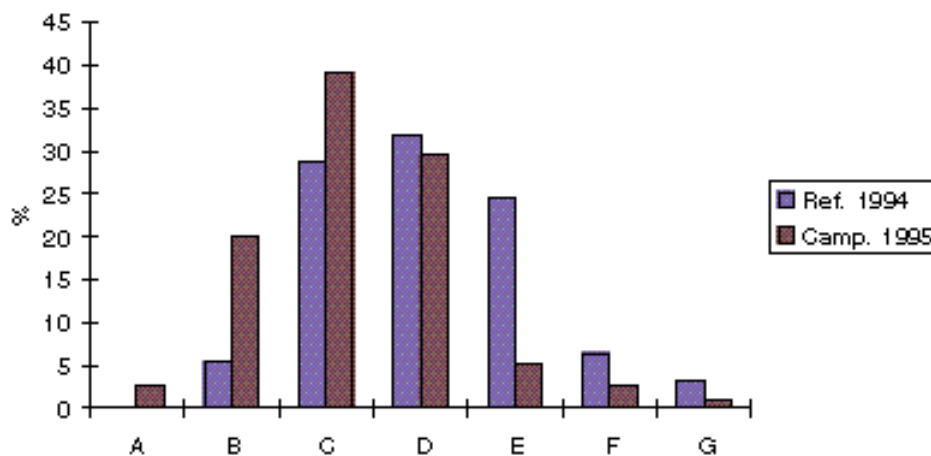
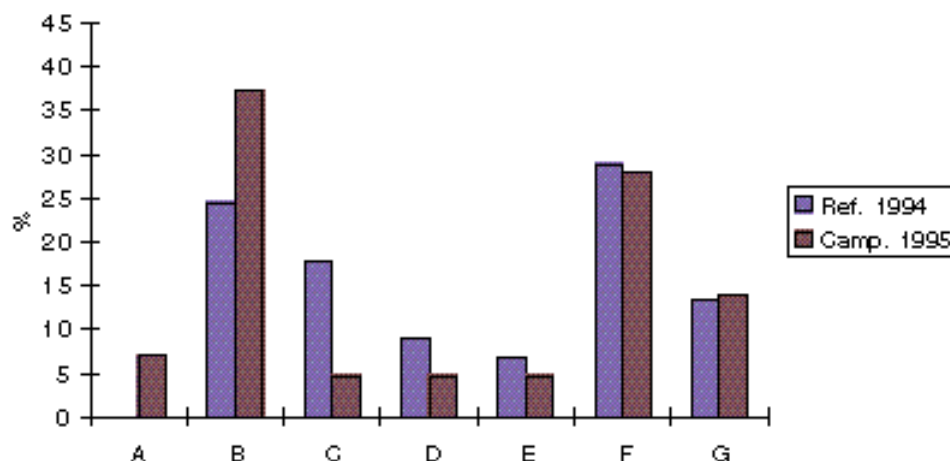


Figure n°3 **Structure of the Stock - Boulanger - Category 9**



On the other hand, sales of Category 9 products (chest freezers) are traditionally divided up according to a double-bell curve distribution, which corresponds to both classic products (F or G) and to super insulated ones (B, some A). The stock doesn't evolve as clearly, but we can nevertheless see that the effort of introducing new products was operable on Classes A and B, which are present in greater numbers in 1995.

## 2. Trends in Sales

The distributor which undertakes this kind of partnership naturally benefits from having its sales evolve parallel to the stock. This is also one of the objectives of the public partners, as electricity savings arise from this evaluation. The other objective of the public Authorities is in contradiction with the immediate interest of the distributor: while the latter is rather sensitive to an increase in its average sales price (it's a major element of motivation for distributors), the collective interest is that the sales price doesn't evolve too much, as such fluctuations would mean too much of an overcost for consumers.

What can be said of the trends which are appearing with Boulanger? First and foremost, we must remember that the different categories of appliances do not have the same importance in sales: it is not necessary to dwell too much on analysing trends in Categories 3 (2% of sales) or 6 (less than 1%). On the other hand we must be very attentive to Categories 1 (8%), 7 (38%) and 9 (16%). This is also important from the distributor's standpoint, as the latter doesn't have a big margin of manoeuvre on categories for which it offers five or six references on sale, while taking into consideration the different sizes! Inversely, the distributor can consecrate a larger showroom surface for categories on which it makes the essential part of its sales, and thus structure its selection on the largest number of appliances (up to 50 references in stores for Category 7).

Figure N° 5 illustrates the evaluation of Boulanger's overall sales (all categories weighted by number of appliances) between the two follow-up periods, August to December 1994 and August to December 1995. We can compare the values with those of the national market, figure N° 4. This graph confirms that, globally, the customers "transformed" the test: the lines have evolved, and sales have evolved accordingly. And so Class A obtains a score which is honourable (3%). But Class B really distinguishes itself with 15%, thus doubling its weight in the distribution of sales. In the same vein, Class C rises to 27% of sales, as opposed to 16% the previous year, and only 11% on the national level! Inversely, sales in Classes E and F collapsed by two thirds. Class G has maintained its sales level, which can be explained by the presence of "first prices" competing with "discounters". These products are supposed to attract customers, with the hope of selling them other - more expensive - appliances (which also offer better profit margins), but it appears that sales are not negligible (4).

Figure n°4

**Evolution of the Sales of Domestic Refrigeration Appliances  
National Market 1993 and 1994**

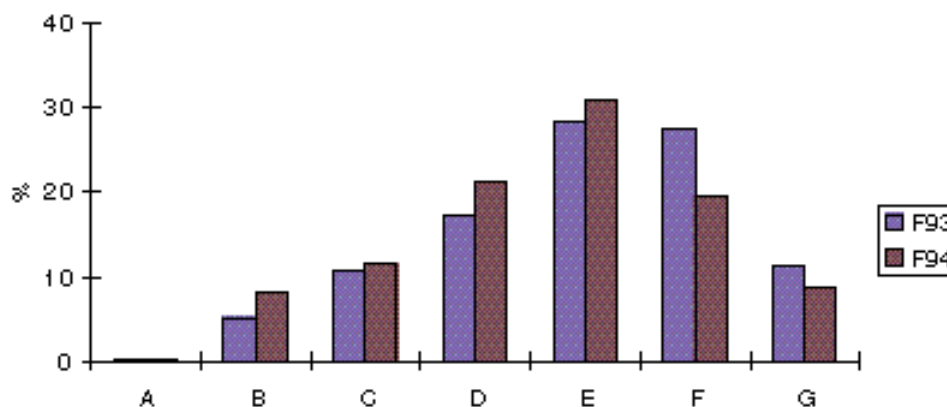
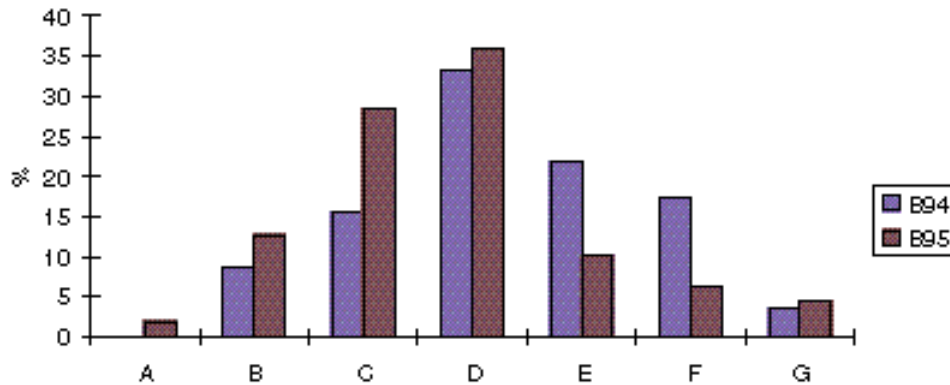


Figure n°5

**Evolution of the Sales of Domestic Refrigeration Appliances  
Boulangier 1994 and 1995**



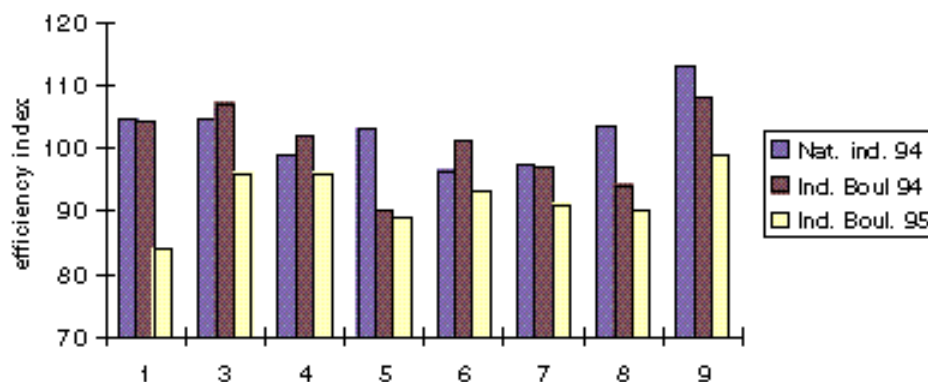
Figures N° 6 and N°7 illustrate the fluctuations of the average efficiency index and of the average price index of Boulangier sales between the reference year (1994) and the campaign year (1995). They thus allow for a more in-depth understanding of sales fluctuations. We indicated for comparison purposes the national values for the reference year, extracted from the Nielsen database.

2.1 Average Efficiency Index

The calculation is made by weighing the index of each appliance sold (which serves to determine classes, from A to G) by the sales made on this appliance. The average index thus indicates the overall performance of products sold. There are no values for Category 2 (not represented at Boulangier), nor for Category 10, for which we do not have all the information necessary to make the calculation.

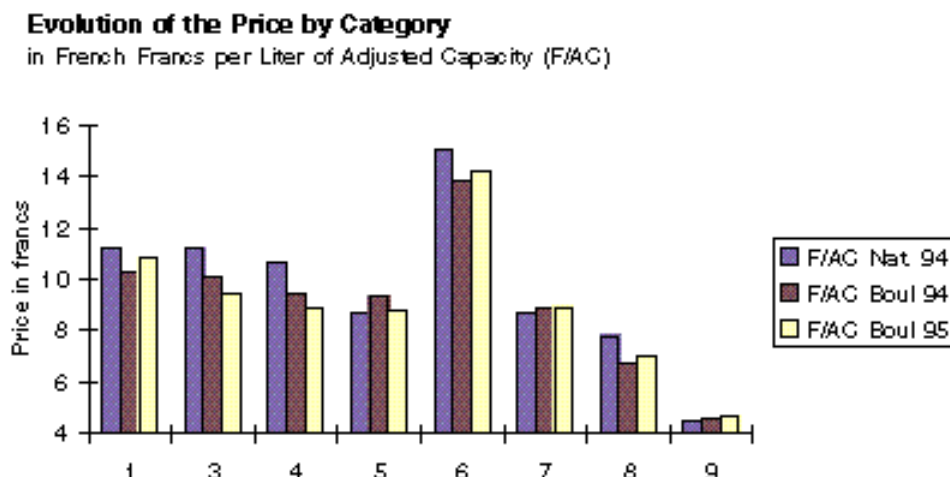
Firstly, we note that - for the categories considered and for the reference year - Boulangier does not present a homogenous mapping compared to the national average. As far as refrigerators are concerned (1 to 7), the average performances are roughly identical. On the contrary, average performances on freezers are clearly better with

Figure n° 6 **Evolution of the Efficiency Index by Category**



Nat. ind. 94 : average national index for the category, year 1994  
 Ind. Boul. 94 : retailer, average index for the category, year 1994  
 Ind. Boul. 95 : retailer, average index for the category, year 1995

Figure n° 7



Boulangier. These tables and graphs also confirm the general mediocrity of energy performances of products sold on the French market, for which the index is quite exceptionally inferior to 100 (Class D). The average is to be found in Class E, even in Class F for chest freezers.

This can be explained by Boulangier's marketing strategy, and by the variable interest accorded up until now to the energy criteria: Boulangier is a specialised distributor, the sales of which reflect a commercial policy more centred on quality and the medium/top of the line models, than it is on the "discounter's" market. But as far as refrigerators are concerned, energy efficiency was absolutely not a criterion to recognise "top of the line" products before the operation conducted in the Nord Pas de Calais region, and the average performances of products sold was just as mediocre as the national average, despite a mean price which is sometimes higher (categories 5 and 7, see below). On the contrary, the "electricity consumption" sales pitch had already been used by Boulangier for freezers to promote products which were "super insulated" (linked to autonomy), which explains the distribution of the stock examined above.

1995/1996 sales represent a clear rupture vis à vis sales in the reference year: advances in the average index are very significant. The figures illustrate an impressive trend in Category 1 (larder/no freezer fridges), a new category in France for which Boulangier is in a good position: this is what allowed Boulangier to modify its stock - and thus its sales - much more drastically than would have been possible in more competitive categories such as 7. But it can be seen that in Categories 8 and 9 - in which Boulangier was already "better" than the national average - the index also drops, going from 94 (class D) to 90 (class C) for upright freezers and from 108 (class E) to 99 (class D) for the chest freezers. Categories 1, 5 and 8 thus already show an average sales index in Class C.

This improvement in indexes can be globally translated by a 7.3% improvement in average energy efficiency of products sold. The 27000 appliances sold during the follow-up period induce an annual consumption of 11,3 Gwh, and the index gain meant that an annual savings of approximately 827 Mwh was possible (about 2500 Mwh on sales for one full year).

The present value of electricity savings (discount rate: 8%, lifetime period 10 years) induced by sales in the autumn of 1995 amounts to 4,2 million francs, i.e. approximately 12 million francs for one year of sales. If Boulangier represents 2.5% of the national market, the same trend for the French retail industry as a whole in this sector would have resulted in a net present value in savings of some 400 million francs.

A more refined analysis shows that these savings are not spread out equally according to the categories of appliances: close to 89% of gains can be attributed to Categories 1, 7, 8 and 9, a cumulated consequence of the net fluctuation of indexes and of the extent of sales for these types of appliances. From a relative point of view (savings induced in a given category, in relation to the consumption rate of that category) it's Category 1 which

evolves the most (23,5% of savings), for reasons already evoked: on a new market which it dominates, Boulanger had no trouble in imposing a distributor's brand product (Baltik, origin Vestfrost) classified A and inexpensive.

## 2.2 Price Evolutions

Prices are average sales prices (total sales made on each reference, divided by the number of appliances sold for this reference during the period in question) divided by the adjusted capacity of the product considered. These prices are weighted on the distribution of sales in volume between the various products. As such, variations in the type of appliance and in average capacity over a given year compared with other years are thus accordingly adjusted.

We can see on the figure N°7 that a very asymmetrical evolution of average prices according to the categories considered has taken place. As such, for Categories 8 and 9, the price rise is significant (+3,5%). But in Category 7, on the contrary, the average price per litre remains relatively stable (+0,4%) despite improvement in the average index of appliances sold. How can we explain this apparent paradox?

We have seen that up until now, energy consumption was not a sales criteria for fridge freezers (Category 7), and thus did not constitute a preoccupation for Boulanger's buyers when they were making up their line and negotiating with suppliers. When the 1995 line was being prepared, it was possible to substitute a number of appliances which were expensive - but not too performant - by perfectly competitive appliances in terms of price, and yet having a better positioning as far as the energy criterion is concerned. Certain brand names were present in greater numbers, others were abandoned. Parallel to this, the supply provided by big manufacturers evolved (Brandt, Whirlpool) and we can see that the 1994 products had been replaced by more efficient products which took up the same price positioning. The Class C Thomson CK 32 model was sold in 1995 at the average price of 3890 francs (for an annual operational cost of 380 francs while taking on a value of 0,70 centimes after taxes for the consumer), while the Class D Thomson Cristal 33 model was sold the previous year for an average of 3850 francs (for an annual operational cost of 440 francs).

On the contrary, the freezer lines were already structured by taking into consideration the "electricity consumption" criteria (linked to autonomy), and the improvement of the index was not able to benefit from similar product reclassification. It is obvious that, as the "energy" preoccupation develops in the composition of product lines, substitution of less performant appliances by energy-saving ones at comparable prices will become more and more difficult. The correlation between efficiency and price will accentuate, and innovation efforts made by manufacturers will be the only means to tone it down. Follow-up which will be done on sales made by distributors who are partners in this project for 1996 and 1997 should bring with it interesting information on relative trends in manufacturers' supply and in distributors' selections.

In gross value, investment overcosts paid for by Boulanger's customers as a consequence of the evolution of sales measured over the study period prove to be low (675 000 francs) in relation to the total sales figure, which is close to 60 million francs (1,1%).

The cost of a kWh saved comes to an average of 11,3 centimes for total sales (i.e., the investment overcost compared to savings, in discounted present value over the life span of the equipment sold). It varies considerably, and is worth 8,2 centimes in Category 7 (because of the reclassification effect of the line, mentioned above). It is worth close to 30 centimes in Categories 1 to 9 (which is undoubtedly more representative of a medium-term trend) and 57 centimes in Category 8 for upright freezers (Table N° 2). In any case, it is considerably lower than the tariff of a low voltage kWh (an average of 70 centimes after taxes, without subscription).

All in all, for this distributor (2,5% of the national market) and with a complete annual sales campaign, the savings on electricity generated comes to nearly 2500 MWh/year, and the gross present value for the community (discounted present value of electricity savings induced, minus the overcosts of investments paid for by those who buy more performant products) is 10,5 million francs. If we deduct public costs of implementing this project (1,5 million francs) by allocating them to this distributor only (others have since joined the partnership) and to the first year of sales, the net evaluation is still positive with a considerably wide margin (9 million F).



Table 2 : Economic Analysis

	Category of appliances			
	1	7	9	all (1 to 10)
Sales 1995 (monitoring period)	2.183	10.401	4.273	26.966
Index 1994 (average for category)	104	97	108	99,4
Index 1995 (average for category)	84	91	99	92
Electricity savings/year (MWh)	132	381	126	827
Price/l. adj. capacity 1994 (francs)	10,26	8,84	4,56	7,86
Price/l. adj. capacity 1995 (francs)	10,78	8,90	4,70	7,93
Cost/kWh saved (1) (francs)	0,291	0,082	0,292	0,113
Net present value (1) (103 francs)	389	1.709	373	3.520

(1) lifetime period =10 years - discount rate 8 %

## Conclusion

The main interest in the follow-up method presented in this paper resides in its capacity to analyse - product category by product category - how the market is structured between manufacturers' supply, the selections made by dealers/distributors (which constitute the line actually offered to customers), and finally the latter's purchasing choices. The important role played by the dealers has been underlined. The dealers proved to be most interested by the information provided by the model, which sheds new light on the representation of their product lines and on their results. On this basis, we were able to undertake a more in-depth common reflection with them (Purchasing and Marketing Departments), on the possibilities of evolution in their product lines. This reflection also deals with the limits of these lines. And so it clearly appears that on certain categories of appliances, distributors have not yet developed the diversity of the supply offered by manufacturers, and can still improve their lines by progressively attracting the clientele towards new products. For other categories, it appears - on the contrary - that manufacturers' supply is now the limiting factor, either because there are no (or few) very performant products, or because such products are too expensive for the French market. And so we have to orient our efforts towards manufacturers "by proxy". This information is thus of utmost interest to public Authorities, who will thus be in a better position to target their support efforts.

The model also allows us to conduct a more detailed follow-up of market fluctuations (indices, prices, sales, electricity consumption) from national databases such as Nielsen or CMI. In particular, price follow-up which we have conducted for a number of months reserves a few surprises: we observed perfectly contradictory trends between certain categories (freezers in particular) for which the improvement in mean performances of products sold resulted in a clear increase of the average price, whereas for other categories (one door fridges), the same improvement took place along with a drop in the average price! The introduction of a new quality criterion on the market thus seems to have complex outcomes (competition, change of supplier, gains in productivity, profit margin policies) - at least in the beginning. It thus seems interesting to be able to proceed with regular follow-up on market fluctuations induced by the implementation of European labels.

## End Notes

(1) An important segment of the French market in household electrical appliances is covered by groups managing large specialised or non-specialised retail outlets (Darty, Boulanger, Conforama, Casino...). Each of these retail outlets distributes several tens to several hundreds of thousands of appliances per year, and possess purchasing groups in charge of selecting lines of products and negotiating with manufacturers and importers. Furthermore, small dealers are also very often affiliated to commercial groups which, in particular, assure supply.

(2) For further details on this project, see Paper N° 35.

(3) The categories of appliances considered in the document are the ten categories of the European Directive N° 94/2/EC (1 : Refrigerator without Frozen Food Compartment (FFC), 2: Refrigerator-Cellar, 3 : Refrigerator with 0 Star Compartment, ).

(4) We also have to take into consideration the enormous popularity of “American fridges”, more often than not classified F and G.

- Assessment of market transformation actions : some results and propositions based on a French experiment with energy labelling
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