

The "Loi Galland" and French consumer prices

Xavier Boutin
Guillaume Guerrero

INSEE Divisions:
- **Markets and Business
Strategies**
- **Short-Term Economic
Analysis**

The "Loi Galland" (Galland Act), implemented in early 1997, is suspected of having driven up French retail prices. Since 2004, it has been gradually challenged, and its provisions have been repeatedly amended. In this article, we assess the effects of the Act and its successive reforms on prices.

In microeconomic terms, the Loi Galland has weakened competition between retailers by forbidding them to pass on "hidden margins" to the consumer—i.e., individually negotiated rebates granted by producers, for example, in exchange for aisle-end display of their products. An analysis of prices collected in stores shows that the Act has eliminated the link between local concentration of outlets and retail prices. In places where store concentration was weak, competition relatively strong, and prices comparatively low, the Act's enforcement has led to higher prices.

Macroeconomic analysis, as well, suggests that the Loi Galland has driven up retail prices. Between 1997 and 2004, prices of basic consumer goods in "large retail chains" have risen faster than those of "other retail forms," which are less affected by the Act. The price gap between the two outlet categories partly explains the retail-price rise. We estimate that the Act contributed approximately one percentage point of "additional" consumer-price growth in the period 1997-2004. The successive amendments to the Act have probably trimmed consumer prices by 0.4 points since 2004.

The Loi Galland's definition of the below-cost retail price floor triggered an unexpected rise in prices

The Loi Galland gave tangible form to the concept of a below-cost retail price floor

The French ban on below-cost resale is well-established and an exception in Europe

France banned below-cost resale in a law of July 2, 1963. The ban was extended and specified in a 1986 government order on freedom of prices and competition. Since then, French retailers have not been allowed to sell goods at below their unit purchase price ("actual invoiced price"). This regulation was promulgated in response to complaints from producers, as cut-price sales by certain retailers had been forcing producers to lower their selling prices to all retailers.

The French regulation is the only one of its kind in Europe, with the notable exception of Ireland, where a similar ban was enforced between 1987 and 2005.

At the outset, the ban was hard to enforce

Large retailers' supply contracts contain many clauses that make it hard for an outsider to estimate actual purchase prices. The unit price is only one component of the purchase price, which typically incorporates many discounts and rebates as well. For example, a producer will commonly grant a discount to a retailer who has increased annual sales of one of its products. Likewise, the provision of sales-related services, such as aisle-end displays, is often paid for retroactively through rebates. These discounts and rebates can take various forms: they may be quantitative, retroactive, tied to multiple and reciprocal services, and so on. The 1986 government order allowed invoices to include "accrued" discounts whose amounts were "quantifiable at the invoice date." This loose wording left ample scope for changing the price via reporting of fictitious discounts. In practice, therefore, it was hard to determine the relevance of invoices for individual products, and the ban on below-cost resale remained purely theoretical.

The Loi Galland has made the ban on below-cost resale effective

The Loi Galland gave a simple, precise definition of the actual purchase price and hence of the below-cost retail price floor: "The actual purchase price is the unit price stated on the invoice plus taxes on sales, specific taxes applied to the resale, and transportation costs." Since 1997, the definition of purchase price has thus been restricted to the price stated on the invoice, with no deductions such as year-end discounts. The Act also tightened official verification and raised fines. Only the margins formally applied at the invoice date and shown on the invoice—the "upfront margins" (*marges avant*)—can be passed on to final consumers through reductions in the final selling price. By contrast, all other discounts are described as "hidden margins" (*marges arrière*) and therefore excluded from the below-cost retail price floor. Examples include margins linked to an annual sales volume, to the retailer's display of the product on a minimum shelf length, to business cooperation, or simply to the respect of mutual commitments over a certain period. Consequently, hidden margins can in no way be passed on to consumers.

The Loi Galland has raised prices

The Act facilitates impediments to competition

Hidden margins have grown since the Act's implementation

The Loi Galland capped the proportion of rebates that retailers can pass on to consumers. Producers and retailers therefore had a common incentive to focus on the share of these hidden rebates in the final selling price paid by the consumer, since they represented a secure margin that would not be affected by competition. Indeed, according to ILEC—the producers' association—the average share of hidden margins rose from 22% of wholesale prices in 1998 to

32% in 2003. As stated by a group of experts (Canivet Commission report), bargaining between suppliers and retailers broadly shifted from "upfront margins" (rebates that can be included in invoices) to hidden margins (retroactive rebates and merchandising cooperation, which cannot be included in invoices).

In some extreme cases, retailers have used the below-cost retail price floor to set artificially high retail prices on a coordinated basis

In some extreme cases, retailers established a system of *falsely conditional* rebates in order to set the below-cost retail price floor at an artificially high level. For example, the French Competition Commission (Conseil de la Concurrence), in decision 05-D-70 of December 2005, fined a producer of video cassette recordings and some of its retailers for having used a complex pricelist in which nearly all rebates were shown on a conditional basis. This price then naturally became the below-cost retail price floor. Nevertheless, although these rebates were formally conditional, a large proportion of them seems to have been consistently granted to retailers. This led the Competition Authority to regard the practice as a manipulation of the below-cost retail price floor aimed at eliminating competition between retailers and imposing artificially high prices on consumers. More recently, the Authority ruled against similar practices in the toy-retailing sector (Conseil de la Concurrence, decision 07-D-50).

The Act also stimulates price increases

An increase in the share of hidden margins at the expense of upfront margins creates an industry-wide price floor

The below-cost retail price floor is a price below which a product cannot be sold. If the floor is low by comparison with a product's usual price, it will not actually influence retailers' pricing practices. If they wish, they can set their prices below those of other merchants, for example in order to be more competitive. If changing the floor in order to raise prices becomes a general practice, the floor will be set at an artificially high level. It will then effectively constrain retailers, who will no longer be able to lower their selling prices to undercut their competitors. This threshold therefore constitutes a *floor price*. The general terms of sale offered by producers cannot be discriminatory, and they apply to all retailers equally. The floor price is accordingly an *industry-wide floor*. Since no retailer can sell below it, retailers can be certain that their competitors will not be able to offer the same product at a lower price.

Industry-wide floor prices reduce competition between retailers

There are two broad types of competition over products sold to consumers: competition between different producers selling the same type of product (*inter-brand competition*) and competition between rival retailers over identical products or brands (*intra-brand competition*). When competition between producers is weak, it is the intensity of downstream competition, i.e., between stores, that determines the final selling price. Intra-brand competition is thus essential to ensuring relatively competitive prices, even absent an alternative to the existing producer. But industry-wide floor prices eliminate this competition between retailers and therefore lead to high retail prices.¹ For this reason, competition law is particularly strict with regard to binding prices and floor prices, which are banned *per se* under European and U.S. law.

The widening use of hidden margins and the generalization of industry-wide floor prices promoted by the Loi Galland should therefore have driven up retail prices. As early as 2000, Patrick Rey and Jean Tirole voiced their concern in a report by the Economic Analysis Council (Conseil d'Analyse Économique). More recently, this concern was expressed in a report by a group of experts commissioned by the Economy Minister in 2004 (Canivet Report) and in an opinion by the Conseil de la

1. For a discussion of recent literature on vertical relationships, see P. Rey and T. Vergé, "The Economics of Vertical Restraints," in P. Buccirossi, ed., *Handbook of Antitrust Economics*, MIT Press, 2008. For a more specific discussion of issues concerning the Loi Galland, see P. Biscourp, X. Boutin, and T. Vergé, *The Effects of Retail Regulations on Prices: Evidence from the Loi Galland*, DESE working paper G 2008/02, INSEE, 2008.

Concurrence (avis 04-A-18), which stressed the fact that the Loi Galland might foster anti-competitive behavior. High price levels would result not directly from the Act, but from competitive practices facilitated by the Act.² In particular, it is not the existence of hidden margins that is problematic in itself, but the fact of excluding them from the below-cost retail price floor. This creates an incentive to manipulate general terms of sale and, ultimately, allows the elimination of competition between retailers, thus driving up prices.

An empirical test on microeconomic data confirms the undesired effects of the Loi Galland

The Loi Galland has significantly weakened competition between retailers

Microeconomic analysis confirms that the Loi Galland has tended to reduce competition between retailers, leading to higher prices. In 1994, competition appeared to be working: local concentration of stores had a substantial impact on retail prices (Appendix 1). By 1999, three years after the Loi Galland, this relationship had ceased: retail prices no longer depended on store concentration in a catchment area. The relationship between prices and concentration is one of the most robust links identified by economic analysis. The disappearance of the relationship is therefore a particularly significant fact. It is due to the generalization of the use of the below-cost retail price floor as an industry-wide floor price, effectively eliminating price competition between retailers.

The upward impact on prices is more significant in hypermarkets

Depending on their location criteria, for example their distance from city centers, stores are more or less substitutable for consumers, and therefore more or less sensitive to the degree of local competition. For example, customers of midtown stores in large cities go to them on foot. The distance traveled by the consumer is therefore a more important factor than for hypermarkets, located at the periphery of cities. In other words, for a given distance, two city-center stores are less substitutable than hypermarkets. Empirical analysis confirms that hypermarkets were more sensitive to local competition in 1994.³ The elimination of this competition therefore had a greater impact on hypermarkets. A complementary analysis tracking prices in a set of stores during the same period corroborates the assumption that prices rose more sharply in stores that initially charged the lowest prices. The generalization of industry-wide floor prices has led to an "upward" convergence of retail prices.

In conclusion, the microeconomic effects of the Loi Galland seem consistent with the predictions of economic theories. The enforcement of a below-cost retail price floor has eliminated competition between retailers and increased profits for producers and retailers at consumers' expense. However, while microeconomic analysis provides confirmation of these effects, it does not give us a measure of the macroeconomic loss to consumers caused by a general price increase. That is the goal of the macroeconomic analysis presented in the second part of this study.

2. The Loi Galland made the enforcement of the price floor not only possible, but particularly credible, since all sales below price floors became illegal. In the first case mentioned earlier, when a store sells a videotape below "list price," the producer will use compliance with the Loi Galland as the argument for asking the retailer to raise its selling price—very often after a complaint from a competitor.

3. For a detailed discussion of this point and the following, see P. Biscourp, X. Boutin, and T. Vergé, *The Effects of Retail Regulations on Prices: Evidence from the Loi Galland*, DESE working paper G 2008/02, INSEE, 2008.

Macroeconomic analysis gives an order of magnitude of the impact of the Loi Galland and its reforms

The Loi Galland may have raised prices by as much as one percentage point

Macroeconomic analysis confirms the price increase due to the Loi Galland

Macroeconomic analysis corroborates our microeconomic study: the Loi Galland appears to have caused an increase in consumer prices of about one percentage point in the period 1997-2004.⁴

This analysis rests on price indices for basic consumer products sold by "large retail chains" and "other retail forms" published by INSEE since 1998. "Large retail chains" consist of mainly food stores with a surface area exceeding 120 m² (1,300 sq. ft). They do not include hard-discount stores. These are included in "other retail forms," which comprise all other outlets such as specialized small stores (butcher stores, bakeries, and so on). Most of the products sold there are not major brands. This category of outlets is thus far less affected by the Loi Galland.

Prices of basic consumer products rose by 4.2 points more in "large retail chains" than in "other retail forms" between 1997 and mid-2004.⁵ Conversely, those prices have fallen by 4.1 points less in the first category than in the second since mid-2004, when French lawmakers began to reform the Loi Galland (*Box*). Basic consumer products sold by "large retail chains" account for about 10% of the price index. Assuming that the differential above measures the impact of the Loi Galland on prices, we can estimate its cumulative impact at slightly less than half a percentage point.

However, the hypothesis that the price differential is an exact measure of the impact of the Loi Galland is a heroic assumption. We cannot rule out, a priori, the possibility that the differential captures other phenomena that might, for example, have driven down prices in "other retail forms"—such as larger productivity gains in hard-discount stores that would have reduced their prices below those of large retailers. Conversely, if the variable captures the effect of the Loi Galland in qualitative terms, it may understate its impact, first, because it does not quite cover all the products concerned, second, because other stores, faced with less aggressive competition from large retailers, may have raised their margins as well.

Econometric analysis separates the specific effects of the Loi Galland...

Hence the need for a complementary analysis, which rests on an econometric model in which consumer prices depend on the price gap between "large retail chains" and "other retail forms"—as well as on other factors that influence prices. What we want to estimate here is the effect of the price-gap variable, but it is also necessary to take into account the effects of the other factors, in order to avoid making the Loi Galland responsible for effects that might not be due to it.

4. At end-2004, the Canivet Report was already noting an increase in superstore prices. The Commission reached this conclusion by comparing (1) prices of products mainly sold in superstores with other prices and (2) prices of these products with those of France's EU neighbors. The Commission found that prices of food products and basic consumer products had risen faster than those of other products. They also appeared to have risen more quickly in France than in most other euro-zone countries. However, the Report did not provide a quantitative estimate of the Loi Galland's effect on inflation.

5. This calculation is based on the reasonable hypothesis that the price differential between the two retail channels, which came to 0.5 points per year between 1998 and mid-2004, was identical in 1997-1998, a period for which the "large retail chains" price index is not available.

The "Loi Galland" and French consumer prices

... from other short-term and structural factors

These other factors include short-term developments:

- The price freeze by large retailers between November 2001 and March 2002 explains price rises enacted in Q3 2001 or after H1 2002.
- The euro's depreciation drove up prices of imported food products denominated in foreign currency.
- The mad-cow crisis in October 2000 and the outbreak of foot-and-mouth disease in February 2001 also had inflationary effects. As demand shifted toward fish and other meat categories, prices for these products rose.

Some structural factors also put upward pressure on prices of basic consumer products:

- Unit labor costs in retailing accelerated in the early 2000s.
- Concentration in mass merchandising reduced price competition.
- Legislation on urban planning in shopping districts, which protects the leading mass retailers, amplified the effects of concentration. These players often found themselves acting as judge and party when it came to granting a building permit to a competitor.

The Act is estimated to have added about one percentage point to inflation

Concretely, we introduced variables such as producer prices and import prices for the products concerned, as well as retail-trade labor costs, in the econometric equations that explain consumer prices (*for more details, see Appendix 2*). To measure the effects of the Loi Galland, we performed two alternative estimates.

Stages in Loi Galland reform

June 17, 2004: Under the aegis of French authorities, retailers and producers commit to a long-term reduction in prices of basic consumer products. Following up on this agreement, the Economy Minister commissions a report to review existing legislation and its economic effects, and proposes reforms aimed at lowering prices.

October 18, 2004: Canivet Commission submits report to French government.

August 2, 2005: Dutreil II Act, inspired by the Canivet Report, allows partial deduction of hidden margins from purchase price paid to supplier, in the following stages:

- from January 1, 2006, the share of hidden margins exceeding 20% of the purchase price
- from January 1, 2007, the share of hidden margins exceeding 15% of the purchase price.

January 4, 2008: Châtel Act published in *Journal Officiel*, the government publication of record. Starting March 1, 2008, retailers are allowed to deduct all hidden margins from the purchase price. ■

We illustrate this hidden-margin deduction mechanism in the table below, under the theoretical assumption that hidden margins are equal to 35% of the purchase price.

	1997-2005	Jan. 1, 2006	Jan. 1, 2007	March 1, 2008
Purchase price	100	100	100	100
Hidden margins	35%	35%	35%	35%
Deductible share	0	15	20	35
Below-cost retail price floor	100	85	80	65

The "Loi Galland" and French consumer prices

The first relies on a "core inflation" model. "Core inflation" excludes public-sector tariffs (for electricity, gas, and so on) and products whose prices are volatile or sensitive to weather events (oil products and 68% of food products, such as unprocessed foods, meat, and wine). This eliminates some food products that may have been affected by the Act. On the other hand, this estimation includes services and certain manufactured products that are not affected by the Act. This diminishes the accuracy of its measurement of the total effect. According to the model, the Loi Galland raised "core inflation" by 1.6 points in 1997-2004 (*Table and Chart 1*). We consequently estimate the corresponding impact on total inflation at 1 point.

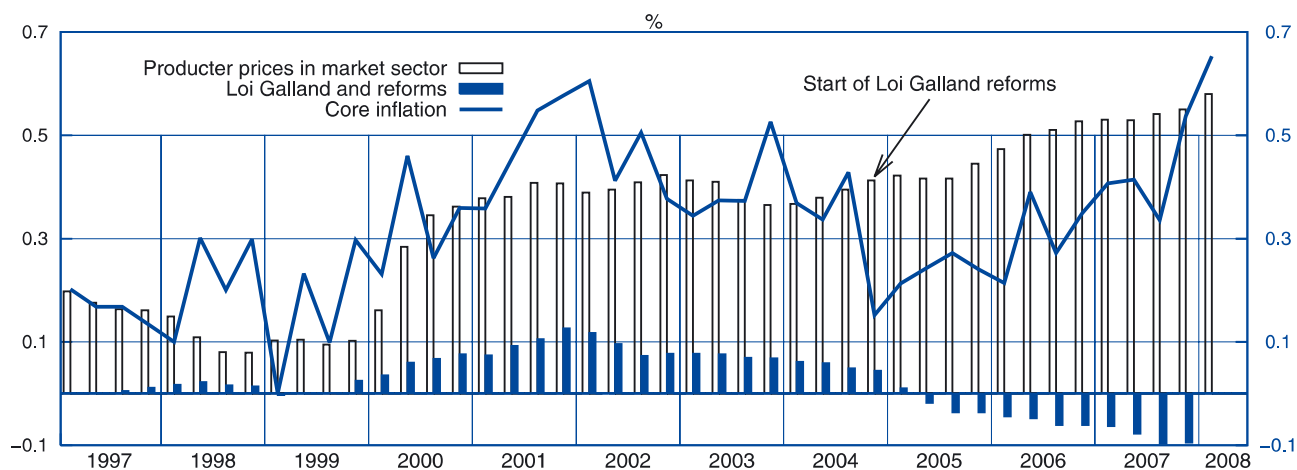
The second estimate rests on a less aggregated model comprising two equations: a price equation for food products, excluding fruit, vegetables, and fresh fish, and an equation for manufactured products sold mainly in superstores.⁶ This model finds that the Act raised the prices of food products excluding unprocessed foods by 3.1 points (*Table and Chart 2*), and the prices of manufactured products sold mainly in superstores by 1.1 points (*Table*). We estimate the impact on total inflation at 0.5 points between 1997 and 2004.

6. These products are: textile household goods, dishware, hygiene and beauty products, do-it-yourself products, and sports and recreational products. Together they account for roughly 6% of the price index. We excluded some manufactured products from the scope of study because of their highly specific distribution channels. Examples include automobiles and clothing/footwear.

Total impact of Loi Galland and reforms

Sectors (2008 weighting)	percentage points	
	1997 Q1 – 2004 Q3	2004 Q4 – 2008 Q1
Core inflation (61.4%)	1.6	-0.7
Food excluding unprocessed foods (14.3%)	3.1	-2.4
Manufactured products sold mainly in superstores (5.6%)	1.1	-1.4
Total index (100%)		
"Core inflation" method	1.0	-0.4
"Food + manufactured products sold mainly in superstores" method	0.5	-0.4

1- Contributions to core inflation



Source: INSEE

The "Loi Galland" and French consumer prices

In other words, with either method, the indicator used to capture the impact of the Loi Galland—i.e., the price gap between “large retail chains” and “other retail forms”—displays the expected (positive) sign for the period 1997-2004. Moreover, its estimated impact exceeds the purely “automatic” impact: while we should be cautious in interpreting econometric estimates, our results suggest that the effect of the Loi Galland extended beyond basic consumer products sold in chainstores.

Successive adjustments to the below-cost retail price floor have lowered prices

The successive reforms of the Loi Galland are estimated to have trimmed prices by about 0.4 points

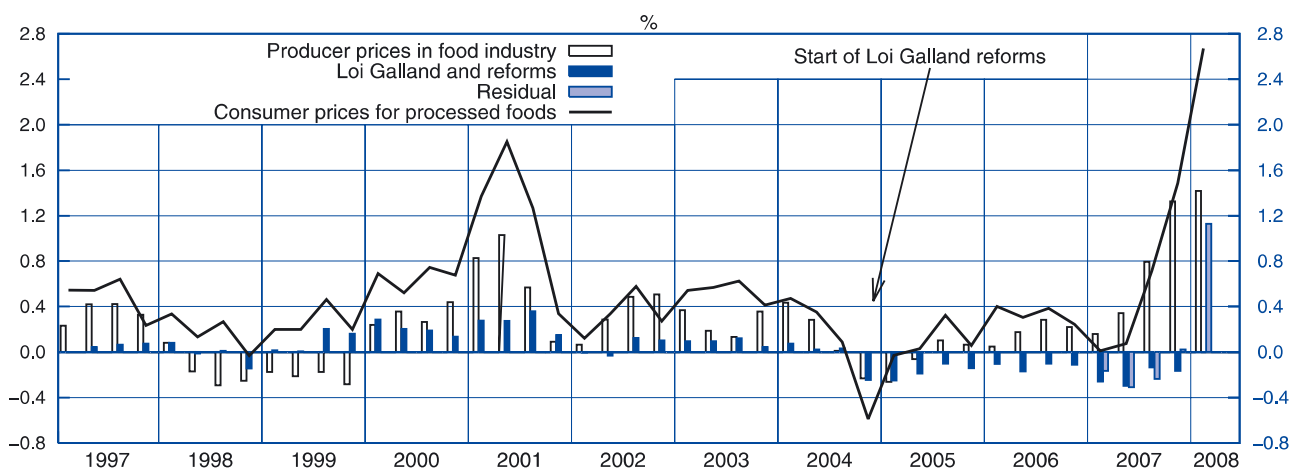
Although they were not quantified, the undesired effects on prices have been effectively admitted since the Canivet Report (2004). They have led lawmakers to gradually amend the Loi Galland (Box). The measures taken to reduce prices in chainstores make it possible to redefine the below-cost retail price floor by incorporating hidden margins. We have estimated the effects of these measures using the same methods as before. Since Q4 2004, the successive reforms of the Loi Galland are reckoned to have lowered prices by about 0.4 points (Table).

However, the effects of the reforms seem to have stalled recently

Nevertheless, the effects of the reforms appear to have stalled recently. While year-on-year price growth for basic consumer products has been slower in “large retail chains” than in “other retail forms” (Chart 3), the monthly changes have been nearly identical since end-2007.

We should also note that, in Q1 2008, consumer prices for food products excluding unprocessed foods have risen more steeply than what econometric determinants suggest (Chart 2). This rise concerns prices in superstores as well as “other retail forms.” It may be due to several factors, such as a faster-than-usual transmission of producer prices in the food industry, or an increase in total margins by producers and retailers. ■

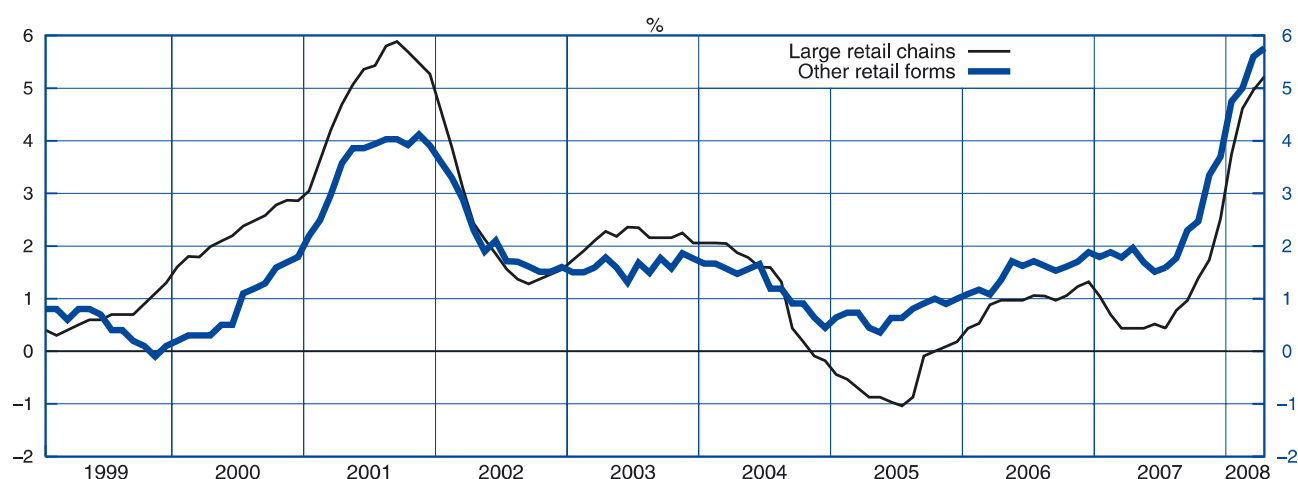
2 - Contributions to consumer price growth for food products excluding unprocessed foods



Note: For better legibility, residuals are shown for 2007 and 2008 only.
Source: INSEE

The "Loi Galland" and French consumer prices

3 - Year-on-year changes in prices of basic consumer goods



Source: INSEE

Appendix 1 - Microeconomic test

In a normal competition regime, retail prices are sensitive to local competition between stores. By contrast, if market players have used the below-cost retail price floor to establish an industry-wide price floor, the final selling price no longer depends on local market structure. Biscourp, Boutin, and Vergé (2008) rely on this intuition to conduct a systematic review of the Loi Galland's effect on French retail prices. The study is based on price quotations used by INSEE to determine the consumer price index (CPI), as well as on store-location data. It concentrates on homogeneous goods, sold in most stores. The authors construct a local-concentration indicator, whose values range between 0 and 1. The fewer the number of local stores, the higher the indicator. If competition between retailers is effective, prices should be higher in the more concentrated areas.

To test the impact of the Loi Galland, the authors regress the price logarithm on local concentration, before and after the Act (respectively 1994 and 1999). To avoid capturing effects due to local characteristics, the authors introduced the most important of these into the regressions, notably average income and

population size (which measures density since the areas studied are of fixed size). The regression results are given in the table below.¹

In 1994, the correlation between prices and local competition is large and significant. Prices in a totally concentrated market (with a concentration index of 1) would be 10.3% higher on average than those in a totally competitive market (with a concentration index of 0). In 1999, the correlation is 0.018 and not significant. This indicates a major regime change, consistent with the systematic use of the below-cost retail price floor as industry-wide floor price. However, these extreme values of the concentration index are not observed in reality. The "standard" differential observed between the most and least concentrated sectors in this period is 0.11 (*standard deviation*). The typical price gap observed between stores located in high-concentration and low-concentration areas therefore averaged 1% in 1994, whereas it was statistically null in 1999. ■

¹ For more details on the methodology and data used by the authors, see P. Biscourp, X. Boutin, and T. Vergé, *The Effects of Retail Regulations on Prices: Evidence from the Loi Galland*, DESE working paper G 2008/02, INSEE, 2008.

	1994	1999
Concentration	0.103*** (0.025)	0.018 (0.024)
Density	0.016*** (0.003)	0.09*** (0.002)
Income (log)	0.023*** (0.010)	0.025** (0.013)
Number of observations	4,197	

How to read these figures: A 0.5 variation in the local-competition indicator reflects a price approximately 5% higher in 1994 and only 0.9% higher in 1999. Let us assume an area A whose concentration exceeded that of area B by one standard deviation. As the indicator's standard deviation was 0.11, a store located in area A charged prices that were, on average, 1% higher than a store in area B. In parentheses, we show the estimated parameter variances, calculated with the aid of a robust method called "common cluster."

Note: 3, 2, and 1 stars respectively denote coefficients that are significant at the 1%, 5%, and 10% limits. Variables included in the regression but not shown in the table: product and year dummies; type and year dummies; chainstore brand and year dummies. Concentration is an HHI index based on the catchment areas in a radius of 10 km (6 miles) around the store's locality.

Sources: INSEE, LSA

Appendix 2 - Models for assessing the Loi Galland's effects on inflation

Our macroeconomic analysis rests on the inflation-forecasting tools available at INSEE, in particular an overall model based on a wage-price spiral. We re-estimated several equations in the model to test the Loi Galland's effects on inflation. We used two different approaches, respectively based on aggregated and disaggregated modeling of retail prices. Below, we do not describe the complete model, but only the main equations that include the difference between the logarithms of prices in "large retail chains" and "other retail forms."

These equations are error-correction models. Most have the desirable property of static and dynamic homogeneity: in the long run and short run, a 1% rise in exogenous prices entails a 1% rise in the explained price. These properties impart long-term stability to the system, enabling us to define an equilibrium unemployment rate independent of inflation.

The first model is based on a change in the core-inflation equation of the overall forecasting model. The second model is based on a more disaggregated approach in which the difference in the logarithm of prices in "large retail chains" and "other retail forms" is included in (1) the equation for consumer prices of food excluding unprocessed foods and (2) the equation for manufactured products sold mainly in superstores.

Model 1:

Equation for core price index:

Estimation period: 1990 Q2-2007 Q4

Student's statistics in parentheses

$$\Delta \log(IPCSJ_t) = 0,005 + 0,38 \cdot \Delta \log(IPCSJ_{t-1}) - 0,17 \cdot \Delta \log(IPCSJ_{t-3}) + 0,28 \cdot \Delta \log(IPCSJ_{t-4}) - 0,076 \cdot \log(IPCSJ_{t-1}) + 0,06 \cdot \log(Pxprod_{t-1}) + 0,016 \cdot \log(PxIM_EC_ED_{t-1}) + 0,0003 \cdot Galland_{t-1} - 0,003 \cdot dum04t4 + \epsilon_t^{IPCSJ}$$

(8,0) (4,4) (-1,9) (2,8) (-7,5)
(7,3) (c) (3,8) (-8,0)

$$R^2 = 0.86$$

where: IPCSJ: core price index

Pxprod: producer prices in market sector (in domestic market)

PxIM_EC_ED: prices of imported consumer goods and automobiles

Galland: difference in the logarithm of prices in "large retail chains" and "other retail forms"

Model 2:

Equation for consumer prices of food excluding unprocessed foods:

Estimation period: 1979 Q3-2008 Q1

$$\Delta \log(Px_HF_t) = 0,48 \cdot \Delta \log(Px_HF_{t-1}) + 0,09 \cdot \Delta \log(Px_HF_{t-4}) + 0,19 \cdot \Delta \log(Px_EB_t) + 0,15 \cdot \Delta \log(Px_EB_{t-1}) + 0,09 \cdot \Delta \log(CSU_EJ_{t-3}) - 0,02 \cdot dum82t3 + 0,003 \cdot \Delta Galland_t + 0,001 + \epsilon_t^{Px_HF}$$

(7,9) (2,0) (5,2) (3,6)
(c) (-7,6) (2,2) (2,6)

$$R^2 = 0.91$$

where: Px_HF: consumer prices of food excluding unprocessed foods

Px_EB: producer prices in food industry (in domestic market)

CSU_EJ: unit labor costs in retailing

Equation for consumer prices of manufactured products sold mainly in superstores:

Estimation period: 1983 Q2-2008 Q1

$$\Delta \log(Px_MAN_t) = 0,66 \cdot \Delta \log(Px_MAN_{t-1}) + 0,08 \cdot \Delta \log(Px_EC_{t-1}) + 0,06 \cdot \Delta \log(Px_IMP_EC_{t-8}) - 0,09 \cdot \log(Px_MAN_{t-1}) + 0,04 \cdot \log(Px_EC_{t-1}) + 0,01 \cdot \log(Px_IMP_EC_{t-1}) + 0,0003 \cdot TREND + 0,0001 \cdot Galland_{t-1} + 0,002 \cdot \Delta Galland_t + 0,15 + \epsilon_t^{Px_MAN}$$

(16,1) (2,8) (4,4) (-5,5)
(3,9) (2,6) (5,5) (c) (2,4) (5,5)

$$R^2 = 0.92$$

where: Px_MAN: consumer prices of manufactured products sold mainly in superstores

Px_EC: producer prices of consumer goods (in domestic market)

Px_IMP_EC: prices of imported consumer goods

TREND: deterministic trend from 1983 Q2 on ■