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Working Paper — Digitized Version

On the quality of quality measures in international trade

Kiel Working Paper, No. 587

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Suggested Citation: Menzler-Hokkanen, Ingeborg; Spinanger, Dean (1993) : On the quality of quality measures in international trade, Kiel Working Paper, No. 587, Kiel Institute of World Economics (IfW), Kiel

This Version is available at:

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Kiel Working Papers

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**On the Quality of Quality Measures
in International Trade**

by
Ingeborg Menzler-Hokkanen*
Dean Spinanger**

July 1993



Institut für Weltwirtschaft an der Universität Kiel
The Kiel Institute of World Economics

ISSN 0342 - 0787

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On the Quality of Quality Measures in International Trade*

1. Introduction, Relevance and Overview

Viewed against the analysis of actual market prices, unit values are second-best proxies for the price and - assuming the law of one price holds - quality component in international trade. Yet, since prices are hardly ever available, unit values are still usually the only usable indicator. In articles by Chinloy (1980), Aw and Roberts (1988), Faini and Heimler (1991a, b) and De Melo and Winters (1993), a common approach is pursued to utilize the economic theory of index numbers to quantify quality without using hedonic regressions (Caves, Christensen and Diewert, 1982). How to measure quality shifts in trade over time and across supplying countries is one key question being addressed in the current empirical trade literature (Feenstra, 1988; De Melo and Winters, 1993). It has gained significance in the past years with respect to the questions of import competition (Rodrik, 1988; Aw, 1991) and how entry can be gained into markets characterized by imperfect competition and oligopolistic structure.

The basic assumption made in the above mentioned approach is that individual prices of differentiated products vary because of differences in quality. The underlying logic is straightforward: Since quality is posited to be positively correlated with price, an increase in price can be interpreted as an increase in quality. Evidence documented by marketing literature on price-quality relationships (Bagwell, 1992) supports this presumption. Objections expressed in Molle (1991, p. 80), however, reflect prevailing criticism (see also Maizels, 1970).

The primary goal of this paper is to examine the original methodology by Aw and Roberts (1988) with a modification - based on the Fisher ideal index - introduced in the literature by Faini and Heimler (1991a, b). Both approaches have been applied in recent papers, although the methods chosen have not been adequately substantiated, despite the inherently differing results engendered by the individual methods. Aside from the possibility of referring to the formal differences in the method of calculation, what is primarily missing is a comparison of results with a given data base. Thus the specific purpose and value added of this paper is to examine and compare the performance of these two approaches in measuring quality in international trade. It

* This study is an input into a World Bank project dealing with factors influencing prices of capital equipment exports to the LDCs (Dean Spinanger). It is likewise part of the project "Price Discrimination in International Trade: The Case of Finnish Exporters" (Ingeborg Menzler-Hokkanen) supported by the Academy of Finland; support from the Yrjö Jahnsson foundation, Helsinki, is gratefully acknowledged. The authors appreciate comments on an earlier version by Ulrich Hiemenz and Rolf Langhammer.

begins with a brief summary of the basic thrust of quality measures in international trade before turning to analytical and then empirical comparison of the two approaches.

2. Quality Measures in World Trade: Basic Thrust

The general principle of measuring quality is similar in both of the newly developed approaches (see Aw and Roberts, 1988; Faini and Heimler, 1991a, b): a weighted index of the total quantity (or price) of imports is decomposed into a quality index and an unweighted index of quantity (or price). Using the notation of Faini and Heimler this can be presented as:

$$(1) \quad F(x) = A \cdot Q$$

where $F(x)$ = weighted index of total quantity imported,

A = index of quality,

Q = index of the unweighted total quantity of imports.

Similarly, using the terminology as given in Aw and Roberts (1988, p. 263), "The key to the decomposition of the import bundle into quality and quantity components is an equation that defines the aggregate flow of services from import bundle x^i as the product of the total quantity of imports and the quality per unit of imports":

$$(2) \quad F(x^i) = A^i H(x^i)$$

where $F(x^i)$ = the flow of services,

$H(x^i) = (\sum_k) x_k^i$ = the unweighted total quantity of imports,

A^i = the flow of per unit quantity ('quality').

In other words: the Faini and Heimler method (1991a, b) draws on the Fisher Index, rather than the more frequently used Tornqvist-Theil-Translog index (e.g. Aw and Roberts, 1988; De Melo and Winters, 1993).

2.1 Tornquist-Theil Translog (TTT) Index Number Technique

For consistent, cross-country comparisons of import prices and quality at the same or different points in time Aw and Roberts (1988) recommended multilateral translog price index techniques.

A translog multilateral price index (P^*) can be derived as the difference between two bilateral price comparisons as follows:

$$(3) \quad \ln P^*_{ij} = \frac{1}{2} \sum_k (s_k^i + \bar{s}_k) (\ln p_k^i - \ln \bar{p}_k) - \frac{1}{2} \sum_k (s_k^j + \bar{s}_k) (\ln p_k^j - \ln \bar{p}_k)$$

$$\text{where } \bar{s}_k = \frac{1}{N} \left(\sum_{i=1}^N s_k^i \right),$$

$$(\ln \bar{p}_k) = \frac{1}{N} \left(\sum_{i=1}^N \ln p_k^i \right)$$

when s_k^i = the share of the total expenditures for observation i vis-a-vis commodity k ,

j = any second observation and

N = the total number of observations in the sample.

This allows a comparison of price levels between observations i and j . Each bilateral comparison is between an observation of interest and the hypothetical base observation with cost shares s_k and prices $\ln p_k$. In our study the hypothetical base observation is the mean for all observations, as used by Aw and Roberts (1988).

To study the relationship among service flows, quality, and total quantity, Aw and Roberts (1988) define the price per unit of service for import bundle i , $P(p^i)$, as being equal to the average price per unit of quantity $R(p^i)$ divided by the level of quality:

$$(4) \quad P(p^i) = R(p^i) / A^i$$

$$\text{where } R(p^i) = (\Sigma_k) * (p^i)_k * (x_k^i) / (\Sigma_k) * (x_k^i).$$

Rewriting equation (4) for observation j and taking the natural logarithmic difference between the two equations gives

$$(5) \quad \ln P(p^i) - \ln P(p^j) = -(\ln A^i - \ln A^j) + [\ln R(p^i) - \ln R(p^j)]$$

According to Aw and Roberts (1988), this decomposition can also be done by using the translog multilateral index (see equation 3), by taking the difference in two

bilateral comparisons: one for observation i and the hypothetical base observation and one between observation j and the base. Rearrangement of the terms gives

$$(6) \quad \ln R(p^i) - \ln R(p^j) = (\ln A^i - \ln A^j) + \ln P_{ij}^*$$

where $\ln P_{ij}^*$ is the multilateral price index defined by equation (3).

Equation (6) can be used to compare the quality of the import bundle from different supplying countries at different times (Aw and Roberts, 1988). In our study "j" will refer to the values for Italy in 1988 (= 1.00), as a reference to which all other values are compared. Therefore, the term $(\ln A^j)$ in equation (6) will be zero ($\ln 1.00 = 0$), and we are left with the relationship

$$(7) \quad \ln R(p^i) - \ln R(p^j) = \ln A^i + \ln P_{ij}^*$$

which can be simplified as

$$(8) \quad R(p^i) / R(p^j) = (A^i) * (P_{ij}^*)$$

leading to

$$(9) \quad A^i = \frac{R(p^i) / R(p^j)}{P_{ij}^*}$$

Since in our study we relate all observations to those of Italy in 1988, $R(p^i) / R(p^j) = RUV(I_{88})$, the numerator in equation (9) is simply the relative unit value of the country and commodity group in question (relative to Italy's corresponding data for 1988).

Therefore equation (6) - after solving for quality - becomes:

$$(10) \quad A^i = RUV(I_{88}) / P_{ij}^*$$

2.2 Fisher Ideal Price Index and the Multilateral EKS-Index

Following Faini and Heimler (1991a, b), the bilateral Fisher Ideal index can be written in general terms as

$$(11) \quad F_{kl} = \left\{ \left[\sum S_{li} (Z_{ki} / Z_{li}) \right] \left[\sum S_{ki} (Z_{li} / Z_{ki}) \right] \right\}^{1/2}$$

where

S_{li} and S_{ki} = value share weights and

Z_{li} = unit values of the relevant observation (li)

Z_{ki} = unit values of the reference observation (ki).

In our study the value share weights (S_{li} and S_{ki}) were calculated as the proportion of commodity group i of the total bundle imported into FRG from country l at the time point of interest. As reference (k) the values for Italy in 1988 were chosen (Italy = 1.00).

From the bilateral Fisher Ideal Index a multilateral (EKS) index can be constructed (as explained in Faini and Heimler, 1991b) by incorporating a reference base observation, against which all the other observations are compared using the Fisher Index. The ratio of the two bilateral indexes, is the multilateral EKS-Index, satisfies the circulatory test (see Drechsler, 1973), and was therefore the preferred method utilized by Faini and Heimler (1991a, b):

$$(12) \quad EKS_{lm} = \frac{\left\{ \left[\sum S_{li} (Z_{ki} / Z_{li}) \right] / \left[\sum S_{ki} (Z_{li} / Z_{ki}) \right] \right\}^{1/2}}{\left\{ \left[\sum S_{mi} (Z_{ki} / Z_{mi}) \right] / \left[\sum S_{ki} (Z_{mi} / Z_{ki}) \right] \right\}^{1/2}}$$

where l and m refer to two observations of interest, and k is the reference observation, in our case the mean value share weights or unit values for commodity group i from all the observations in the data set.

For the measurement of quality we adopt from Faini and Heimler (1991b, p. 65) their equation 9:

$$(13) \quad c(p) = V/A$$

where $c(p)$ = weighted index as given by equation (12) above

V = uncorrected unit value index and

A = quality index.

This produces for quality

$$(14) \quad A = c(p)/V$$

which is in essence the same as equation (10) above, but uses a different method to calculate the weighted, multilateral index.

3. Dealing with Real Data: An Empirical Comparison of Quality Indices

3.1. Overview of the Data

The multilateral index number techniques described in Section 2 were applied to Germany's furniture imports for the years 1988-1990 (Germany = West Germany; otherwise referred to as FRG). Specifically data were drawn from CN-group 9401 [entitled: seats (excl. those in 94.02), also convertible into beds, and parts thereof] and covered five eight-digit subgroups (i.e. CN 9401-5000, -6100, -6900, -7100, -7900). Exports of 24 different countries from these subgroups for 1988-1990 were used as the data base. The decision to consider Italy as the central country of the comparison seems quite natural, because in the commodity groups included its trade share (by value) of imports into FRG is by far the largest (overall, 31% for 1988-90). The index values for the years 1988-90 are normalized by Italy's value for 1988.

Three sets of indexes were calculated: In Table 1 the industry-level unit-value indexes for imports of chairs by Germany are reported; in Table 2 the corresponding translog multilateral indexes; and Table 3 the quality indexes for the same period. In the calculation of the TTT-index, prices for missing values in commodity groups, countries, and years where no exports to the FRG took place (or at least were not reported), were imputed in line with Aw and Roberts (1986, 1988). The multilateral indexes were calculated using equations (3) and (12), above, and the quality indexes using equations (10) and (14).

The data have been arranged along regional lines to permit an analysis among and between economically more similar areas, be it in a context of resource endowments, economic systems or exchange rate changes. Although the setup is not perfect, it helps to focus attention to certain underlying issues which will be dealt with later.

3.2. Comparing Calculations of the EKS and TTT Indices

A total of 72 quality index comparisons between the TTT and EKS-methods are given in Table 3. The degree to which they measure quality in a similar, consistent manner can be determined by comparing their absolute levels and the degree to which they track changes in quality over time.

As concern the levels, it can be established that almost 60% of the two quality indices assume values within an acceptable range of 10% from one another. About one third of the index pairs exhibited deviations exceeding 20%, or rather over 10% had differences beyond 100%. However, while in 1988 (with only one exception) all the

Table 1 - Relative Unit Value Indexes for FRG Chair Imports by Country of Origin^a and Exchange Rate Changes

Exporting country	1988	1989	1990	Exchange rate change ^b
USA	1.65	1.52	1.51	-8.00
EC \emptyset	1.58	1.66	1.63	
Belg/Lux	1.87	1.81	1.82	-0.89
Denmark	2.36	2.42	2.08	+0.12
France	1.59	1.33	1.16	+0.70
Italy	1.00	1.06	1.09	-0.05
Netherlands	1.30	1.31	1.40	-0.08
Spain	0.64	1.51	1.92	+5.19
United Kingdom	2.29	2.19	1.97	-7.78
EFTA \emptyset	2.08	1.97	2.17	
Austria	1.57	1.66	1.60	-0.04
Finland	1.31	1.44	1.45	+0.70
Norway	3.63 ^c	3.42 ^c	3.73 ^c	-4.17
Sweden	1.02	1.08	1.04	-4.71
Switzerland	2.89	2.25	3.05	-3.05
Eastern Europe \emptyset	0.47	0.47	0.46	
Bulgaria	0.42	0.36	0.28	-73.73
Czechoslovakia	0.43	0.42	0.43	-26.36
Hungary	0.52	0.53	0.60	-26.58
Poland	0.51	0.54	0.46	-95.82
Romania	0.39	0.41	0.41	-41.40
Soviet Union	0.41	0.38	0.35	+3.53
Yugoslavia	0.61	0.65	0.66	-98.12
Asia \emptyset	0.63	0.70	0.69	
China, PR	0.32 ^d	0.29 ^d	0.26 ^d	-28.37
Singapore	0.89	1.21	1.10	+2.20
Taiwan	0.52	0.58	0.61	-2.03
Thailand	0.78	0.71	0.77	-9.00
Range ^c	11.34	11.79	14.35	

^aRelative to Italy = 1.00 in 1988. The regional averages (i.e. " \emptyset ") have been calculated on an unweighted basis, summed over the given set of countries. See Appendix Table 1 for description of product groups. - ^b% change relative to DM-Lire change 1988-1990. For Italy: % DM-Lire change. - ^cDesignates highest unit value in given year. - ^dDesignates lowest unit value in given year. - ^eHighest (c) divided by lowest (d).

Source: Own calculations based on Eurostat foreign trade data, IMF (1993), UN (1991) and OECD (1992).

Table 2 - Comparison of the TTT and the EKS Multilateral Price Indexes for FRG Chair Imports^a

Exporting country	1988		1989		1990	
	TTT	EKS	TTT	EKS	TTT	EKS
USA	1.45	1.41	1.68	1.60	1.90	1.57
EC						
Belg/Lux	1.56	1.54	1.42	1.50	1.64	1.53
Denmark	2.20	2.09	2.17	2.19	2.38	2.01
France	1.99	1.84	1.72	1.67	1.79	1.21
Italy	1.00	1.00	1.01	1.07	1.14	1.12
Netherlands	1.44	1.37	1.36	1.38	1.56	1.39
Spain	0.64	0.61	1.58	1.56	1.73	1.91
United Kingdom	2.27	2.15	1.97	2.00	2.20	1.80
EFTA						
Austria	1.46	1.43	1.46	1.52	1.60	1.54
Finland	1.44	1.40	1.65	1.73	1.76	1.88
Norway	2.60 ^b	2.74 ^b	2.45 ^b	2.67 ^b	2.67 ^b	3.17 ^b
Sweden	1.15	1.16	1.15	1.24	1.26	1.12
Switzerland	2.59	2.62	2.26	2.45	2.54	2.90
Eastern Europe						
Bulgaria	0.66	0.17 ^c	0.55	0.15 ^c	0.59	0.26 ^c
Czechoslovakia	0.45	0.39	0.38	0.37	0.45	0.39
Hungary	0.51	0.43	0.51	0.48	0.61	0.54
Poland	0.47	0.38	0.45	0.43	0.56	0.39
Romania	0.29 ^c	0.33	0.29 ^c	0.35	0.36 ^c	0.35
Soviet Union	0.41	0.33	0.31	0.31	0.39	0.30
Yugoslavia	0.56	0.48	0.53	0.52	0.63	0.58
Asia						
China, PR	0.57	0.21	0.57	0.24	0.63	0.37
Singapore	0.74	0.56	1.05	0.97	1.24	0.77
Taiwan	0.60	0.60	0.62	0.67	0.74	0.65
Thailand	1.06	0.96	0.71	0.67	0.82	0.35
Range ^d	8.97	16.12	8.45	17.80	7.42	12.19

^aRelative to Italy = 1.00 in 1988. See Appendix Table 1 for description of product groups. -

^bDesignates highest price index in given year. - ^cDesignates lowest price index in given year. - ^dHighest (b) divided by lowest (c).

Source: Own calculations based on Eurostat foreign trade data.

Table 3 - Comparison of the TTT and EKS Quality Indexes for FRG Chair Imports^a

Exporting country	1988		1989		1990	
	TTT	EKS	TTT	EKS	TTT	EKS
USA	1.14	1.17	0.91	1.03	0.80	1.05
EC						
Belg/Lux	1.20	1.22	1.27	1.25	1.11	1.23
Denmark	1.07	1.13	1.12	1.08	0.87	1.17
France	0.80	0.86	0.77	0.95	0.65	1.31
Italy	1.00	1.00	1.05	0.94	0.96	0.89
Netherlands	0.90	0.95	0.96	0.94	0.89	0.93
Spain	0.99	1.04	0.96	0.41 ^c	1.11	0.33 ^c
United Kingdom	1.01	1.06	1.11	1.15	0.90	1.27
EFTA						
Austria	1.07	1.09	1.14	1.03	1.00	1.02
Finland	0.91	0.94	0.87	0.76	0.83	0.70
Norway	1.39 ^b	1.32	1.40	1.36	1.40 ^b	1.15
Sweden	0.88	0.88	0.94	0.82	0.83	0.90
Switzerland	1.12	1.10	1.00	1.18	1.20	0.99
Eastern Europe						
Bulgaria	0.64	2.51 ^b	0.66	2.92 ^b	0.48	1.65 ^b
Czechoslovakia	0.95	1.08	1.10	1.17	0.96	1.09
Hungary	1.02	1.20	1.04	1.08	0.98	0.96
Poland	1.10	1.34	1.20	1.18	0.82	1.30
Romania	1.36	1.18	1.42 ^b	1.13	1.13	1.12
Soviet Union	1.00	1.25	1.21	1.32	0.91	1.36
Yugoslavia	1.09	1.28	1.23	1.17	1.05	1.05
Asia						
China, PR	0.56 ^c	1.49	0.51 ^c	1.34	0.41 ^c	0.85
Singapore	1.21	1.59	1.15	0.93	0.88	1.16
Taiwan	0.86	0.86	0.94	0.77	0.82	0.79
Thailand	0.74	0.81 ^c	1.01	1.16	0.94	1.04
Range ^d	2.48	3.10	2.78	7.12	3.41	5.00

^aRelative to Italy = 1.00 in 1988. See Appendix Table 1 for description of product groups. -

^bDesignates highest quality value in given year. - ^cDesignates lowest quality value in given year. - ^dHighest (b) divided by lowest (c).

Source: Own calculations based on Eurostat foreign trade data.

major deviations were to be found within the group of (former) socialist countries, over 60% of these 8 countries revealed similar values (i.e. within 10% of one another) in 1989, only to become considerable less uniform again in 1990. More specifically:

- For the Western European countries the initial year reveals good matches across all pairs, but already in 1989 France and Spain head in different directions, while the differences for Sweden and Switzerland increase. By 1990 Denmark, the United Kingdom and Switzerland are also pointing down other paths.
- The Eastern European countries surprisingly include four of the six highest values, with Bulgaria always the highest among the EKS indices. Since Bulgaria also tends to be toward the bottom of the TTT indices the spread between the two indices remained the largest over the three years (in 1989 it exceeded a factor of 4).
- The results for the Asian countries (and the USA) are mixed with large variations for China and Singapore.

Across all countries and both indices there is a tendency for the values to be lower in 1990 than in 1988; this is particularly the case among the Eastern European countries. However, in those cases where the indices were higher in 1990 than 1988 the EKS values were more heavily represented; likewise across all years they revealed larger ranges. No other dominant trends of the values could be established.

What became evident in the above analysis was the fact that - for the most part - the two indices assumed similar values for differing countries in each of the three years. In other words: the changes in the two indices over time were not tracking each other, thus leading to a far greater number of mismatches in 1990 than in 1988. As a matter of fact almost half of the index pairs in 1990 had spreads exceeding 20%. Since it is the ability to differentiate between price and quality changes over time which is of particular interest in examining international trade flows (see introductory remarks) such discrepancies - given the lack of true prices - would leave us not knowing which - if any - index can be trusted.

Without comparing the year-to-year EKS and TTT index number changes, an analysis of the period 1988-1990 should more clearly if the two indices are really telling different stories. Initial evidence shows that out of the 24 EKS-TTT pairs 15 were pointing in the same direction. However, out of these 15 only 8 actually changed within a range of 10% from one another over the course of the two years (i.e. Austria, Bulgaria, CSFR, Italy, Netherlands, Taiwan, Thailand and Singapore). Particularly large deviations were evident for France, Poland, Spain, United Kingdom and the USA.

Given the lack of discernible patterns or regularities evolving from these methods, determining which one yields better or poorer quality results must be left open. That is, while the exact reasons for the inconsistent outcome would require further detailed studies, it suffices for the purpose of this paper to have established that these commonly-used methods to measure quality in international trade do not produce similar enough results to permit one to be unequivocally used in place of another. Or rather, implausible results for both methods (e.g. low TTT indices for France but high EKS values for China) further make it difficult to place confidence the methods.

As regards the multilateral price indexes derived by these two methods (Table 2), the agreement is much better than for the quality index. However, since the data in Tables 2 and 3 are related, the largest discrepancies can be seen for the same countries and years as pointed out above for the quality indexes. The procedure for calculating the quality indexes appears thus to have amplified the differences in the results. The multilateral price indexes are also conceptually easier to depict than the quality indexes. The countries charging high export prices also have a high multilateral index value, and the ranking of countries corresponds to the picture obtained earlier of the chair markets in FRG as well as in France (Menzler-Hokkanen et al., 1992). This can be easily seen when referring both to Tables 1 and 2, comparing the indices in the various regions. As a matter of fact there is consensus in the highest values (Norway).

Some generalizations, repeatedly observed and frequently confirmed in earlier papers dealing with empirical data on unit value and multilateral indexes, seem not to comply with the data and patterns evident on our data. One pattern has been that with the multilateral indexes "it can immediately be seen that the cross-country variation in prices is strongly reduced when compared to the variation in unit-value indices" (Faini and Heimler, 1991b, p. 67); or that "it is immediately obvious that the cross-country variation in prices is substantially reduced when compared with the variation in unit value indexes" (Aw and Roberts, 1988, p. 268-9).

This is not the case with our data, for which no obvious reduction in cross-country variation can be seen between unweighted and weighted price indexes (Tables 1 and 2). This can be first seen by comparing the range statistic, which actually shows larger ranges for the multilateral indices. Secondly, no doubt this is partially due to the structure of the data underlying our results: of all the product subcategories that we considered, one covers about 60% of all the chair imports into FRG. Most countries have exports - some only to a small degree and others entirely - at least in this category. Given the implied major weighting variations between the countries severe implications result if the product groups have clearly varying unit values. The unit

value of the major category was on the average by far the highest, over 5 ECU/kg, compared to other categories around 2 ECU/kg or even below. Some countries, which have specialized exports of only one product category, may have low aggregate unit values (e.g. Bulgaria), but have relatively high unit value for their specific category and thus will receive a quite high multilateral index value despite a low aggregate unit value. It is not unlikely that the results for Bulgaria and other (former) socialist countries are influenced by highly distorted exchange rates.

4. Conclusions

The two most widely used indexes for analyzing aspects of quality in international trade proved to generate an unacceptable number of contradictory results when applied to the same set of real trade data. Since it is not possible to conclude which index is producing the correct results, further research is necessary on the quality of quality indices.

Given that the data structure, i.e. its country or product specific variation, impacts strongly on how the different indicators modify the original data, there should be tests which can be applied - like in the case of diversification and concentration indices - to determine which index is best for the data being analyzed. In the case of our data, the "general pattern" contended to hold, i.e. multilateral indexes reduce variations in index values compared to variation in aggregate unit values, was shown not to hold under all circumstances.

Finally it should be noted that neither of the methods takes two other relevant factors into consideration. First of all, some changes in unit values (prices) can obviously be attributed to exchange rate movements. While these were moderate within the European currency system during the period analyzed, vis-à-vis other countries this was not the case (see Table 1). For sure, there seemed to be some indications (albeit not dealt with above) that exchange rate changes were correlated with movements in the indices. One way to minimize this problem is to analyze exports from one given country to x other countries (see e.g. De Melo, Winters, 1993). Secondly, the prevailing methods account for only one weighting method (e.g in this case kilograms) without adjusting for the size of a given object (100 kgs of 50 chairs tells a different story than 100 kgs. of 5 chairs). Such adjustments are surely necessary if the products being examined are to be considered to be homogeneously within each specific group. Research down both of these paths could prove fruitful in narrowing down the differences between actual price (quality) indices and those calculated with the above methods.

Appendix 1 - CN-groups analysed in the study:

1988-1990:

9401.50-00	Seats of cane, osier, bamboo or similar material
9401.61-00	Upholstered seats, with wooden frames (other than those of heading N 94.02), (Excl. 9401.10-10 to 9401.40-00)
9401.69-00	Seats with wooden frames, non-upholstered (other than those of heading N 94.02), (Excl. 9401.10-10 to 9401.40-00)
9401.71-00	Upholstered seats, with metal frames, (other than those of heading N 94.02) (Excl. 9401.10-10 to 9401.40-00)
9401.79-00	Seats with metal frames, non-upholstered (other than those of heading N 94.02), (Excl. 9404.10-10 to 9404.40-00)

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