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Volatility of retail prices of roasted coffee in selected importing countries

Background

In the context of its programme of activities, the Organization pays particular attention to price volatility, which has consequences for the earnings of producers and the profit margins of stakeholders throughout the coffee chain as well as for consumption. This document contains a study of the volatility of retail prices of roasted coffee.

Action

The Council is requested to take note of this document.

VOLATILITY OF RETAIL PRICES OF ROASTED COFFEE IN SELECTED IMPORTING COUNTRIES

Introduction

1. Coffee roasting is an important component of the food and drinks processing industry in many importing countries. In varying degrees, retail prices exert a significant influence on coffee consumption. This study aims to carry out a comparative analysis of retail price volatility in selected importing countries.

2. The methodology used is based on observation of monthly retail prices during the period January 1975 to December 2010[1]. The criterion for the selection of importing countries is based on an annual average import volume of at least one million bags during the period covered by the study. An important additional consideration was the availability of retail prices.Twelve importing countries were finally selected.

Table 1: Average imports of selected importing countries (60-kg bags)

	Period average			
	1975-2010	**1975-1989**	**1990-2010**	**2001-2010**
Belgium	2 061 965	1 333 209	2 582 505	3 439 960
Finland	828 914	810 502	842 065	864 716
France	4 618 487	4 278 063	4 861 647	4 794 670
Germany	9 660 584	7 063 878	11 515 374	13 186 563
Italy	3 996 306	2 882 961	4 791 552	5 599 468
Japan	4 105 976	2 734 422	5 085 657	5 626 113
Netherlands	2 149 024	2 067 388	2 207 335	2 182 596
Spain	2 317 144	1 429 042	2 951 503	3 409 756
Sweden	1 197 572	1 202 305	1 194 192	1 204 085
Switzerland	945 130	821 952	1 033 114	1 249 831
United Kingdom	2 244 197	1 921 539	2 474 667	2 706 144
USA	15 776 885	14 815 873	16 463 322	17 589 431
Total selected countries	**49 902 185**	**41 361 133**	**56 002 936**	**61 853 332**
Total world imports	**75 177 183**	**60 947 086**	**85 341 537**	**94 583 343**
Share of selected in World	**66.4%**	**67.9%**	**65.6%**	**65.4%**

3. These twelve countries account for 66.4%, on average, of total coffee imports by all importing countries during the period under study. More specifically, their share of world

[1] *This study takes up some of the methodology used in previous studies, particularly the comparative analysis of retail prices of coffee in importing countries presented in September 2010 (document ICC-105-3) and the study on coffee price volatility presented in September 2009 (document ICC-103-7).*

imports was 65.6% during the period 1990 to 2010 compared to 68% between 1975 and 1989. This means that the twelve importing countries selected hold the dominant share of the world's coffee processing industry. Average consumption is shown in Table 2. Determination of retail price volatility in these twelve countries, expressed both in US dollars and in national currencies, is the main focus of this study.

Table 2: Average consumption in selected importing countries (60-kg bags)

	Period average			
	1975-2010	**1975-1989**	**1990-2010**	**2001-2010**
Belgium	1 153 763	1 292 468	1 054 688	1 159 698
Finland	1 013 120	1 021 886	1 006 859	1 037 701
France	5 282 614	5 134 120	5 388 681	5 352 484
Germany	8 951 133	8 121 326	9 543 852	9 166 608
Italy	4 612 022	3 865 988	5 144 903	5 582 554
Japan	5 232 742	3 549 774	6 434 862	7 054 535
Netherlands	2 020 052	2 037 111	2 007 867	1 673 082
Spain	2 487 205	1 832 585	2 954 791	3 021 731
Sweden	1 459 820	1 641 920	1 329 749	1 226 712
Switzerland	819 448	685 287	915 278	948 660
United Kingdom	2 397 683	2 169 977	2 560 329	2 713 515
USA	18 956 094	18 219 098	19 482 520	20 741 432
Total selected countries	**54 385 697**	**49 571 540**	**57 824 380**	**59 678 714**
Total consumption in importing countries	**75 177 183**	**60 947 086**	**85 341 537**	**94 583 343**
Share of selected in World	**72.3%**	**81.3%**	**67.8%**	**63.1%**

I. RETAIL PRICE VOLATILITY EXPRESSED IN US DOLLARS

A. Changes in retail prices

4. Table 3 shows average retail prices in US cents/lb. It can be noted that, with the exception of France and Germany, average retail prices were higher during the period from 1990 to 2010, which corresponds to the free market period, than in the period from 1975 to 1989, corresponding to the regulated market period. Comparative analysis of changes in retail prices was covered in detail in previous studies.

Table 3: Average retail prices of roasted coffee in selected importing countries (US cents/lb)

	Period average			
	1975-2010	**1975-1989**	**1990-2010**	**2001-2010**
Belgium	367.58	335.19	390.72	427.49
Finland 1/	285.22	282.43	286.28	282.43
France	311.20	341.60	289.49	296.79
Germany	395.41	398.15	393.46	394.72
Italy	490.37	370.84	575.74	626.35
Japan 1/	1 036.91	859.94	1 104.32	789.47
Netherlands 2/	330.16	304.67	349.28	374.93
Spain 3/	340.44	335.39	343.57	342.39
Sweden	341.80	337.48	344.89	320.37
Switzerland 4/	436.86	381.61	488.66	504.40
United Kingdom 5/	1 133.69	824.75	1 354.35	1 488.22
USA 6/	305.00	273.42	328.69	325.46

1/ Series starts in 1982
2/ No information for 2010
3/ Series starts in 1977
4/ Series stops in 2005
5/ Soluble coffee
6/ Average price for 2009 refers to December 2009

B. Retail price volatility indexes

5. On the basis of observations of monthly variations in retail prices, volatility during one year will be calculated. Measurement will be based on the following equations:

Equation 1: Var (P_m, P_{m-1}) = Ln (P_m/P_{m-1})
Var = variation in retail price from one month to the next
P_m = retail price for the month
P_{m-1} = retail price for the previous month
Ln = Naperian logarithm

Equation 2: $\sigma = \sqrt{[\Sigma \text{Ln}(P_m/P_{m-1})]}$ (sum from M=1 to N)

√ = square root; N = Total number of months; σ = standard deviation for the month

Volatility = $\sigma \times \sqrt{N}$

6. Table 4 shows averages of volatility indexes for retail prices in the twelve selected countries. Annex I contains Graphs 1 to 4 which show changes in retail price volatility during the period from 1975 to 2010. During the whole period under study (1975-2010), retail price volatility was relatively weak, the highest level being 15.6% recorded in Japan. However, during the regulated market period from 1975 to 1989[2], in comparison with the free market period from 1990 to 2010 volatility indexes were high in the Netherlands (16.1%), Sweden (15.4%), France (15.1), Belgium (13.5%), Spain (11.8%), Finland (11.4%) and Switzerland (11.3%). By contrast, retail prices became more volatile during the free market period in the case of Japan (17.3%), Finland (12.9%), Switzerland (12.4%) and Sweden (12.3%). In the other importing countries, volatility levels were more or less identical to or slightly higher than during the regulated market period. During the more recent period from 2001 to 2010, there was a consolidation in the downward trend of the volatility index in all the selected importing countries except Japan, which recorded an even higher index (21.2%).

7. The volatility index for the ICO composite indicator is also shown for comparison purposes. The volatility of the ICO composite indicator price is higher than the one of retail price. Presumably, retail prices are more stable than the ICO composite indicator price as they take into account other components including logistics, marketing, processing, taxes and profit.

Table 4: Volatility index averages (calculated from prices in US cents/lb)

	Period average			
	1975-2010	**1975-1989**	**1990-2010**	**2001-2010**
Belgium	11.2%	13.5%	9.6%	9.5%
Finland	12.5%	11.4%	12.9%	11.5%
France	11.7%	15.1%	9.3%	8.8%
Germany	10.2%	9.9%	10.3%	10.1%
Italy	8.8%	9.5%	8.4%	8.3%
Japan	15.6%	11.2%	17.3%	21.2%
Netherlands	12.7%	16.1%	10.3%	8.7%
Spain	10.6%	11.8%	9.8%	8.4%
Sweden	13.6%	15.4%	12.3%	10.0%
Switzerland	11.9%	11.3%	12.4%	11.0%
United Kingdom	10.8%	10.6%	10.9%	10.1%
USA	9.1%	9.0%	9.2%	8.5%
ICO composite	23.3%	25.2%	22.0%	17.8%

[2] *The period 1975 to 1989 is regarded as being influenced by market regulation mechanisms even though export quotas under the Agreement were only in force for part of this period (October 1980 to February 1986 and October 1987 to July 1989)*

II. RETAIL PRICE VOLATILITY EXPRESSED IN NATIONAL CURRENCIES

A. Changes in retail prices expressed in national currencies

8. Table 5 shows average retail prices in national currencies[3]. In relation to the regulated market period retail prices during the free market period fell in most countries in the Euro Area, except in Italy and Spain where retail prices rose. In the case of countries outside the Euro Area retail prices fell in Japan (-18.3%) and Switzerland (-7.1%) but increased in Sweden (+28.9%), the United Kingdom (+69.5%) and the United States (+19.3%).

Table 5: Average retail prices (in national currencies)

		Period average				Variation from 1975-1989 to 1990-2000
		1975-2010	1975-1989	1990-2010	2001-2010	
Belgium	**(BFF/kg)**	288.37	293.97	284.37	299.56	**-3.3%**
Finland	**(FMk$/kg)**	30.53	31.01	30.35	29.45	**-2.1%**
France	**(FF/kg)**	38.76	44.60	34.50	34.23	**-22.6%**
Germany	**(DM/kg)**	16.02	19.25	13.72	13.03	**-28.7%**
Italy	**(Lira/kg)**	15 524.84	9 793.73	19 618.50	21 038.74	**100.3%**
Japan	**(Y/200g)**	599.91	690.22	564.23	412.60	**-18.3%**
Netherlands	**(F$/kg)**	14.63	16.29	13.45	13.45	**-17.4%**
Spain	**(Pst/kg)**	931.54	813.09	1 004.86	1 024.87	**23.6%**
Sweden	**(SKr/kg)**	51.25	43.90	56.59	54.62	**28.9%**
Switzerland	**(SwF/kg)**	15.61	16.20	15.05	15.42	**-7.1%**
United Kingdom	**(£/100g)**	1.49	1.06	1.80	1.92	**69.5%**
USA	**(US$/lb)**	3.03	2.73	3.26	3.22	**19.3%**

B. Changes in retail price volatility indexes expressed in national currencies

9. Table 6 shows average retail price volatility indexes expressed in national currencies for the period as a whole and for the sub-periods corresponding to the regulated market and free market periods. With the exception of Japan, volatility indexes were weak in all countries during the period under study, namely January 1975 to December 2010. It should be noted that retail price volatility expressed in national currencies is relatively weaker in relation to prices expressed in US dollars. These indexes became even weaker during the recent period, particularly in Italy (0.4%), Netherlands (0.5%), Spain (1.8%), France (1.9%) and Belgium (2.9%).

[3] *In the case of countries in the Euro Area, in which the Euro replaced national currencies in 2002, conversion into the relevant national currencies was made for the period from 2002 to 2010*

Table 6*:* **Volatility index averages (calculated from prices in national currencies)**

	Period average			
	1975-2010	**1975-1989**	**1990-2010**	**2001-2010**
Belgium	5.3%	7.6%	3.7%	2.9%
Finland	7.5%	6.8%	7.7%	7.7%
France	5.6%	9.6%	2.7%	1.9%
Germany	5.6%	4.2%	6.6%	7.1%
Italy	2.0%	3.1%	1.1%	0.4%
Japan	11.1%	5.2%	13.4%	20.1%
Netherlands	7.4%	11.8%	4.1%	0.5%
Spain	4.8%	7.3%	3.2%	1.8%
Sweden	9.5%	13.0%	7.0%	4.1%
Switzerland	5.8%	4.9%	6.6%	6.4%
United Kingdom	6.5%	5.9%	6.9%	6.9%
USA	9.1%	9.0%	9.1%	8.3%

10. Annex II contains Graphs 5 to 8 which show changes in the volatility indexes in the selected importing countries.

11. The graphs clearly indicate a downward trend in the price volatility indexes in Belgium, France, Italy, Netherlands, Spain and Sweden. The other countries selected show an upward trend, which is much more marked in the case of Finland, Germany and Japan.

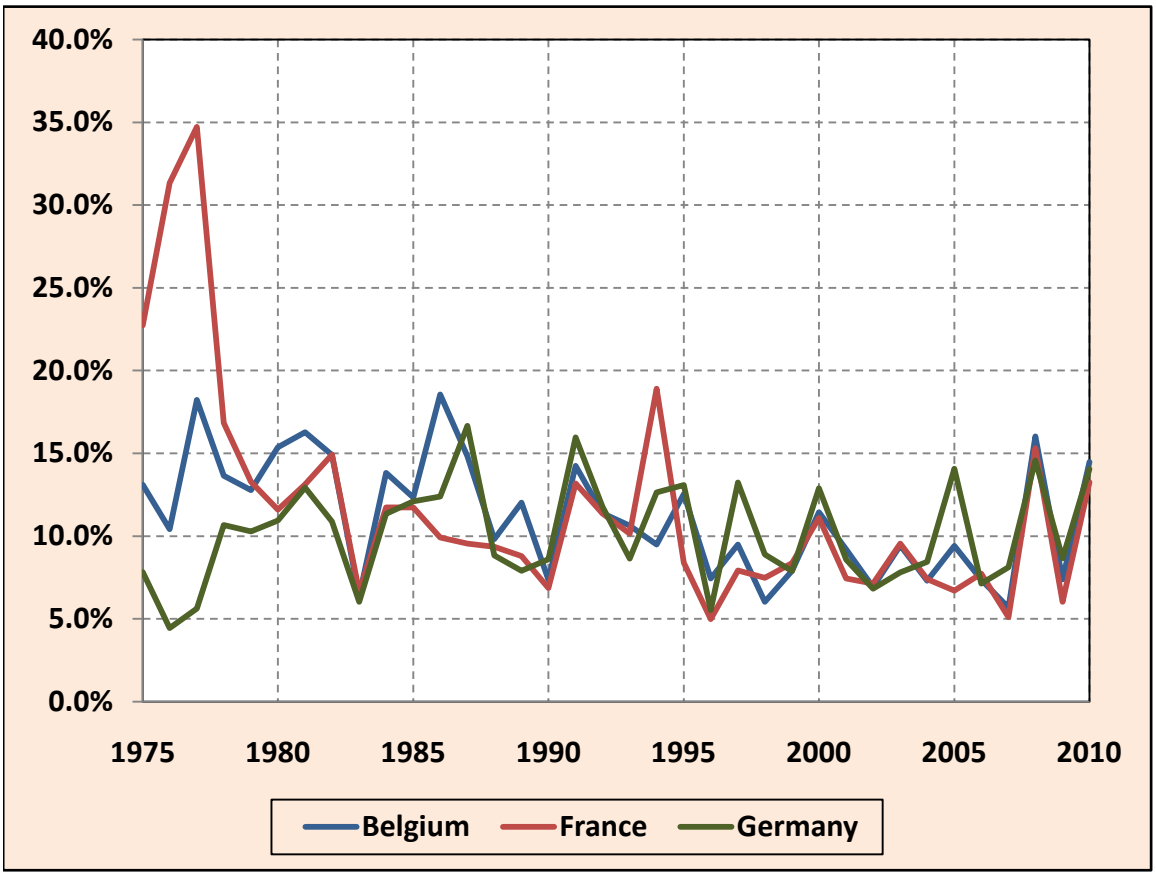
CONCLUSION

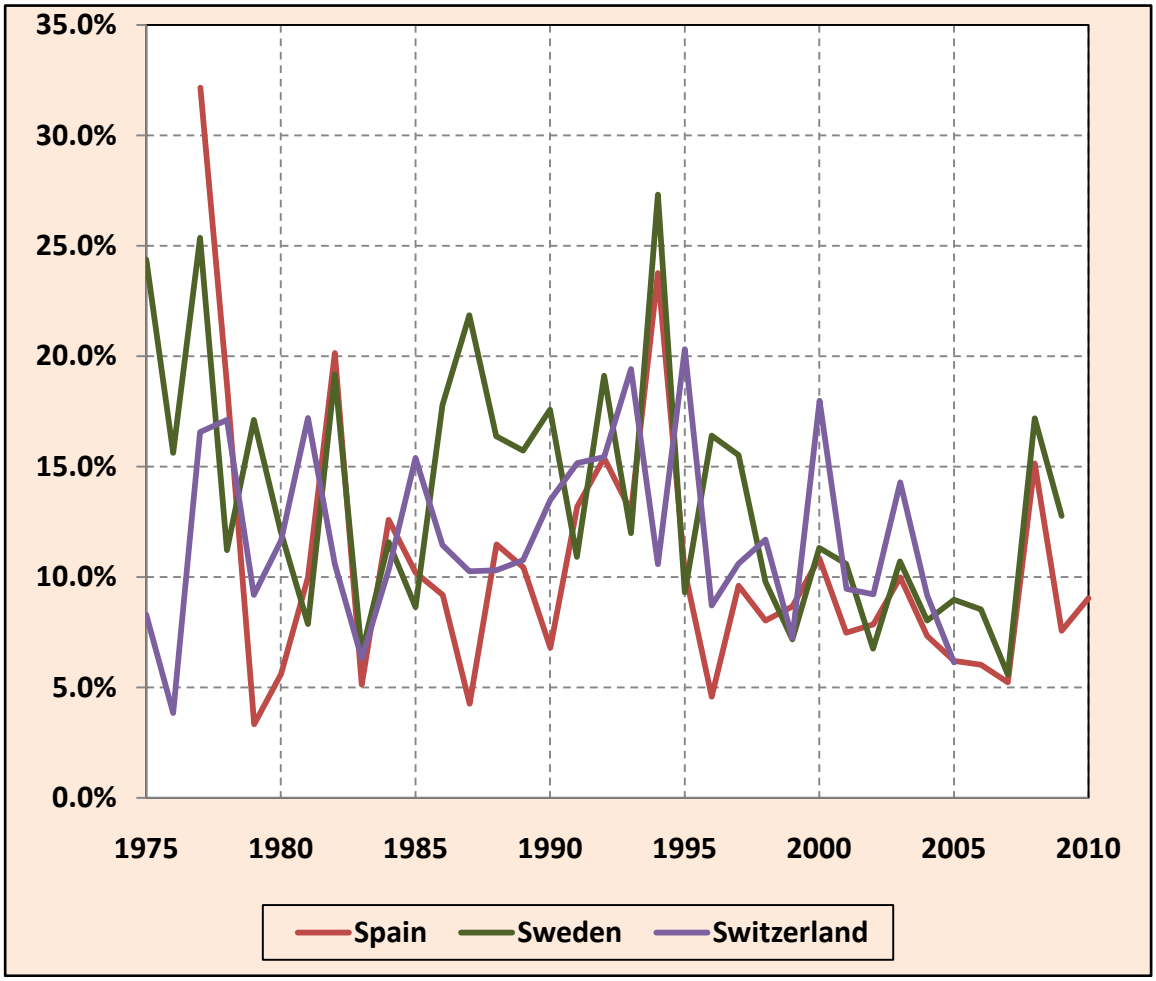
12. In conclusion, it should be noted that with the exception of Japan, retail price volatility in the selected importing countries weakened during the free market period. It was even weaker during the most recent period in comparison with previous years.

13. In the case of retail prices expressed in United States dollars, volatility was significantly influenced by fluctuations in exchange rates between national currencies and the United States dollar.

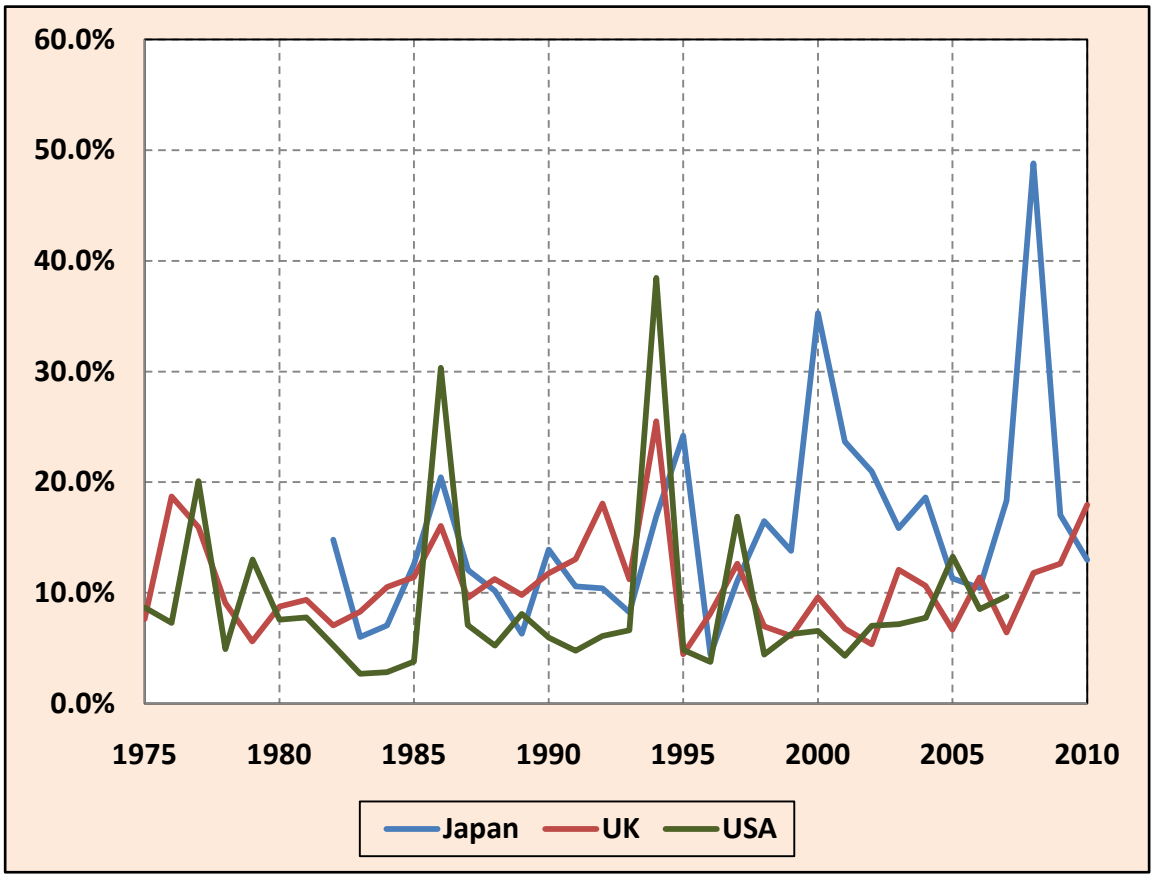
14. It should also be noted that retail prices are less volatile than the ICO composite indicator price. This could be explained by the inclusion of more stable components such as logistics, marketing and processing costs as well as taxes and profit in the determination of retail prices.

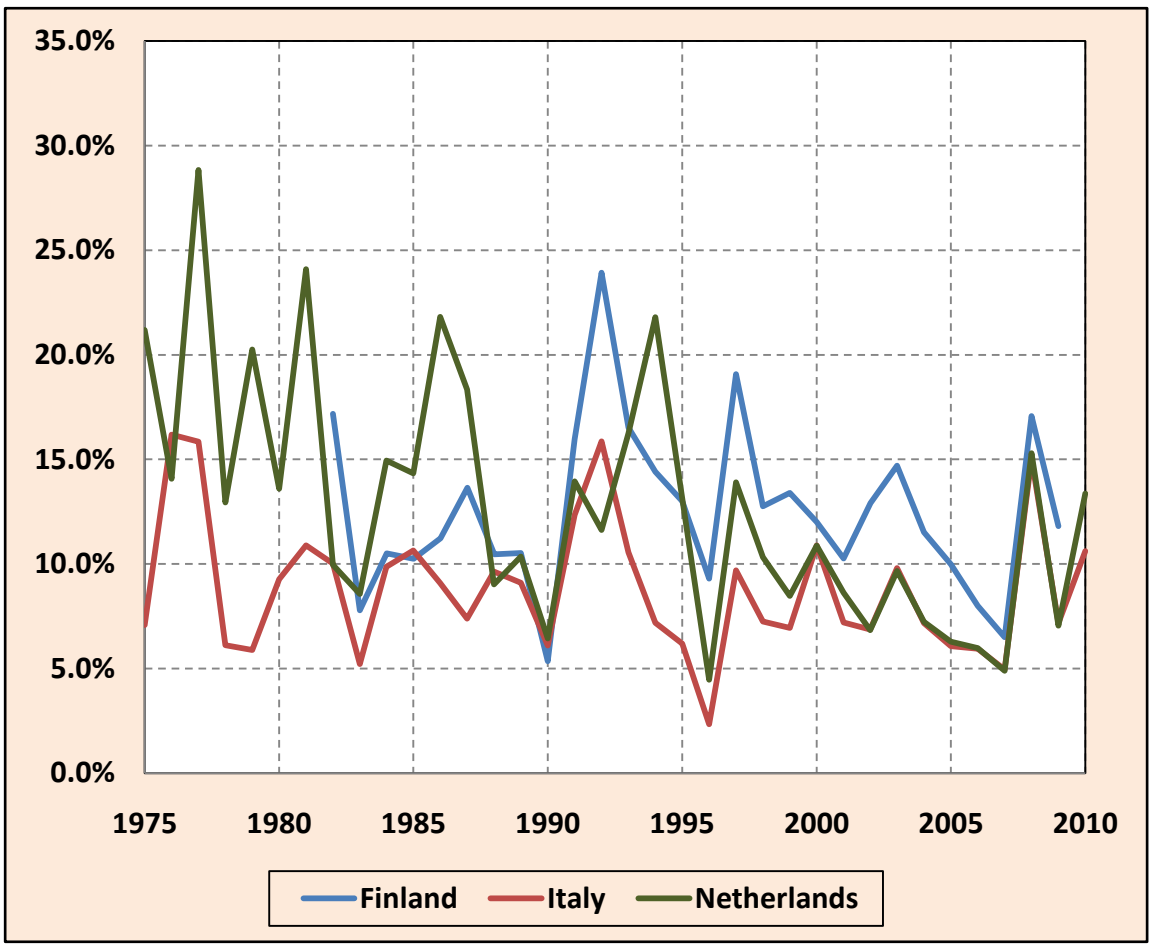
Volatility index calculated from prices expressed in US cents/lb
Graphs 1 and 2



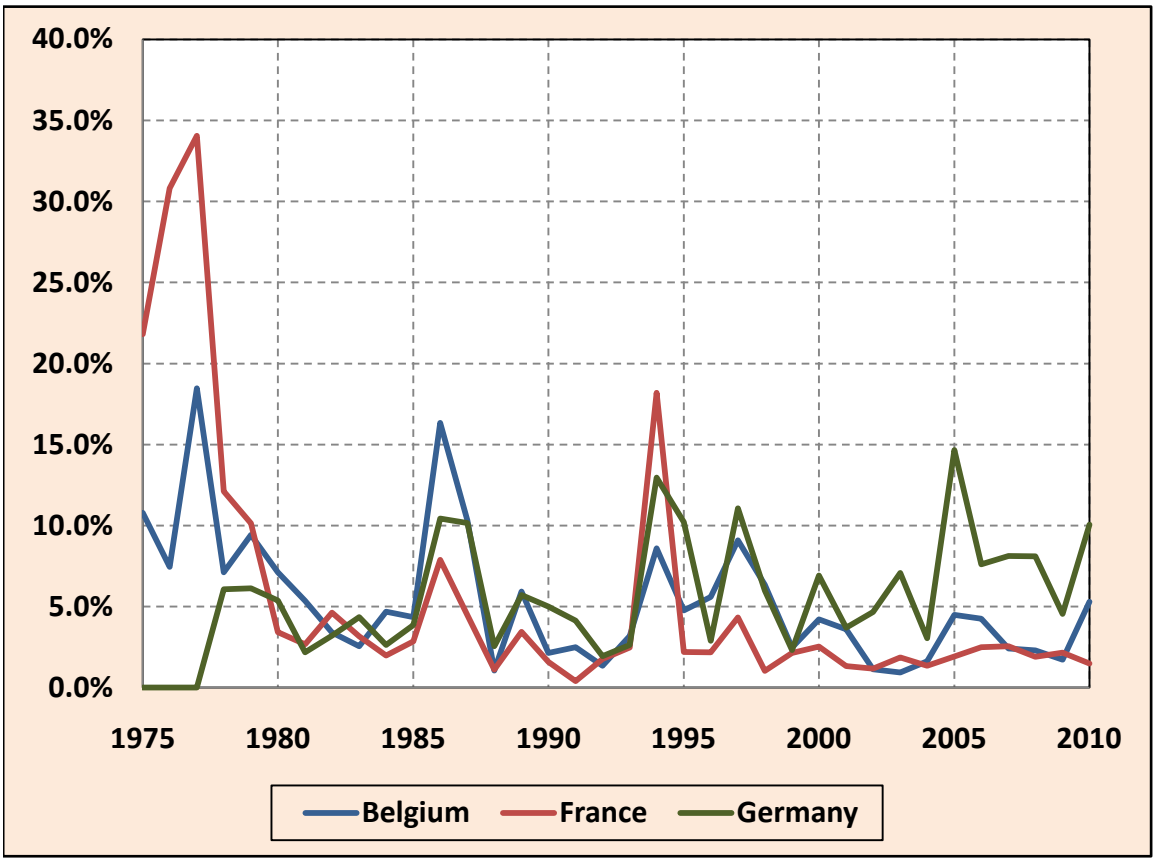


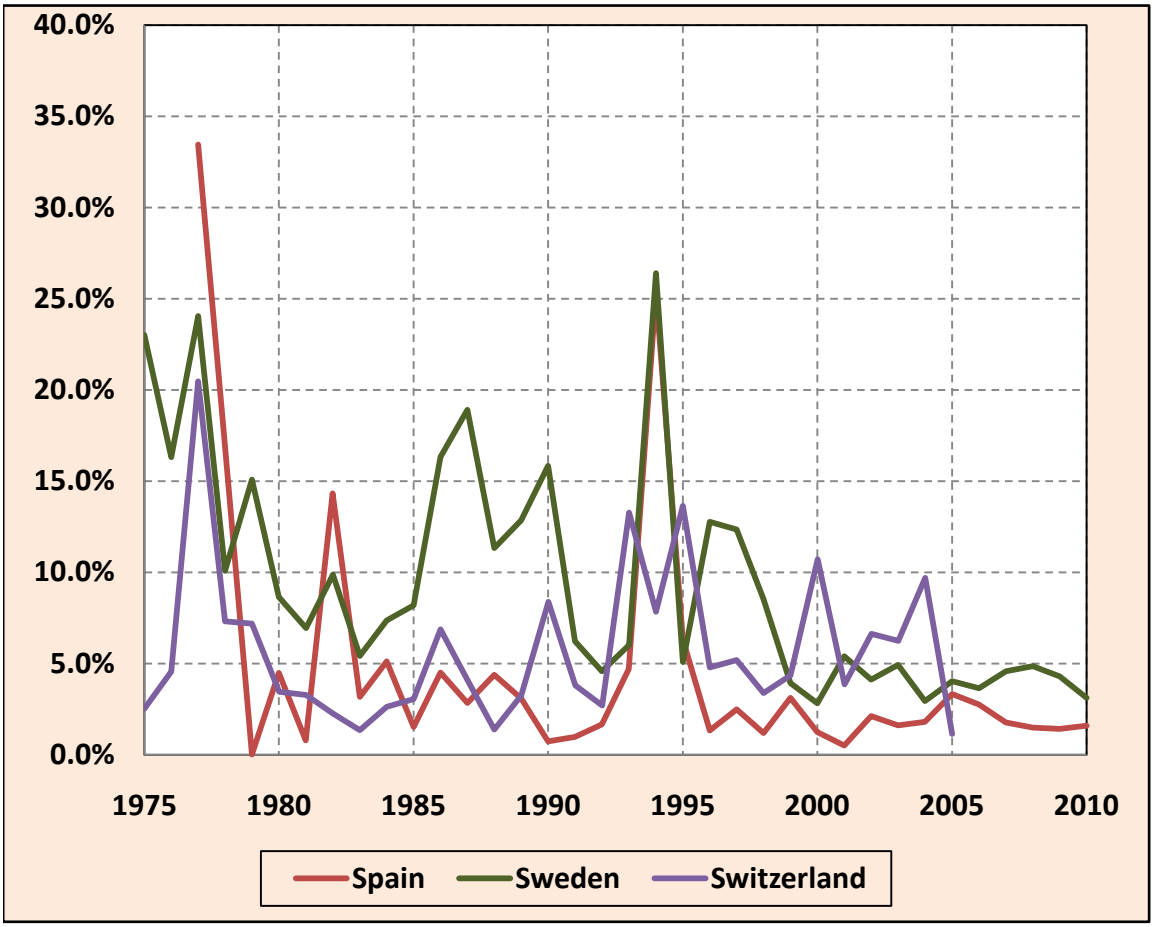
Graphs 3 and 4





Volatility index calculated from prices expressed in national currencies
Graphs 5 and 6





Graphs 7 and 8