

# Comparative price levels for investment goods in 33 European countries for 2005

## Statistics in focus

### ECONOMY AND FINANCE

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#### Prices

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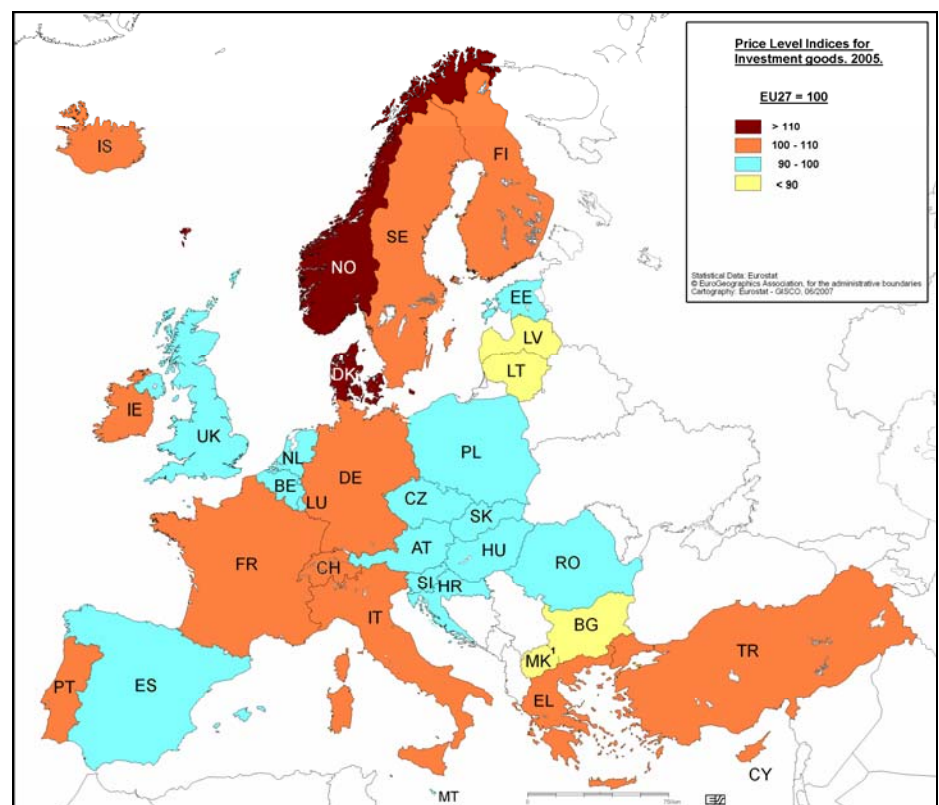
### Contents

2005 Price level indices for investment goods .....	2
2005 PLIs for GFCF, total investment goods and components.....	3
Price dispersion of investment goods .....	6

This article presents the main results of a survey on prices of investment goods in 2005 across 33 European countries. Investment goods include machinery, equipment and other products (see box no. 1). The survey is part of the Eurostat – OECD Purchasing Power Parities (PPP) program. The 33 countries that participated in the survey are the 27 Member States, the 3 candidate countries Croatia, the former Yugoslav Republic of Macedonia and Turkey and the 3 EFTA countries Iceland, Norway and Switzerland.

This investment goods survey, together with a survey on prices for construction, has as objective to produce PPPs and Price Level Indices (PLIs) for the above countries for Gross Fixed Capital Formation (GFCF). This aggregate is one of the main components of Gross Domestic Product (GDP). GFCF is made up of 3 expenditure categories: "Machinery and equipment", "Other products" and "Construction". The investment goods survey covers products belonging to the first two categories. These two categories have a share of about 10% of GDP in most of the EU Member States. The results of the construction survey are presented in a separate Statistics-in-Focus publication.

**Figure 1: 2005 Price level indices for investment goods (EU27=100)**



## 2005 Price level indices for investment goods

Price level indices provide a comparison of the countries' price levels with respect to the European Union average: if the price level index is higher than 100, the country concerned is relatively expensive compared to the EU average and vice versa (see also the methodological notes).

Figure 1 shows the 2005 overall PLIs for investment goods for each of the 33 participating countries. Colours in this map, as well as in Figure 2, correspond to the following grouping:

### Group 1 (> = 110%)

Denmark (DK) and Norway (NO) (2)

### Group 2 (>= 100% and < 110%)

Germany (DE), Ireland (IE), Greece (EL), France (FR), Italy (IT), Cyprus (CY), Portugal (PT), Finland (FI), Sweden (SE), Turkey (TR), Switzerland (CH) and Iceland (IS) (12)

### Group 3 (>= 90% and < 100%)

Belgium (BE), Czech Republic (CZ), Estonia (EE), Spain (ES), Luxembourg (LU), Hungary (HU), Malta (MT), Nederland (NL), Austria (AT), Poland (PL), Romania (RO), Slovenia (SI), Slovakia (SK), United Kingdom (UK) and Croatia (HR) (15)

### Group 4 (< 90%)

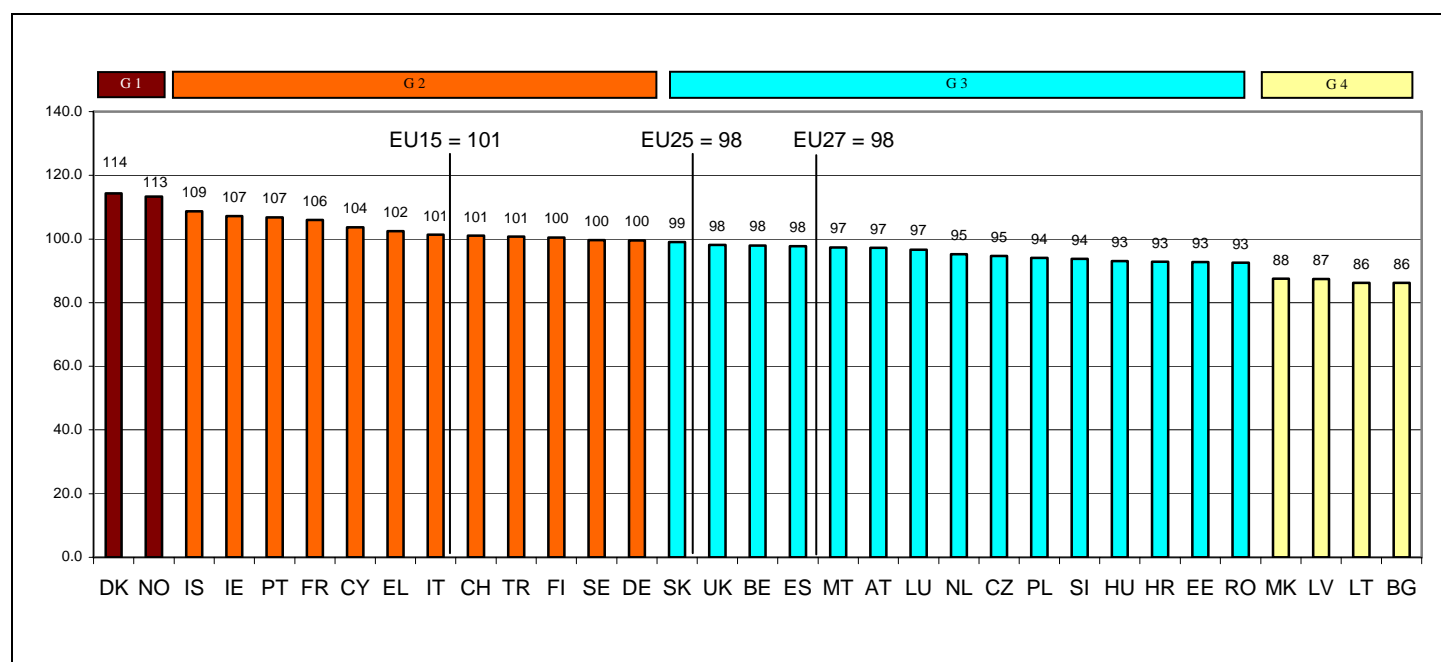
Bulgaria (BG), Latvia (LV), Lithuania (LT) and the former Yugoslav Republic of Macedonia (MK<sup>1</sup>) (4)

Although there is a clear homogeneity in the investment goods' price levels across the countries, the map shows a certain trend of Mediterranean and Southern countries to be allocated in Group 2 and Central and Eastern countries in Group 3.

The homogeneity of price levels can particularly be seen from these groups 2 and 3, which comprise together no less than 27 very different countries within a range of 16 percentage points.

These results are shown graphically in Figure 2 below. This chart illustrates even more clearly the similarity between price levels across countries. It can be seen from the quite smooth profile formed by the countries' price level indices; the highest jumps are produced at the end of Group 1 (from the Norway's PLI of 113 to the Iceland's PLI of 109) and at the end of Group 3 (from the Romania's PLI of 93 to the PLI of the former Yugoslav Republic of Macedonia of 88), with a fall of 4 and 5 percentage points, respectively. So, in fact, only the Group 1 made up of the most expensive countries Denmark and Norway and the Group 4 made up of the countries with the lowest price levels, Bulgaria, Latvia, Lithuania and the former Yugoslav Republic of Macedonia, are clearly distinguished from the other countries belonging to the Groups 2 and 3 that are very close to the EU27 average.

Figure 2: 2005 Price level indices for equipment goods (EU27=100)



### **Box 1: Categories of goods priced in the investment goods survey**

The 2005 Investment goods survey was based on 186 products (500 items, taking into account their alternatives) across 17 basic headings covered by this survey which are shown below. The selection of these products was based on the comparability and representativity of the products across countries. Each country was asked to price a minimum number of 80- 90 products. (An item may be a product, but also an alternative to this product - different make or model, different capacity, etc.)

The 33 countries that participated in the investment goods survey priced together more than 6,000 items during the data collection period. The categories with the highest number of items priced were "Motor vehicles", "Agriculture and forestry machinery", "Medical, precision and optical instruments, watches and clocks" and "Computers and other information processing equipment". On the other side, the categories where countries priced the lowest number of items were "Machinery for food, beverages and tobacco processing", "Machinery for textile, apparel and leather production" and "Other special purpose machinery".

#### **Metal products and equipment**

1. Fabricated metal products
2. Engines, turbines, pumps and compressors
3. Other general purpose machinery
4. Agricultural and forestry machinery
5. Machine tools
6. Machinery for metallurgy, quarrying, mining and construction
7. Machinery for food, beverages and tobacco processing
8. Machinery for textile, apparel and leather production
9. Other special purpose machinery

#### **Electrical and optical equipment**

10. Office machinery
11. Computers and other information processing equipment
12. Electrical machinery and equipment
13. Radio, television and communications equipment
14. Medical, precision and optical instruments
15. Other manufactured goods

#### **Transport equipment**

16. Motor vehicles, trailers and semi-trailers
17. Other road transport (*no products surveyed*)

#### **Software**

18. Software

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## **2005 PLIs for GFCF, total investment goods and components**

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Table 1 below shows the PLIs for GFCF, investment goods and their main components "Metal products and equipment", "Electrical and optical equipment", "Transport equipment" and "Software".

It also shows the maximum to minimum ratios for each sub-group. The prices underlying this table are annual national average prices for the respective product groups. In columns the table provides a direct comparison of the price levels for each product sub-group across all 33 countries participating in the comparison.

**Table 1: 2005 Price level indices for GFCF, total investment goods and components (EU27=100)**

Country		GFCF	Total Investment goods	Metal products and equipment	Electrical and optical equipment	Transport equipment	Software
Belgium	BE	99	98	104	95	99	87
Bulgaria	BG	52	86	83	90	87	93
Czech Republic	CZ	71	95	92	99	91	107
Denmark	DK	125	114	110	99	161	113
Germany	DE	104	100	100	104	100	86
Estonia	EE	78	93	91	99	85	111
Ireland	IE	128	107	107	97	124	87
Greece	EL	84	102	109	112	97	69
Spain	ES	96	98	100	96	97	100
France	FR	109	106	108	104	103	111
Italy	IT	91	101	99	100	94	128
Cyprus	CY	81	104	100	105	112	100
Latvia	LV	69	87	83	90	89	91
Lithuania	LT	74	86	87	86	81	99
Luxembourg	LU	100	97	93	97	97	112
Hungary	HU	78	93	94	94	91	91
Malta	MT	73	97	98	97	113	74
Netherlands	NL	113	95	97	96	105	79
Austria	AT	107	97	96	96	109	87
Poland	PL	65	94	94	97	88	98
Portugal	PT	78	107	105	103	117	112
Romania	RO	60	93	90	95	94	93
Slovenia	SI	70	94	90	97	88	118
Slovakia	SK	73	99	101	99	92	116
Finland	FI	105	100	100	100	115	90
Sweden	SE	126	100	102	93	106	101
United Kingdom	UK	115	98	97	99	99	98
Croatia	HR	71	93	92	94	91	99
The former Yugoslav Republic of Macedonia	MK <sup>1</sup>	48	88	83	89	94	87
Turkey	TR	74	101	98	96	121	75
Switzerland	CH	124	101	102	103	99	94
Iceland	IS	111	109	109	113	126	88
Norway	NO	124	113	110	114	138	93
Maximum		128	114	110	114	161	128
Minimum		48	86	83	86	81	69
Max./Min.		265	133	133	133	197	185

First, it is interesting to emphasize the difference between the price levels for total GFCF and for investment goods, since the latest shows much more homogeneous price levels. This fact can be observed in the three last rows of Table 1: the maximum, the minimum and the ratio between these two (max/min). This ratio is much higher for GFCF (265%) than for investment goods (133%). GFCF with a minimum PLI of 48 (the former Yugoslav Republic of Macedonia) and a maximum of 128 (Ireland) shows a higher dispersion due to construction which, as it is explained above, also forms part of GFCF, and is an expenditure category with price levels that are much more heterogeneous across countries.

The PLIs across all countries for "Metal products and equipment" and "Electrical and optical equipment" are homogeneous as can be seen from the relatively low maximum to minimum ratios (133%, in both cases). They are in line with the ratio for all investment goods, which shows exactly the same rate, 133%.

"Transport equipment" presents a very different picture, however, with a much larger variation (the maximum to minimum ratio is 197%). This is due in part to differences in the tax regime in different countries. Particular examples of high taxes are Denmark and Norway.

"Software" also shows a wide variation, with a maximum to minimum ratio of 185%.

Denmark shows the highest PLIs of all countries for "Metal products and equipment" (110%) and "Transport equipment" (161%). For "Electrical and optical equipment", the maximum is registered by Norway (114%) that also shares with Denmark the maximum for "Metal products and equipment". Italy shows the highest PLI for "Software" (128%).

Lithuania registers the lowest PLI for "Electrical and optical equipment" (86%) and for "Transport equipment" (81%). The lowest PLIs for "Metal products and equipment" are found in Bulgaria, Latvia and the former Yugoslav Republic of Macedonia (83%) while for "Software" Greece shows the minimum (69%).

### **Box 2: Some characteristics of the 2005 investment goods survey**

The initial phase of the work was the pre-survey, introduced in 2005 for the first time. The objective of this pre-survey, that took place between March and May, was to check the availability of a list of products in the national markets. During this stage, countries were also asked to make proposals for new items.

The price collection took place in September and October 2005. It was based on a sample of 186 products, which, together with alternatives, produced a list totalling 500 items, across the 17 basic headings (see box 1).

The prices collected are purchasers' prices (including discounts, surcharges or rebates) – that are the prices that purchasers actually pay for the products at the place required by the purchasers. They include trade margins, transport and delivery costs, and where relevant, assembly.

The prices were collected by National Statistical Institutes, often with specialist input from external consultancy firms.

The prices were validated during the period November 2005 – March 2007. During this period prices were analysed, paying special attention at comparability and representativity of items priced by countries.

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## Price dispersion of investment goods

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Table 2 below, which is based on Table 1, provides a measure of the price dispersion between the Euro-area countries (EA 13), the EU 15, the EU 27 and the whole group of 33 countries that participate in this comparison. The measure used is, for each product group, the coefficient of variation, i.e. the standard deviation expressed as a percentage of the arithmetic mean of the countries' PLIs.

The figures for "Investment goods", "Metal products and equipment" and "Electrical and optical products" are similar, with relative low dispersion values. "Transport equipment" and "Software", however, are significantly higher, again reflecting the tax situation and variation in software prices, respectively.

Overall, the figures in Table 2 are quite low for all product sub-groups, which shows once more the homogeneity of the investments goods' price levels across countries.

**Table 2: Coefficients of variation by product sub-group for 2005**

	Euro area (EA 13)	EU 15	EU 27	All 33
<b>Investment goods</b>	<b>4.2</b>	<b>4.9</b>	<b>6.5</b>	<b>7.1</b>
Metal products and equipment	5.5	4.9	7.4	7.8
Electrical and optical products	4.8	4.7	5.2	6.3
Transport equipment	9.5	15.1	15.5	16.0
Software	17.3	15.7	14.2	13.9

## ➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

The data in this publication are produced by the Eurostat-OECD Purchasing Power Parity (PPP) programme. The full methodology used in the programme is described in the *Eurostat-OECD Methodological manual on PPPs* which is available free of charge from the Eurostat website on

[EUROSTAT Website/Home page/Economy and finance/Publications/Eurostat-OECD Methodological manual on purchasing power parities](#)

Purchasing Power Parities (PPPs) are currency conversion rates that are applied to convert economic aggregates in national currency to an artificial common currency, called Purchasing Power Standard (PPS), which equalise the purchasing power of different national currencies.

Comparative price levels as presented in this publication are the ratios of PPPs to exchange rates. They provide a measure of the differences in price levels between countries by indicating for a given product group the number of units of common currency needed to buy the same volume of the product group or aggregate in each country. Price level indices (PLIs) provide a comparison of the countries' price levels with

respect to the European Union average: if the price level index is higher than 100, the country concerned is relatively expensive compared to the EU average and vice versa.

Price level indices are not intended to rank countries strictly. In fact, they only provide an indication of the comparative order of magnitude of the price level in one country in relation to others, particularly when countries are clustered around a very narrow range of outcomes. The degree of uncertainty associated with the basic price data and the methods used for compiling PPPs, may affect in such a case the minor differences between the PLIs and result in differences in ranking which are not statistically or economically significant. It is, therefore, preferable to use these indices to divide countries into groups of a comparable level, as done in this article.

The main use of PPPs is to convert expenditures (including GDP) of different countries into real expenditures (and real GDP). Real expenditures are valued at a uniform price level and so reflect only differences in the volumes purchased in countries. PPP and real expenditures provide the price and volume measures required for international comparisons.

*Footnote 1: MK is a provisional code which does not prejudice in any way the definitive nomenclature for this country, which will be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations.*

## Further information:

Data: [EUROSTAT Website/Home page/Economy and finance/Data](#)



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