Four Kinds of Fallacies in Comparing Market-Type and Soviet-Type Economies: Issues and Outcomes

This article[1] deals with the most common fallacies in comparing market-type and Soviet-type economies. Each of the four kinds of fallacy analyzed in the paper tends to reduce — for different reasons and in different ways — the development differential between mature industrialized market-type economies (MTEs) and Soviet-type ones (STEs).[2] Since each of the fallacies in question skews comparisons in the same direction, their cumulative effect is substantial. These fallacies are at the root of many overestimates of the development of STEs and of the even more frequent confusion resulting from the conflict between eyewitnesses and other unquantified unofficial evidence and official STE figures.

The fallacies in question affect estimates of the *relative* development level of STEs rather than the absolute level. This is interesting, since the former measure is more important in determining whether and — if so to what extent — these economies have been able to catch up with mature industrialized MTEs. In addition to the mature industrialized MTEs that serve throughout the paper as a yard-stick of changes — or the lack thereof — in the relative position of STEs, two other groups of METs have been added for comparative purposes. Three mature industrialized MTEs — Finland, Austria, and Italy — that have caught up with the old industrialized MTEs in the post-war period have been

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[1] This article is an abbreviated version of the mimeographed seminar paper No. 385, Institute for International Economic Studies, Stockholm, 1987.

[2] The terms: "STEs", "CPEs", "centrally-planned economies" and "East European economies" are used interchangeably and are intended to cover the Soviet Union and six smaller countries of the region: Bulgaria, Czechoslovakia, East Germany (GDR), Hungary, Poland and Romania. The terms: "Soviet system" and "central planning" are also used interchangeably, and mean the political-economic system of the countries in question.

included to see whether these newcomers who started from a relative position not much higher than that of STEs have been more successful in catching up than the latter countries. Some middle developed MTEs — Eire, Spain and Greece — have also been included for the same purpose.

Looking at inputs rather than at outputs

Since various indicators of per capita energy or steel consumption showed a strong and positive correlation with the per capita GNP in MTEs, and since per capita GNP calculations for STEs are rare and not very reliable, many analysts have turned to these substitute indicators. This practice implies the assumption of a similar efficiency in inputs use, *i.e.* in input-output relationship, in both groups of countries. On this assumption, any differential in per capita consumption of inputs would result from the difference in the development level.

In such comparisons, STEs looked highly developed as far back as 1960 and well on the way to catching up with the West. In the case of per capita energy consumption, STEs that had industrialized before Communist rule (East Germany and Czechoslovakia) even looked like drawing level with (or overtaking) most developed West European economies, with a relative measure showing about 150% of the reference MTE level (see Table 1).

Table 1 presents data on relative per capita consumption of basic inputs: energy, steel, and cement, calculated as the ratio of a given country's per capita consumption to the weighted average of the three industrially mature European economies: Germany, France and Belgium.[3] This relative measure has been used throughout the article.

Thus, in comparing inputs, it will be noted that almost all STEs "overtook and surpassed"[4] the input level of mature industrialized West European economies over the 1960-1980 period. The only STE that did not do so by either indicator is Hungary, incidentally the STE

[3] Leaving aside the oldest industrial power, the United Kingdom, as well as the United States, Germany, France, and Belgium were the reference economies most often used in East European propaganda. The lead of these countries is therefore an appropriate indicator of the differential in the development level..

[4] The term is characteristic of Soviet-type propaganda in the 1950s, 1960s and — up to a point — the 1970s as well.

TABLE 1

COMPARING INPUTS: RELATIVE PER CAPITA ENERGY CONSUMPTION, STEEL CONSUMPTION, CEMENT CONSUMPTION IN 1960-1980 IN SELECTED EUROPEAN COUNTRIES

	Energy Consumption[1]			Steel Consumption[2]			Cement Consumption[3]		
	1960	1970	1980	1960	1970	1980	1960	1970	1980
Developed MTEs									
Germany (F.R. of)	1.160	1.118	1.140	1.301	1.112	1.225	1.188	1.052	1.043
France	0.775	0.823	0.826	0.725	0.713	0.807	0.790	0.995	0.972
Belgium	1.207	1.212	1.103	0.652	0.792	0.684	0.956[4]	0.931[4]	0.896[4]
Finland	0.479	0.880	0.959	0.545	0.656	0.764	0.771	0.691	0.701[5]
Austria	0.667	0.710	0.768	0.635	0.634	0.963	1.071	1.067	1.344
Italy	0.340	0.572	0.598	0.436	0.629	1.002	0.872	1.050	1.348
Middle Developed MTEs									
Eire	0.582	0.560	0.658	0.133	0.234	0.273	0.534	0.549	.
Spain	0.240	0.317	0.471	0.142	0.405	0.504	0.471	0.848	0.978
Greece	0.144	0.240	0.427	0.118	0.162	0.446	0.490	0.895	.
STEs									
East Germany (GDR)	1.551	1.326	1.527	0.822	0.851	1.262	0.766	0.808	1.238
Czechoslovakia	1.486	1.169	1.290	1.130	0.987	1.576	1.074	0.898	1.307
Hungary	0.649	0.609	0.794	0.495	0.477	0.714	0.411	0.663	0.902
Poland	0.972	0.787	1.137	0.505	0.574	1.141	0.580	0.660	0.893
Bulgaria	0.408	0.817	1.156	0.261	0.437	0.682	0.534	0.734	1.041
Romania	0.421	0.652	0.959	0.306	0.507	1.182	0.313	0.591	1.000[6]
USSR	0.890	0.890	1.153	0.701	0.726	1.222	0.635	0.655	0.846

[1] A weighted average of per capita energy consumption in Germany, France and Belgium (respectively: 3695, 2474, 3851 Kg. in 1960; 5170, 3806, 5603 in 1970; 7510, 3995, 5335 in 1980) equal to 1.000. [2] A weighted average of per capita steel consumption in Germany, France and Belgium (respectively: 549, 306, 275 in 1960; 649, 445, 495 in 1970; 566, 373, 316 in 1980) equal to 1.000. [3] A weighted average of per capita cement consumption in Germany, France and Belgium (respectively: 436, 290, 351 in 1960; 609, 555, 539 in 1970; 564, 526, 485 in 1980) equal to 1.000. [4] Including Luxembourg. [5] Output per capita. [6] 1979.

Sources:
(a) *Yearbook of International Statistics*, 1977, 1981, 1984 (in Polish); *World Development Report*, 1983 (Annex); *Indicators of Economic Development Abroad*, 1984 (in Czech.).
(b) *Yearbook of International Statistics*, 1981, 1984 (in Polish).
(c) *Economic Bulletin for Europe*, vol. 31, 1980, No. 2; *Indicators of Economic Development Abroad*, 1984 (in Czech.).

country widely regarded as most efficient in input use (Romania achieved "only" 95.9% of the per capita energy consumption level, Bulgaria 68.2% for steel and Poland 89.3% for cement). Interestingly enough, the relative measure shows the largest increases between 1970 and 1980, *i.e.* when prices of energy were high, as were those energy-intensive products. The above figures may be regarded as another indication of the unresponsiveness of demand to price changes in both traditional and modified[5] STEs.

By 1980, however, input indicators ceased to be referred to as development level indicators both in the West and in the East. In the former, a nonlinear approach to economic growth became dominant, and various theories argued that a high intensity of resource use was a passing stage as countries moved from a preindustrial (low) to an industrial (fast rising and high), and then to a post-industrial (slowly declining) level of resource use. The Kuz-Smil (1976) theory stressed this proposition in relation to the energy-GNP ratio.

This author (Winiecki, 1984b) applied the Kuz-Smil theory to STEs to see whether they conformed to this pattern. He assumed the existence of a roughly 20-year gap in development between East European STEs and selected West European MTEs, and consequently compared energy intensity per dollar of GNP in the former group in 1979 with that of the latter in 1960 (both in 1979 US $). As shown in Figure 1, the two groups of countries slot neatly into different parts of the diagram, with STEs showing on the average a distinctly higher — by one and a half-to-two times — energy intensity of GNP.[6] This author also included Spain and Eire in the evaluation, since in 1979 these two countries were within the same GNP per capita range as STEs. Both countries, however, displayed an energy intensity only slightly higher than the average for developed West European MTEs in 1960, as may be seen from Figure 1, and a *much* lower one than STEs. Clearly, the latter were (and still are) on a different energy intensity trajectory than both developed and middle-developed West European MTEs.[7] The Kuz-Smil theory *does not* explain their high resource use.

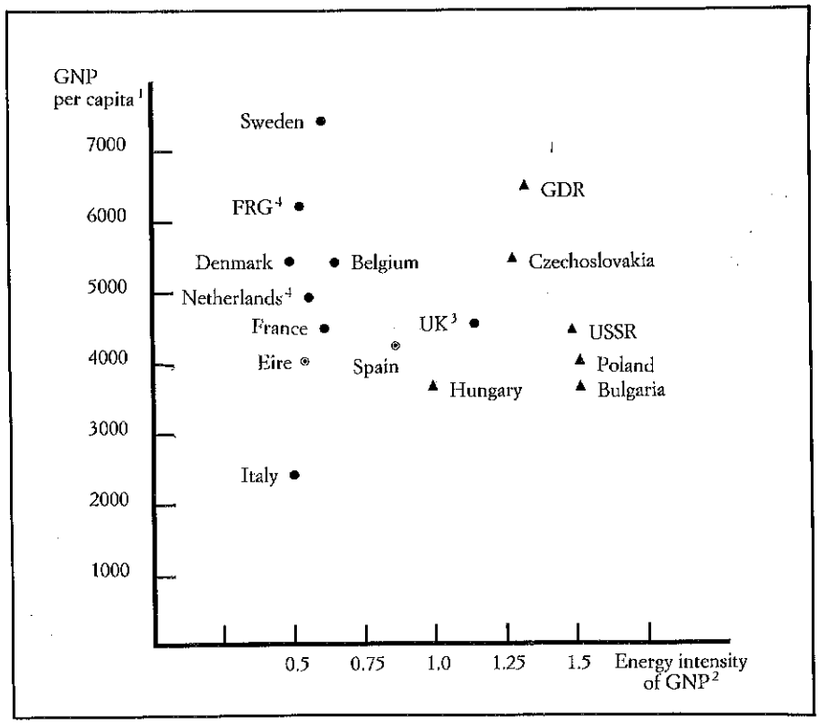
[5] The term "modified centrally planned economy" (MCPEs) appeared in the late 1970s to describe those CPEs that modified the traditional mechanism of central planning through the elimination of the extremely detailed output planning, an increased role of profits in evaluating enterprise performance, and the freeing of some prices from central control. Those countries using the term included Hungary and, in some respects, Poland. See, *e.g.*, WOLF (1978) and BORNSTEIN (1980).

[6] The United Kingdom and Hungary. Both countries displayed respectively the highest and the lowest energy intensity within their respective groups of countries.

[7] Interestingly enough, in 1975 the People's Republic of China in spite of its much lower development level, had about the same energy intensity (roughly 1.50 kg of coal equivalent per 1 US $ of GNP) as East European STEs (CEPII, 1983).

FIGURE 1

RELATIONSHIP BETWEEN ENERGY INTENSITY AND PER CAPITA GNP *



* In selected european countries at an approximately similar level of development. For West European MTEs, except Spain and Eire data on GNP per capita are for 1960 while for East European STEs, as well as for Spain and Eire data on GNP per capita are for 1979. All data on GNP per capita are in 1979 dollars.

[1] In 1979 US dollars.

[2] In kilograms of coal equivalent per 1 dollar.

[3] Energy intensity slightly overestimated due to exchange rate factors.

[4] Energy intensity slightly underestimated due to the exchange rate factors.

In the East, a growing resource constraint, first in the case of smaller STEs and later in that of the USSR, demoted per capita consumption of these representative inputs as indicators of success. Instead of advertising a high level of economic development, they are gradually transformed into indicators of inefficient resource use.[8]

[8] The transformation that began in the mid-1970s associated a high resource intensity of STEs with the dynamics of centrally planned economy, especially the structure of incentives, type of success indicators for enterprises, "soft" budget constraint, overinvestment, etc. They were the typical weaknesses of central planning long stressed in the West (see, *e.g.*, GROSSMAN, 1963), and now rediscovered at the official propaganda level in the East.

Thus, the relative indicators in Table 1 point to the existence of a trend of decreasing differentials between STEs and developed MTEs, and later show STEs as "overtaking and surpassing" the latter in per capita input use. No such trend can be discerned, however, from the output or — as some would have it — "throughput" indicator, that is, per capita GNP.

Selected per capita GNP estimates for East European STEs and corresponding estimates for MTEs for 1960-1980 are shown in Table 2. Some of these figures are based on methodologies that, according to certain analysts, tend to overstate the per capita GNP of STEs (physical indicator methodology of the UN Economic Commission for Europe; purchasing power parities methodology of the United Nations-World Bank studies). Other calculations such as those based on exchange-rate converters yield figures that vary widely between STEs in their reliability because of the different degrees of linkage between domestic and world market prices effected via the exchange rate.[9]

Since we are concerned here more with the *relative* position of STEs *vis-à-vis* middle developed and fully developed MTEs, all absolute per capita GNP figures from Table 2 have been converted in Table 3 into relative figures, using the measure applied uniformly throughout the article.

We assume that in spite of comparability problems per capita GNP estimates based on the same methodology can be meaningfully interpreted at least with respect to the *direction of change, i.e.* whether an economy is catching up or falling further behind. Given the validity of the assumption, there are no estimates showing the uniform trend of decreasing differentials *vis-à-vis* the West, either for the 1960-1970 or for the 1970-1980 period.

Estimates based on the physical indicators methodology show that the distance increased in the case of East Germany and Czechoslovakia and decreased in the case of the remaining East European STEs. The picture would be worse if based on the World Bank Atlas-World Development Report estimates. On the latter basis, the distance increased in the case of *all* STEs in question with the exception of Bulgaria. The direction of change based on purchasing power parity methodology cannot be ascertained because of the seven STEs in

[9] The best exposition of difficulties associated with per capita GNP estimates is found in MARER, 1985.

TABLE 2

VARIOUS PER CAPITA GNP ESTIMATES FOR SELECTED EUROPEAN COUNTRIES IN 1960-1980

	1960		1970		1980			
	WBA/DR	PIM/ECE	WBA/DR	PIM/ECE	ICP/UN-WB	WBA/DR	ICP/UN-WB	Marer/ICP Adj.	RPNI (1981 $)
Developed MTEs									
Germany (F.R. of)	1323	1255	2930	2445	3585	13590	9518	x	13450
France	1336	1079	3100	2148	3599	11730	9129	x	12190
Belgium	1245	1286	2720	2420	.	12180	8804	x	11920
Finland	1116	1015	2390	2223	.	9720	7689	x	10680
Austria	891	1032	2010	1979	.	10230	8144	x	10210
Italy	690	792	1760	1712	2198	6480	7267	x	6960
Middle Developed MTEs									
Eire	635	860	1360	1762	.	4880	5133	x	5230
Spain	341	594	1020	1435	.	5400	5928	x	5640
Greece	421	472	1090	1151	.	4380	4756	x	4420
STEs									
East Germany (GDR)	.	1115	2490	1990	.	7180	.	5590	8199
Czechoslovakia	.	996	2230	1904	.	5820	.	4740	6932
Hungary	.	652	1600	1419	1935	4180	4373	4390	6050
Poland	.	671	1400	1392	.	3900	4081	3730	5182
Bulgaria	.	542	760	1374	.	4150	.	.	5304
Romania	.	437	930	1095	.	2340	.	2680	4282
USSR	.	729	1790	1548	.	4550	.	4190	

Explanations of data:
WBA/DR — *World Bank Atlas/Development Reports* US dollar estimates on the basis of exchange rates of national currencies *vis-à-vis* US $ in a given year for MTEs. Changing methodology for STEs, but uniform at a given time point.
PIM/ECE — Physical Indicators Methodology/Economic Commission for Europe.
ICP/WB-UN — International Comparisons Project/World Bank-United Nations: purchasing power parity methodology, developed by KRAVIS *et al.*, (1975, 1978, 1982).
Marer — PAUL MARER: adjusted purchasing power parities through the adjusted exchange rate deviation index, developed by WOLF (1982).
RPNI — Research Project on National Income in East Central Europe. Varied methodology for STEs, 1981 GNP per capita from WBA/DR added.

Sources: World Bank Atlas, various issues; *World Bank Development Report*, various issues; *Economic Bulletin for Europe*, 1980, No. 2; KRAVIS *et al.*, 1975, 1978, 1982; ALTON, 1985; MARER, 1985.

TABLE 3

RELATIVE PER CAPITA GNP MEASURES ACCORDING TO VARIOUS ESTIMATES FROM TABLE 2 FOR SELECTED EUROPEAN COUNTRIES IN 1960-1980

	PIM/ECE		ICP/UN-WB		Marer *et al.*[3]	WBA/DR		RPNI
	1960	1970	1970[2]	1980	1980	1970	1980	1981
Developed MTEs								
Germany (F.R. of)	1.061	1.056	0.998	1.025	x	0.983	1.073	1.053
France	0.912	0.927	1.002	0.983	x	1.038	0.926	0.954
Belgium	1.087	1.045	.	0.948	x	0.911	0.962	0.933
Finland	0.858	0.960	.	0.828	x	0.800	0.767	0.836
Austria	0.872	0.854	.	0.877	x	0.673	0.808	0.799
Italy	0.669	0.739	0.612	0.782	x	0.589	0.512	0.545
Middle Developed MTEs								
Eire	0.727	0.761	.	0.553	x	0.456	0.383	0.410
Spain	0.502	0.620	.	0.638	x	0.342	0.426	0.441
Greece	0.399	0.497	.	0.512	x	0.365	0.346	0.346
STEs								
East Germany (GDR)	0.934	0.859	.	.	0.601	0.834	0.569	0.642
Czechoslovakia	0.842	0.822	.	.	0.510	0.747	0.459	0.542
Hungary	0.351	0.613	0.539	0.471	0.473	0.536	0.330	0.473
Poland	0.567	0.601	.	0.439	0.406	0.469	0.308	0.406
Bulgaria	0.458	0.593	.	.	0.415	0.255	0.328	0.415
Romania	0.369	0.428	.	.	0.335	0.311	0.185	0.335
USSR	0.616	0.668	.	.	.	0.599	0.359	.

[1] A weighted average of per capita GNP for Germany, France, Belgium equal to 1.000.
[2] A weighted average of per capita GNP for Germany and France only.
[3] Relative values for STEs comparable with ICP/UN-WB values for 1980.

Note: For explanation of abbreviations see table 2.
Sources: See Table 2.

question, only Hungary participated in the first phase of the International Comparisons Project (ICP) of the United Nations-World Bank, and only Hungary and Poland were active in the third phase. Nonetheless, the distance increased in the case of Hungary from 1970 to 1980.

There are, however, additional pairwise MTE-STE comparisons applying purchasing power parity methodology to consumption — the largest component of GNP expenditures — covering a similar time

span. Thus, comparisons between Czechoslovakia and Austria for 1964-1980 showed a per capita consumption differential increasing sharply over the period (Havlik, 1985). Another comparison — between Poland and Austria — showed the per capita private consumption level of Poland as decreasing from 58% to 50% of the Austrian level in 1964-1973, and then decreasing further, albeit slightly, from 50% to 48% in 1973-1978 (Askanas and Laski, 1985). There is, then, additional evidence of the increasing differential between the MTEs and STEs in the 1970-1980 period, also based upon the purchasing power parity methodology.

It is interesting to note that the overtaking of MTEs by STEs in the case of per capita inputs and their falling behind as regards per capita outputs was more marked in 1970-1980 than in 1960-1970. Since the latter period is regarded as one of semi-stagnation in the West and the official economic growth rates differential in favour of STEs actually increased in the latter period, the diverging trends in the case of inputs and outputs underline the *increasing unreliability* of official growth figures for STEs.[10]

However, it has been argued that GNP per capita is not the best measure of output, if output is intended to reflect the level of material well-being of the population. Some stress the fact that value added is merely a *throughput* that still has to be converted into final goods with often widely differing utilities. This author made alternative calculations of outputs. First, he calculated absolute and relative measures for the satisfaction of housing and private transportation needs (Table 4). These two indicators were selected for *as being most closely linked with the representative inputs*. Of all the consumer goods, houses (in STEs, almost exclusively apartment houses) and cars use the largest quantities of steel and/or cement, as well as (indirectly) energy, not only on a per unit basis but also in the aggregate. Accordingly, the comparison of inputs and outputs using the largest quantities of these inputs (see Table 5) has a certain appeal.

These two measures yield interesting results. The number of persons per room has been falling much faster in MTEs, both developed and middle developed, than in STEs, and, as a result the differential

[10] In fact, they also stress the opposite kind of unreliability with respect to official growth figures for MTEs. While official figures for growth in STEs tend to overstate the position, official growth figures in MTEs tend to *understate* the actual figures due to the varying (but generally higher) growth rates of "shadow" economies.

TABLE 4

COMPARING BASIC INPUTS-RELATED CONSUMPTION INDICATORS:
ABSOLUTE AND RELATIVE MEASURES OF HOUSING AND PRIVATE TRANSPORTATION
IN SELECTED EUROPEAN COUNTRIES IN 1960-1980

	Persons per room						Cars per 1000 inhabitants					
	Abs. measure			Rel. measure[1]			Abs. measure			Rel. measure[2]		
	1960	1970	1980	1960	1970	1980	1960	1970	1980	1960	1970	1980
Developed MTEs												
Germany (F.R. of)	0.9	0.7[2]	0.6[9,2]	1.000	1.000	1.000	81	238	391	0.827	0.979	1.065
France	1.1	0.9	0.7[9]	0.818	0.778	0.857	121	254	348[8]	1.235	1.045	0.948
Belgium	0.6	0.6	.	1.500	1.167	1.000	82	213	328	0.837	0.877	0.894
Finland	1.3	1.0	0.8	0.643	0.700	0.750	41	155	280	0.418	0.638	0.763
Austria	0.9	0.8	0.8[10;11]	1.000	0.878	0.750	57	161	312	0.582	0.663	0.850
Italy	1.1	0.9	.	0.818	0.778	.	40	190	325[10]	0.408	0.782	0.886
Middle Developed MTEs												
Eire	1.0	0.9	.	0.900	0.778	.	61	133	210	0.622	0.547	0.572
Spain	0.9	0.9	.	1.000	0.778	.	9	70	220	0.092	0.228	0.599
Greece	1.4	1.0	.	0.642	0.700	.	5	26	102	0.051	0.107	0.278
STEs												
East Germany (GDR)	1.2[3]	1.1[7]	.	0.750	0.636	.	17	68	175	0.173	0.280	0.477
Czechoslovakia	1.3[3]	1.1	0.9	0.692	0.636	0.667	20	58	159	0.204	0.239	0.433
Hungary	1.4	1.4	1.5[11]	0.643	0.500	0.400	3	23	110	0.031	0.095	0.300
Poland	1.7	1.4	1.2[9]	0.529	0.500	0.500	4	15	79	0.041	0.062	0.215
Bulgaria	1.2[4]	1.0[5]	.	0.750	0.700	.	1	4	71[9]	0.010	0.016	0.193
Romania	1.6	1.4[6]	.	0.562	0.500	.	1	2	.	0.010	0.009	.
USSR	1.6	1.5	.	0.562	0.467	.	3	8	25[9]	0.031	0.033	0.068

[1] A weighted average of persons per room in Germany, France and Belgium equal to 1.000; [2] A weighted average of cars per 1.000 inhabitants in Germany, France and Belgium equal to 1.000; [3] 1961; [4] 1965; [5] 1975; [6] 1966; [7] 1971; [8] 1972; [9] 1978; [10] 1981; [11] Kitchens not counted as rooms.

Sources: *Yearbook of International Statistics*, 1977, 1981, 1984 (in Polish), *United Nations Statistical Yearbook*, 1982, 1983/84.

between MTEs and STEs *increased* between 1960 and 1980. On the other hand, after the stagnation of the 1960s, there was a decrease in the 1970s in the — otherwise extremely large — differential as regards cars per 1000 inhabitants in the majority of STEs (with the exception of Romania and the USSR).

The overall assessment is markedly unfavourable to STEs. The costs of their development efforts increased over time as exemplified by the fast rising relative level of input use, but these increased costs were not matched by higher benefits in the sense of a decreasing relative gap, either in terms of "throughput" or output. On the contrary, STEs were losing ground relatively, or at best maintaining their relative distance. The juxtaposition of inputs and of outputs (includes "throughput") points to a fall in the relative efficiency of STEs *vis-à-vis* MTEs. And the situation subsequently became much worse.

Looking at per capita GNP rather than consumption

Normally per capita GNP is the overall measure of economic development. The same is true for comparisons between MTEs and STEs. In the latter case, however, results would usually be skewed, showing smaller differentials than actually exist. It is assumed that per capita consumption is a better measure in comparisons concerning both MTEs and STEs. Since there is no great discrepancy between levels of per capita GNP and consumption in the West in the longer term, both indicators are treated in intra-Western comparisons as close substitutes. Any lasting discrepancy between the two indicators in favour of per capita GNP for any developed or middle developed MTE would be highly unusual. Such a discrepancy, however, could have one of two causes. Either the resource allocation of a given country is less efficient and that country must invest more per unit of GNP to keep up with the others or it is investing to meet other needs than consumption, *i.e.* for the greater glory of the state.

Table 6 compares investment and consumption levels for all countries under consideration calculated for the year 1965 on the basis of the ECE/UN physical indicators methodology. In all STEs under consideration the relative level of per capita investment was markedly higher than that of per capita consumption. The differential was the

TABLE 5

COMPARING REPRESENTATIVE BASIC INPUTS, GNP PER CAPITA ("THROUGHPUTS"), AND BASIC INPUTS-RELATED OUTPUTS (LEVEL OF CONSUMPTION INDICATORS) IN SELECTED EUROPEAN COUNTRIES IN 1960-1980 (ACCORDING TO AVERAGED RELATIVE MEASURES)

	Average relative measure of 3 basic inputs[1]			Average relative measure of GNP p.c. ("throughputs")[2]			Average relative measure of 2 basic inputs-related consumption indicators[3]		
	1960	1970	1980	1960[4]	1970	1980	1960	1970	1980
Developed MTEs									
Germany (F.R. of)	1.216	1.094	1.136	1.061	1.012	1.050	0.913	0.989	1.032
France	0.763	0.844	0.868	0.912	0.898	0.954	1.026	0.911	0.902
Belgium	0.938	0.978	0.864	1.087	0.978	0.948	1.168	1.022	0.947
Finland	0.958	0.742	0.808	0.858	0.880	0.813	0.530	0.669	0.756
Austria	0.791	0.804	1.022	0.872	0.763	0.828	0.791	0.770	0.800
Italy	0.549	0.750	0.983	0.669	0.647	0.613	0.613	0.780	.
Middle Developed MTEs									
Eire	0.416	0.448	.	0.727	0.608	0.449	0.791	0.662	.
Spain	0.284	0.523	0.651	0.502	0.481	0.502	0.546	0.503	.
Greece	0.251	0.432	.	0.399	0.382	0.401	0.346	0.403	.
STEs									
East Germany (GDR)	1.046	0.995	1.342	0.934	0.846	0.572	0.461	0.458	.
Czechoslovakia	1.230	1.018	1.391	0.842	0.784	0.504	0.448	0.437	0.550
Hungary	0.518	0.583	0.803	0.551	0.563	0.437	0.337	0.295	0.350
Poland	0.687	0.674	1.057	0.567	0.535	0.389	0.285	0.281	0.357
Bulgaria	0.401	0.663	0.960	0.458	0.424	0.371	0.380	0.358	.
Romania	0.347	0.583	1.047	0.369	0.369	0.269	0.255	0.254	.
USSR	0.742	0.757	1.074	0.616	0.633	0.359[5]	0.281	0.250	.

[1] An arithmetic average of relative measures for energy, steel and cement consumption per capita from Table 1.
[2] An arithmetic average of relative measures for GNP per capita from Table 3.
[3] An arithmetic average of relative measures for housing (persons per room) and private transportation (cars per 1000 inhabitants) from Table 4.
[4] Only the results of PIM/ECE methodology.
[5] Only one coefficient on the basis of WBA/DR methodology.
Sources: See previous Tables.

TABLE 6

COMPARING INVESTMENT AND CONSUMPTION LEVELS: ABSOLUTE AND RELATIVE MEASURES BASED ON ECE PHYSICAL INDICATORS METHODOLOGY IN SELECTED EUROPEAN COUNTRIES IN 1965

	Absolute measure[1]		Relative measure[2]	
	Inv. p.c.	Cons. p.c.	Inv. p.c.	Cons. p.c.
Developed MTEs				
Germany (F.R. of)	490	1319	1.099	1.036
Belgium[3]	464	1351	1.040	1.064
France	393	1198	0.881	0.943
Finland	397	1156	0.890	0.910
Austria	381	1061	0.854	0.835
Italy	323	860	0.724	0.677
Middle developed MTEs				
Eire	246	1044	0.552	0.822
Spain	268	680	0.601	0.535
Greece	181	582	0.406	0.458
STEs				
East Germany (DDR)	422	959	0.946	0.755
Czechoslovakia	437	935	0.980	0.736
Hungary	282	715	0.632	0.563
Poland	306	646	0.686	0.509
Bulgaria	274	573	0.610	0.461
Romania	223	464	0.500	0.365
USSR	353	655	0.791	0.516

[1] In 1965 U.S. dollars.
[2] A weighted average of per capita investment in Germany, France, Belgium and that of per capita consumption (private and public) in Germany, France and Belgium equal in each case 1.000.
[3] Including Luxembourg.
Source: *Economic Survey of Europe*, 1969.

highest in the Soviet Union where the usual low system-specific efficiency of investments was coupled with the presumably highest "conspicuous investment", thus lowering the overall investment efficiency even further. The differential ranged from 27.5 percentage points for the USSR (79.1% of the reference MTEs level for investments and 51.6% for consumption) to 15.9 percentage points for Bulgaria (61.0%

and 45.1% respectively), with only Hungary displaying a one-digit differential of 6.9 percentage points (63.2% and 56.3% respectively).[11]

As stressed above, comparisons between MTEs and STEs are usually limited to per capita GNP comparisons, and the decomposition into components of per capita GNP is rare. Thus, we have no comparable data for the later years, either based on the above physical indicators methodology or on other methodologies, that would cover all countries under consideration. The comparison of purchasing power parities for 1980 based on the methodology of Kravis *et al.* (1975, 1978) covers only two STEs, one of them being Hungary the least representative STE in this respect.

Actually, neither Hungary nor the year 1980 is representative in this context. Not only has Hungary the lowest bias among all STEs in favor of investment, but both Hungary and Poland (the other STE in the study) had been sharply cutting investment since the late 1970s in order to protect living standards in the face of the fall in economic activity and the rise in debt service requirements. The comparison of gross fixed investment rather than of gross investment (or capital formation) eliminated the impact of unusually high inventories in STEs on the level of investment (on the sources of high inventories, see Kornai 1982, and Winiecki 1986a). Despite all these bias-reducing features, the results for comparisons for 1980 yield no differential between the relative per capita consumption and gross fixed investment levels for Hungary, and a gross fixed investment level for Poland which is 7.3 percentage points higher (48.6% of the reference MTEs' level for investment and 41.3% for consumption respectively). The no less rare country-by-country MTE-STE comparisons suggest the same bias. For example, Krejci (1969) showed that, in 1966, with a level of per capita GNP in Czechoslovakia equal to 100% of the Austrian level, fixed investment was 115.9% in Austria and 145.7% in the United Kingdom. At the same time the level of consumption in Austria was 129.2% and in the United Kingdom 161.3% of that in Czechoslovakia.

[11] This last result offers additional evidence that it is conscious post-1956 policy change rather than systemic modifications (nonexistent at the time) that improved the living standards of Hungarians through relatively greater attention being paid by the Communist government to the *material* well-being of the population (for sources of that change, see WINIECKI 1986d and 1987).

Looking at goods on a "wrong" Engel's curve

In MTE-STE comparisons, extensive attention has been accorded to certain standard consumer durables. Indicators of radios, TV sets, refrigerators and washing machines per 100 households or 1000 inhabitants abound in such studies, along with some other (usually not too numerous) non-food products. These comparisons have led their authors, since the early 1970s, to the conclusion that, as regards consumer durables, STEs are almost on a par with Western MTEs.

But comparisons between countries, some with a rising and some with a falling share of expenditures on household equipment[12] for a rather narrow set of standard goods over a long time span gives an increasingly distorted picture. Particularly so, if a countervailing set of indicators both for new and/or more sophisticated durables and higher order goods and services is not included in such comparisons. If there is not a balance between these two sets of indicators — and a changing balance, at that, giving increasing weight to the latter set — comparisons between MTEs and STEs are concentrating on the "wrong" Engel's curve.

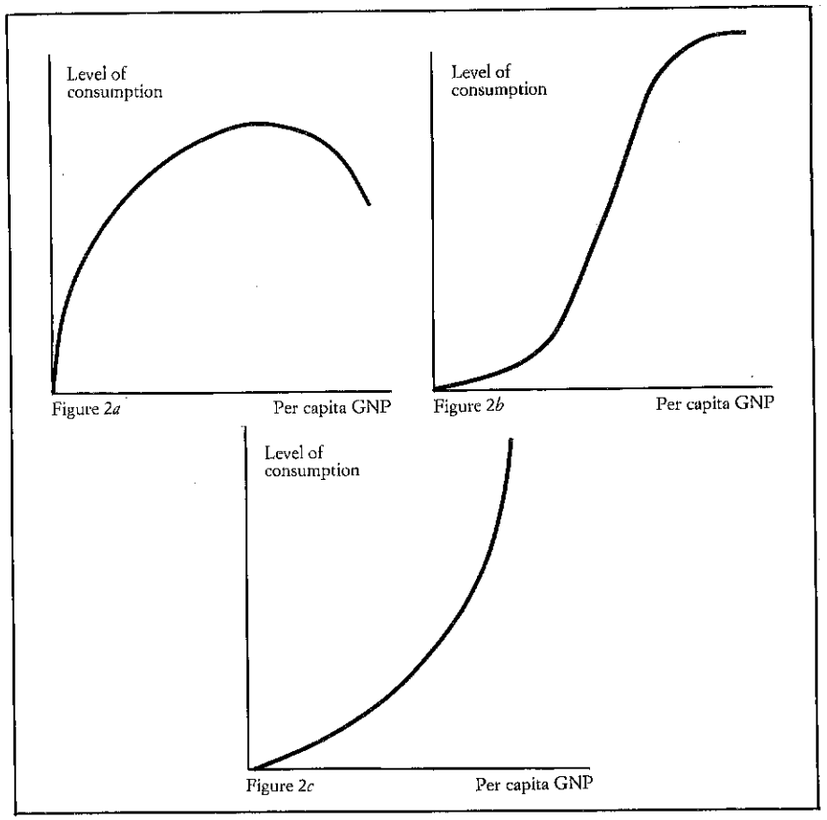
Diagrammatically, the problem in question may be explained in terms of three differently shaped Engel's curves, each of which is characteristic of a certain type of good. The logistic curve presented in Figure 2b is of the greatest interest here, since it presents, among other things a consumption pattern for household equipment. At low levels of per capita GNP, the stock of the durable household equipment is very small; then, as industrialization progresses and per capita GNP increases, it begins to increase rapidly. Again, at some higher rung on the per capita GNP ladder, the income elasticity of expenditures on consumer durables declines, as does the rate of growth of the stock of these durables. Later still, the stock of standard equipment, by and large, ceases to grow as the stock per household approaches the optimum, and replacement demand for standard durables becomes dominant. The income elasticity of household equipment expenditure falls below unity, and the share of these expenditures begins to decline.[13] There would also be a continuous shift of expenditures *within*

[12] Statistics usually present data on both household equipment and its operation.

[13] At least at current prices at which household expenditure surveys are made. At constant prices, it increases for a somewhat longer period, given the falling relative prices of consumer durables relative to the prices of most other categories of expenditures.

FIGURE 2

DIFFERENT TYPES OF ENGEL'S CURVES REFLECTING CHANGING DEMAND FOR DIFFERENT TYPES OF GOODS AND SERVICES



that category of expenditures toward higher quality durables in the case of standard durables and toward new durable equipment regarded as non-standard at the time.

Thus, the stock of standard consumer durables per 100 households or 1000 inhabitants may give some idea of the distance between various countries as regards living standards only if household expenditures on durable equipment in the countries compared are located on the sharply upward sloping part of the Engel's curve shown in Figure 2b, so that in all of them the share of household equipment in consumer expenditures

is still growing. In STE-MTE comparisons it is doubtful if this condition is met as far back as the 1970s. At that time, in some of the mature industrialized MTEs in question, the share of household equipment expenditures had already peaked or begun to decline.[14] But, in the 1970s[15] these expenditures were still increasing their share of the total in all East European STEs, except Czechoslovakia. This meant that industrialized MTEs were already on the almost flat upper part of the Engel's curve shown in Figure 2b, indicating the dominance of replacement demand. STE-MTE comparisons based on standard consumer durables indicators began to yield an increasingly misleading picture.

An insufficient range of indicators and the existence of quality-insensitive indicators for household equipment are only part of the problem. The other — and increasingly important — part concerns the shift of expenditures from household equipment to higher order goods and services, whose income elasticity continues to be above unity. This is the case of the Engel's curve presented in Figure 2c. There are many kinds of expenditures for which no indicators exist. This again works in favour of the STEs, whose constraints, *e.g.*, on foreign travel would, if taken into account, show them to be at a great disadvantage. Where indicators do exist, as in what may be loosely called the information sector, the distance between developed MTEs and STEs did not shrink. It even *increased* in the 1960-1980 period, again in the case of East Germany and Czechoslovakia. Table 7 presents absolute and relative indicators of communication services: telephones per 1000 inhabitants and domestic letters per inhabitant.[16] By both indicators, East Germany and Czechoslovakia lost ground in relative terms. Thus, their relative lag behind old mature industrialized MTEs, as well as Finland and Austria, increased by both indicators. They were also overtaken by Italy, Spain and Greece as regards telephones, and East Germany was overtaken by Spain as regards the mail service as well. As regards the remaining less developed STEs, their record is spotty, and a decrease in the lag measured by one indicator was accompanied by an increased lag as regards another.

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[14] Actually, in Germany it peaked much earlier, just as it peaked before 1960 in the U.S., Sweden, Denmark and a few other developed MTEs not considered here.

[15] According to international household surveys (ILO 1976, 1979). There were no data on Romania in these surveys.

[16] Telephones per 1000 inhabitants are an imperfect substitute for the intensity and distance of traffic. However, it is the only criterion available.

TABLE 7

COMPARING LEVELS OF TELECOMMUNICATIONS' SERVICES: ABSOLUTE AND RELATIVE MEASURES OF PHONES AND LETTERS (BOTH PER 1000 INHABITANTS) IN SELECTED EUROPEAN COUNTRIES

	Phones per 1000 inhabitants						Letters per 1000 inhabitants					
	Abs. measure			Rel. measure[1]			Abs. measure			Rel. measure[2]		
	1960	1970	1980	1960	1970	1980	1960	1970	1980	1960	1970	1980
Developed MTEs												
Germany (F.R. of)	113	225	464	1.066	1.119	1.022	136	159	215	0.978	0.888	0.935
France	95	172	459	0.896	0.856	1.011	126	191	234	0.920	1.067	1.017
Belgium	124	211	369	1.170	1.050	0.812	224	235	303	1.612	1.313	1.317
Finland	137	256	497	1.292	1.274	1.094	62	127	158	0.446	0.709	0.687
Austria	99	193	401	0.934	0.960	0.883	98	170	247	0.705	0.950	1.074
Italy	78	174	338	0.736	0.866	0.744	98	110	98	0.705	0.615	0.426
Middle Developed MTSs												
Eire	57	104	191	0.538	0.517	0.421	88	100	.	0.633	0.559	.
Spain	59	135	315	0.557	0.672	0.693	71	102	114	0.511	0.570	0.496
Greece	21	119	290	0.198	0.592	0.638	22	25	.	0.158	0.140	.
STEs												
East Germany (GDR)	75	123	189	0.708	0.612	0.416	78	56	59	0.561	0.313	0.256
Czechoslovakia	74	138	206	0.698	0.687	0.454	128	146	158	0.921	0.816	0.687
Hungary	19	80	118	0.179	0.398	0.260	55	91	140	0.396	0.508	0.609
Poland	29	57	95	0.274	0.284	0.209	30	45	35	0.216	0.251	0.152
Bulgaria	22	56	140	0.208	0.279	0.308	22	30	31	0.158	0.168	0.135
Romania	16	32	73[3]	0.151	0.159	0.161	18	24	40	0.129	0.134	0.174
USSR	20	45	89	0.189	0.224	0.196	20	33	36	0.144	0.184	0.157

[1] A weighted average of phones per 1000 inhabitants in Germany, France and Belgium equal to 1.000.
[2] A weighted average of letters sent per 1000 inhabitants in Germany, France and Belgium equal to 1.000.
[3] 1977 (latest data).
Sources: Yearbook of International Statistics, 1973, 1977, 1981, 1984 (in Polish), *Indicators of Economic Development Abroad*, 1984 (in Czech.), *Economic Bulletin for Europe*, vol. 31, 1980, No. 2.

Thus, as regards goods and services represented by the third Engel's curve, indicators with comparable data for both MTEs and STEs are too few, and their number does not seem to be on the increase in international statistics. Given the increasing share of consumer expenditures allocated to higher order goods and services in developed MTEs, comparisons based on standard consumer durable goods indicators are looking to an increasing extent at the "wrong" Engel's curve.

Looking at quantity only rather than quantity *cum* quality [17]

As Wiles (1977, p. 394) puts it, most Western analysts simply do not make the appropriate minor quality discounts: "How often and how fast does this bus run? Electricity is cheap, but how often are there power cuts? How old are these eggs? Does the rent include lift maintenance, and how often is the lift out of order? How truthful is this newspaper?" All these questions must be answered before we can arrive at a purchasing power par (or a cost-of-living index). And Wiles writes: "I am certain that everyone leans over backwards to exaggerate the purchasing power of the rouble[18] ...".

He is certainly right but the discounts referred to are often *anything but minor*. We can identify four types of quality differentials:

1) Pure quantity differentials, that are treated as quantity differentials because we are unable (or sometimes unwilling) to estimate them in quantitative terms;

2) quality differentials that stem from a different degree of technological sophistication for the same goods manufactured in different places;

3) quality differentials that stem from the different quality of materials, workmanship and maintenance as regards goods, and from the efficiency of the services rendered;

[17] This section is a summary of an article written jointly with the author's wife, Elisabeth Diane. Her agreement to its inclusion in this paper is warmly acknowledged.
[18] He extends the perceived need of discounts to less developed countries (LDCs) as well.

4) quality differentials that stem from differences in taste either in the material or aesthetic sense of the word. Although unquantifiable, they make a vast difference for consumers.

Quality differentials of the first type exist in many areas of MTE-STE comparisons. For example, there is a convention for measuring housing conditions by using (see Table 4) the number of persons per room as an indicator. But in houses and apartments in Western MTEs, there are often also more square metres per room.

However, such data are not compared conventionally. They are probably not even collected in many countries. The only data available are those for the average space in square meters per housing unit in newly built constructions. Such data *understate* differentials between Western MTEs and Eastern STEs, since the custom of building large housing units is a long standing one in the West, but not in most STEs. Nonetheless, even these biased comparisons show the differential to be larger than that based on the conventional indicator. In the Soviet Union, for example, the level of housing relative to the reference MTEs was, according to the conventional indicator, 46.7% in 1970, the last year for which data for the USSR were available at the time of writing (see Table 4). But the absolute level of housing in these reference MTEs measured by the number of square metres per person was 29.5 m^2 in 1970, while in the USSR it was 11.1 m^2 that year. Thus, according to the proposed indicator, the relative level in the USSR was only 37.6%.[19]

Yet another quantifiable quality differential is that of the amenities in housing units. Interestingly enough, these data are easy to obtain. The main obstacle in this case, as in many others, is *the lack of agreed weights* to correct the absolute and relative housing indicators for differences in pure quantities. Thus, the East German level of housing, whether the conventional one or the one proposed here,[20] in 1970 (the last year for which the data are available) was equal to less than 2/3 of that for the Federal Republic of Germany. Running water was available in 82.1% of housing units in the former and in 99.2% in the latter, a toilet flush in only 40.9% of the housing units in the former, and in 84% in the latter, while a bathroom or shower was to be found in only 38.7%

[19] Similar downward revision of the relative housing level would also be necessary for a given year in the case of Bulgaria, Poland and Romania.

[20] They are about equal in the case of that country (calculated on the basis of the same data).

of housing units in the former, but in 81.8% in the latter.[21] Thus, had conventional weights been agreed upon, the housing level for the GDR relative to Federal Republic of Germany[22] would have to be revised downwards, reflecting additional differentials in the availability of these amenities per housing unit and — consequently — per person living therein. Similar discounts could also apply to many durable consumer goods.[23]

Quantifiable quality differentials are not confined to multifaceted sophisticated durable goods (or to housing). On the contrary, they can be found in all areas, including food products. Food inspection tests in Poland in 1983 found that about one-fifth of food sold in the stores was inedible or downright harmful to health (Polityka 1985, August 31). No purchasing power comparisons that include STEs (*e.g.* those made by Kravis *et. al.* 1975, 1978, 1982) take account of such facts by introducing discounting coefficients for officially registered quantities.[24]

The second type of quality differentials stems from the superior design, greater technological sophistication, etc. It is basically unquantifiable, although there are obvious differences in utility between more and less sophisticated products. A good example is that of colour TV-sets. Such differences are the rule rather than the exception *e.g.* in audiovisual equipment. Havlik (1985) noted that standard Czechoslovak equipment was often below the lowest quality level of Austrian equipment in terms of technological sophistication. But in comparisons of representative indicators these differentials would not be recorded.[25]

[21] The same data base.

[22] Calculated as relative measures elsewhere in this study.

[23] There *is* a utility difference between colour and black-and-white TV sets, but, again, no agreed weights exist that could be used for comparative purposes. Thus, the Czechoslovak relative level in 1980 was 86.3% of the Austrian one for all TV-sets but only 9.8% for colour ones only (HAVLIK, 1985). Clearly, the application of weights would revise the relative Czechoslovak level downward.

[24] Those coefficients could vary with STEs given the differing (but generally low) public health standards, but probably not proportionally to the level of development. Better sanitary conditions in East Germany or Czechoslovakia would be "compensated" by much higher pollution there. Thus sulphur dioxide emissions per capita are more than three times higher there than, *e.g.*, in Poland and, incidentally, more than four times higher than in Germany or France (Trend, 1985, No. 4, p. 9). Obviously, quantities of harmful elements in food products would also be higher than in Poland where they have been shown to be frightening (see, *e.g.* Polityka, 1985, August 31). Very high quantities of nitrates and nitrities (much above WHO standards) were recently reported in many vegetables in Czechoslovakia. All these vegetables, as well as the even more seriously affected potatoes, have continued "temporarily" to be sold in the state groceries (Polityka, 1986, July 19).

[25] Another source of quality differentials based on technological sophistication is pointed out by MARER (1985). It is the inability of Western experts to discover all the technical short-comings upon the cursory examination made during their short visits in participating STEs.

The third type of quality differential is the most varied one. It covers both quantifiable and unquantifiable differentials in workmanship as regards goods and services. Housing comparisons are a good starting point for such a wide survey. In addition to the quantifiable quality differentials of the first type referred to above, there are dozens of quality-of-workmanship differentials between housing units in MTEs and STEs which increase the overall quality differences. To begin with, new apartments in STEs are so poorly finished that they often need replastering *before* the tenants move in. The cost of such repairs is high: in the USSR, it is 125-150% of the average monthly salary. Some other alterations are needed in order to make an apartment habitable.[26]

Both the quality of fittings in apartment houses and that of municipal services is generally very low. Hence, pipes, etc., are changed after a few years rather than a few decades. And it is worth noting that the economic decay and low investment levels in STEs have affected the infrastructure, including municipal services, disproportionately since the late 1970s (see Winiecki, 1986b).

The low quality of housing and the declining quality of housing-related municipal services were compounded in the 1980s by fuel shortages. The authorities either limited the hours of lighting, heating, and the supply of hot water, as in Romania and Bulgaria, or simply allocated less fuel to power plants and individual users as in Poland and the Soviet Union. Thus, the quality differential in housing of the type considered here, already large, is on the increase.

The quality of consumer durables is not only affected by the low technological sophistication of materials but also by the low quality of manufacturing and assembly, *i.e.* by the poor quality of workmanship. On the average, every colour TV-set is returned for repair in Poland more than once within the period agreed by the guarantee.

The most difficult evaluations are those of the quality of services in STEs. From every source comes evidence of the low quality of services in these countries. Overloaded transportation systems and particularly archaic and inefficient telecommunications systems, education and public health systems shows signs of mounting malfunctioning, negligence and corruption.

No statistics, whether based on purchasing power parity or physical indicators, take much account of these weaknesses. Even those

[26] Le *Courrier des Pays de l'Est*, 1986, N. 282.

analysts who, like Havlik (1985), stress the notoriously low quality of Czechoslovak services as well as those of other STEs, make no more than marginal corrections in their two-country comparisons.

Finally, there is *the fourth type of quality differential* based on differences in taste: beauty, elegance, harmony, diversity, not forgetting taste, pure and simple. These differences are by their very nature unquantifiable but there are clear utility differentials between good taste and tastelessness in products and services.

For example, the living in drab grey barrack-like apartment houses, *i.e.* under the standard conditions in East European STEs, is certainly depressing. The alternative is to find a XIX century or a pre-second-world-war building. In spite of their often dilapidated state due to the lack of maintenance, their architectural diversity, elegance, and functionality make them highly attractive.

Elegance and diversity in finishing, packaging, and so on of consumer durables are also important considerations. The contrast is probably even greater as regards clothing, and footwear. The best quality East European products of light industries find an outlet in the West only in cheap drugstores and the bargain section of large department stores.

Thus, overall, quality differentials are anything but minor. Let us look at the commonly used per capita meat consumption indicator. If we allow for quantifiable quality differentials of the first type, 16% of the meat sold in Poland was inedible. Again, hidden officially imposed reductions of meat content in meat product in Poland in the early 1970s amounted to 12.8% decrease in meat content (Laski, 1977). Moreover, firms on their own initiative lower the meat content of products even further. And this is a *continuous process*, not an occasional decision due to lack of supplies. Some meat is wasted because of defective refrigeration and subsequent lack of refrigerated storage. More is wasted owing to increasingly frequent power cuts. Finally, meat is wasted in consequence of the overly large purchases by households forced upon them by uncertainty as regards supply.

These discounts in total would *significantly reduce* the officially registered per capita meat consumption in STEs. Such an aggregate discount for all types of quality differentials should be effected for each consumer good, both food and nonfood, as well as for housing. Since this is not possible, the need to allow for a *very large* quantity discounts due to quality differentials in the case of STEs should be constantly kept in mind.

Conclusions

The preceding four sections dealing with four fallacies in MTE-STE comparisons have established the existence of a marked bias in favour of the latter. The *extent of this bias* cannot unfortunately be measured to yield an aggregate corrective coefficient, and thus rectify errors in MTE-STE comparisons.

Various corrections made in this paper show not only that these are large overestimates of the relative STE position *vis-à-vis* mature industrialized Western MTEs. They also show that STEs are clearly *not* catching up with the West. Almost all comparisons for the more recent 1970-1980 period made in this paper suggest on the contrary that the relative position of STEs *vis-à-vis* the West is deteriorating. The STEs fell behind the newly mature Western industrialized MTEs, such as Finland and Austria and most of them are falling behind the middle developed MTEs as well.

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