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The Choice of Variables for Segmentation of the International Market

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Introduction

As the need for segmentation of international markets is becoming widely recognized (Douglas and Craig, 1992), attention turns into search for the appropriate bases for segmentation (Jain, 1987). Since different variables would naturally yield different classifications, this question is of crucial importance (Cheron and Kleinschmidt, 1985).

Different country characteristics are commonly used as bases for segmentation of the international markets. The guiding criterion for the choice of these variables is their performance as measures of demand of various countries (Wind and Douglas, 1972). It seems to be the general view that the factors which have the strongest effect on demand patterns are cultural and social structure and level of economic and technological development (Day *et al.*, 1988), but little is known about the explanatory value of these variables for variation in demand, and to what extent they actually discriminate among countries.

Marketing theorists see culture as one of the underlying determinants of consumer behaviour (Boote, 1983; Fridman, 1986; Clark, 1990) and as a focal point to different market behaviour (Douglas and Dubois, 1977). Culture is difficult to use as a base for segmentation due to difficulties in defining and measuring cultural characteristics. Therefore, studies dealing with international segmentation use as proxies for cultural differences social structures, education systems and living standards (see, for example, Day *et al.*, 1988; Doyle and Gydengil, 1978; Sethi, 1971; Sethi and Holton, 1973). These terms lend themselves to measurement and comparison fairly easy. However, the existing literature supplies little evidence for the influence of these factors on demand patterns, and this effect is only known in very general terms (Shipchandler, 1986). For example, we believe that level of education (a common proxy for cultural differences) may affect general purchasing behaviour, but it tells us little about demand for particular products.

The second category of variables widely used to discriminate among countries consists of different measures of economic development. The economic literature supplies wide empirical and analytical evidence for differences among countries at different stages of economic levels. Economic

development is associated in this literature with rising income (Bhatt, 1980), industrialization (Chenery *et al.*, 1986), change in trade patterns (Sheila, 1990), shifts of resources from agriculture to industry (Kuznets 1966, Chudnovsky and Nagao, 1983), and accumulation of physical and human capital (Syrquin and Chenery, 1989). This transformation is also associated with some socio-economic processes, such as urbanization, demographic transition, changes in income distribution (Adelman, 1992; Bigsten, 1987) and changes in the occupation of the labour force (Berry, 1987).

Yet this literature gives limited evidence for changes of demand as a result of economic development. There is evidence for changes in consumption patterns that are likely to occur with rising income levels, the most important of them being the decline of the share of food in the total consumption (Engel's law), which frees resources for investment and other forms of consumption. The usefulness of this empirical evidence for marketing purposes is limited since it is general and not applicable to marketing strategies of specific products. Moreover, most of this literature refers to consumer goods and does not provide similar insight regarding industrial products.

This lack of empirical evidence for the performance of variables as measures for variation of demand results in a segmentation procedure which suffers two serious deficits. First, the choice of the variables tends to be intuitive, based on subjective judgement of the researchers. Wind and Douglas (1972) admitted that "little is known concerning the relationship between such indices [educational levels, level of technology and degree of urbanization] and consumption other than in very general and broad terms" (p. 21). It seems that we have gained limited knowledge in that area over the last decades, as expressed by Day *et al.* (1988) about 15 years later: "some subjectivity is required in selecting the...variables used to cluster countries into groups" (p. 15).

Second, and partly as a result of the first, a very large set of variables, characterizing the countries under consideration along many dimensions, is typically collected. As bases for segmentation, the purpose is to find the smallest set of variables, accounting for maximum variance of the dependent variable, thus simplifying the process of selecting variables for segmentation and making it less costly (Papadopoulos and Denis, 1988).

There is no justification for this large number of variables since the phenomena they measure seem to be highly correlated. Countries at similar levels of economic development tend to have similar educational levels, standards of living, etc. Moreover, in some cases the same phenomenon is measured by more than one proxy. For example, level of education is typically expressed by measures such as government expenditure on education, number of students in universities and illiteracy.

Nachum and Ayal (1990) discussed these shortcomings and tested the performance of the statistical variables commonly used for segmentation as measures of demand. They compared the results of cluster analyses based on statistical variables with the results of cluster analyses based on import data for a given group of countries, by testing cluster membership in the two analyses.

Their findings show that the widely used bases for segmentation perform quite poorly as measures of actual demand. This study demonstrates the lack of knowledge regarding the appropriate variables to use for segmentation purposes.

However, using cluster analyses as the statistical technique, Nachum and Ayal (1990) were unable to test the explanatory power of each of the variables separately. The results were reported for the full set of the statistical variables and it was not possible to judge which specific variables should be used and which might be dropped.

In this article we seek to go a step further and test separately the different segmentation variables. Two related questions will be addressed: is there a need for such a large number of variables?; and if not, which variables should be dropped? In answering these questions we may identify the variables which have explanatory value for differences in demand among countries. These variables are the appropriate bases for segmentation of countries.

Data and Method

To implement the objectives of the study regression analyses were conducted where import demand is used as the dependent variable, and different sets of countries' characteristics are the explanatory variables. The statistical significance of these variables is used as the criterion to judge their performance as measures for variation of import demand.

Different criteria can be used to assess the performance of the statistical sets (for example, diffusion patterns (Helen *et al.* 1993), product penetration rates (Huszagh, Fox and Day, 1985)). We selected the broad macro concept of variation in import demand as it is a useful starting point in assessing new market opportunities. The other segmentation bases make use of other micro-level variables, and allow the marketer to segment countries on the basis of actual purchase patterns rather than macro-economic aggregates. While this system has its important merit, a more macro approach is a very useful starting point.

Countries

The countries studied are the less-developed countries (LDCs). Three reasons dictated our decision to focus on this group of countries. First, as these markets begin to offer greater market opportunities, increased attention to examining and identifying issues associated with marketing in these areas is clearly needed (Douglas and Craig, 1992). Second, the question of classification is a crucial one for the LDCs due to the large heterogeneity of this group (Kaynek, 1986). The different countries classified as LDCs vary widely in their traditions, habits, wealth, size, political systems and so on. For most marketing purposes, this large and heterogeneous group should be divided into smaller, more homogeneous groups (Myint, 1980; Kaynek, 1982; Samli and Kaynek, 1984). Yet a very limited number of studies made attempts to provide classification of these countries (Kaynek, 1982; Heenan and Keegan, 1977). Those studies used a single variable (typically a single measure of economic development) as a base

for classification, and thus their results have limited value for estimation of variation in demand.

Third, most past country-classification efforts have looked at the whole range of economic development levels, from underdeveloped to post-industrial. Thus they generally resulted in discriminating between highly developed and less-developed economies, but the international marketplace is considerably more heterogeneous than a mere developed versus developing distinction. By focusing only on LDCs we have attempted to reach a finer distinction within this group, and to come to classifications which are useful for marketers to these countries.

Seventy-eight countries were studied (see Appendix 1), based on United Nations definition of LDCs (United Nations, 1986), and excluded those where the market is too small (population under one million), or where less than 80 per cent of the data were available[1].

Dependent Variables

Import figures of the group of LDCs in six broad product categories were used as dependent variables. These include: household equipment, TV and radio receivers, passenger vehicles, non-electric machines, electric machines and transportation equipment (for details see Appendix 2). Two criteria guided the choice of these product groups. First, LDCs are net importers of these products (United Nations, 1988) and therefore they are of practical interest to international marketers. Second, they consist of relatively homogeneous groups in terms of final destination. This allows classifying them as consumer or industrial products. Since demand for consumer and industrial goods is influenced by different factors, a clear distinction was required to allow a choice of appropriate explanatory variables.

We chose to focus on both consumer and industrial goods. Most previous studies in this field focused on consumer goods (for example, Helsen *et al.*, 1993), and limited work was done on segmentation of industrial markets (notable exceptions are Cheron and Kleinschmidt, 1985; Day *et al.*, 1988). Different segmentation bases have been suggested by researchers in these fields, many of them with strong intuitive appeal. Yet they were not put as a subject for empirical test, and both fields would benefit from empirical evidence for the performance of these variables as bases for segmentation.

Import data have the weakness of being limited, by definition, to the import component of total apparent demand. Thus the analysis does not provide a measure of the market potential that is available to exporters who may be able to compete against domestic producers or to generate new customers by stimulating primary demand (Papadopoulos and Denis, 1988). In the case of LDCs this measure suffers additional deficit. Due to import control common in many of these countries (Lord, 1991), import demand is not subject to free market forces and is restricted by government regulations.

Despite these shortcomings, this proxy seems to be the most appropriate for our purposes for two reasons. First, it is the best proxy for actual demand faced by marketers to LDCs. The effect of government regulation is among the forces

shaping actual demand in LDCs and it is incorporated in the actual demand. Second, a broader proxy for demand, which will capture also domestic production, is difficult to construct due to procedures of data collection[2].

Explanatory Variables

Thirty-seven variables were selected as explanatory variables. Two selection criteria were used. First, whether or not an individual variable was frequently used for segmentation purposes by international marketing researchers; and second, whether or not it was judged to be relevant for that purpose, in the sense that it reveals relevant similarities and differences for demand measurements. Special attention was paid to the conditions that gave rise to differences between the LDCs.

Variables on the final list were assigned judgementally into one or more of two categories as measures of demand for consumer goods and/or industrial goods. Naturally there is some overlap between the two sets, since some factors influence demand for both product categories (for example, interest rate, consumption of electricity). In other cases, different measures for the same factor were used in a way that seem appropriate for the product group considered (for example, as proxy for development we used number of R&D employees for industrial goods and level of education for consumer goods). Some other variables are specific for the category considered (for example, the size of the industrial sector, women's education). The final list of variables, classification for groups and sources of the data, are presented in Appendix 3.

Statistical Analyses

Two separated varimax-rotated orthogonal factor analyses were conducted on the two groups of variables in order to reduce the list of variables to a few factors. The results of the analyses are presented in Appendix 4. The factors were identified and named to express their nature based on the variables they load heavily on (factor loads of 0.50 or more). Factor 1 in the analysis for consumer goods loads heavily on variables which measure education level (for example, illiteracy, number of students, government expense on education) and on variables which express health standards (for example, life expectancy, food consumption, babies' death rates). It was identified as the factor which measures education and health. Factor 2 was identified as the factor which expresses tendency to consume, due to the high loads on consumption of food and electricity, and import. Factor 3 loads heavily on income per capita and was named accordingly. Factor 4, which loads heavily on the share of income by the top and bottom in a country was identified as the factor of distribution of income. Factor 5 has high loads on inflation and consumer index and was identified as the factor which measures the instability of the currency.

Factor 1 in the industrial goods analysis was identified as the factor of technology and industrialization, due to the high loads on measures of electricity and energy production and consumption and R&D employees. Factor 2 loads heavily on several measures of change (for example, rate of change in import and export, GDP) and was named the factor of growth. Factor 3 loads

heavy on measures of trade and finance and was named accordingly. Factor 4 measures government expenditure.

The factor scores which emerged from this stage were used as independent variables in the regression analyses. A separate regression analysis was conducted for each of the six product groups. The results are presented in Table I. As discussed above, the statistical variables used to create the factor scores – the independent variables in Table I – are highly correlated. The procedure suggested might be used with a smaller set of variables, without loss of explained variance. In order to test for it, the full set of the statistical variables was eliminated in two steps. First, the results of collinearity analyses among the different variables were used to omit variables highly correlated with others. About half the variables in each set were omitted at this stage. Second, regression analyses were repeated with smaller sets of variables, and variables which were not significant were left out. The final results of these steps are reported in Table II.

<i>Consumer goods</i>	<i>Factors</i>		
	Household equipment	TV and radio	Passenger vehicles
(1) Education and health	215.7 (2.6)	426.7 (4.3)	N/S
(2) Tendency to consume	357.7 (3.8)	414.8 (3.9)	507.5 (4.0)
(3) Income per capita	244.8 (3.1)	274.9 (2.8)	400.9 (3.7)
(4) Distribution of income	N/S	-198.9 (-1.8)	-237.9 (-2.2)
(5) Instability of the currency	-286.6 (-3.1)	-187.8 (-1.6)	N/S
Adjusted <i>R</i> square	0.478	0.527	0.423
<i>Industrial Goods</i>			
	Non-electric	Electric	Transport
(1) Technology and industrialization	740.8 (9.1)	315.5 (3.4)	547.5 (9.8)
(2) Economic growth	349.6 (4.3)	404.0 (4.3)	N/S
(3) Trade and finance	792.8 (9.6)	907.3 (9.6)	361.0 (6.4)
(4) Government expenditure	-257.3 (-3.2)	-458.1 (-4.9)	N/S
Adjusted <i>R</i> square	0.723	0.645	0.642
<i>Notes:</i>			
In parentheses: <i>t</i> -values, significant at 0.01 or more			
N/S: Not significant			
All <i>F</i> significant at 0.0000			

Table I.
Regression Results:
Factor Scores Used as
Independent Variables

<i>Consumer goods</i>			
Household equipment		TV and radio	Passenger vehicles
Inflation	2.032 (1.022)	IncomePH	7.894 (4.775)
Urbanization	4.777 (4.102)	Index	-0.108 (-4.186)
Illiteracy	0.412 (5.831)	Illiteracy	0.735 (8.773)
IncomeCH	0.201 (3.124)	IncomeHI	1.389 (3.873)
Electric	1.879 (1.102)		
Adjusted <i>R</i> square	0.665	0.772	0.589
<i>Industrial goods</i>			
Transport equipment		Electric machines	Non-electric machines
Export	2.06E-04 (2.051)	Export	-0.035 (-2.448)
GNPCH	0.252 (1.899)	RD employ	-0.048 (-4.137)
Reserve	4.12E-04 (1.865)	EnergyP	-0.004 (-3.313)
Debt	-0.019 (-2.496)	Industry	0.143 (3.140)
		ElectP	0.133 (4.028)
Adjusted <i>R</i> square	0.402	0.715	0.234
<i>Notes:</i>			
In parentheses: <i>t</i> -values, significant at 0.01 or more			
All <i>F</i> significant at 0.0000			

Table II.
Regression Results:
Statistical Variables
Used as Independent
Variables

Discussion

Two main conclusions emerge from the statistical analysis. First, for most product groups investigated in this study a smaller set of variables can be used without loss of explained variance, and there is no need for the large sets commonly used in studies of this kind. In most analyses, the percentage of variance explained by a smaller set of statistical variables was higher than that achieved by the factor scores, based on a large set of variables (see Table III for summary of the findings).

Two reasons seem to explain these results. First, in line with our argument, some variables are highly correlated with others and do not add explanatory value to the analyses. Second, when interpreting the results of the factor

analyses, we chose the first four or five factors which emerged from the analyses (see Appendix 4). These capture about 75-80 per cent of the variance in the original variables (the complete set of the explanatory variables). It might be that the last factors in the factor analyses, which account for the rest of the variance in the original variables and were omitted from the analyses, have strong explanatory value for variations in the dependent variables (Doyle and Gidengil, 1978).

However, these results are more consistent for the consumer goods than for the industrial products. In two out of the three industrial products analysed, a higher percentage of the variance was explained by the factor scores (non-electric machines and transport equipment) than by the statistical set.

The second conclusion of the statistical analysis refers to the nature of the variables which possess explanatory value for variation in import demand among countries. For industrial products, some of the variables less commonly used as bases for segmentation were found to possess strong explanatory power. These are trade variables, measures of energy production and consumption, and measures of country monetary situation. For example, in the three analyses of industrial goods the contributions of factor 1 (technology and industrialization) and factor 3 (trade and finance) are far higher than the contributions of the other factors. These factors load heavily on energy consumption and production (factor 1) and on variables measuring trade patterns and financial situation (factor 3).

Many of the variables which yield significant results seem to express the development of the domestic industrial sector. This accounts for the positive correlation between the variables measuring consumption and production of energy and the dependent variable. The significant and negative value for employees in R&D and import of electric machines provides additional evidence for this connection. Electric machines represent the more sophisticated part of the industrial sector, which is a relatively big user of R&D. The less developed the industrial sector, the less it uses R&D and the more the country tends to rely on import for supply of these products.

The significant explanatory value of our measures for monetary situation are in line with existing evidence which suggests that the capacity of many

Independent variables	Consumer products			Industrial products		
	Household TV & radio	Vehicles		Non-electric	Electric	Transport
Factor scores (Table I)	0.478	0.527	0.423	0.723	0.645	0.642
Statistical variance (Tables II)	0.665	0.772	0.589	0.234	0.715	0.402
Report adjusted R^2						

Table III.
Variance Explained in
the Regression
Analyses

LDCs to import is constrained by the availability of foreign currency (for example, Balassa and Bauwens, 1988).

Widely used segmentation variables (for example, GNP, population size) lack explanatory value for variation in import demand for industrial products. It may not be surprising that the mere size of the population is not significant, but the non-significant results for GNP require justification. Level of GNP is a common measure for economic development on a whole, but our results suggest that it does not express the development of the industrial sector, while the more specific measure of the share of the industrial sector in the GNP did yield significant results (see non-electric machines, Table II).

As for consumer goods, important explanatory variables for variations in import demand are different measures of income (income per capita, income distribution). Income per capita is among the most popular variables for comparison of economic development (for example, Keegan, 1989), and is used as a strong indicator for variation in demand. Linder (1961) argued that "while a whole array of forces influences the demand structure of a country...the level of average income is the most important single factor, and it has, in fact, a dominant influence on the structure of demand" (p. 94).

Strong explanatory power was found for the measures of stability of the currency (inflation and consumer price index) for variation in import demand. The effect of these factors on consumers' purchasing behaviour is well known (see, for example, *The Economist* 1993).

Finally, the overall variance explained by the above analyses range between 23-77 per cent (see Table III). This indicates that in some cases important factors were omitted from the analyses. Despite the fact that such a large number of variables is used, we are quite far from being able to explain a satisfying portion of the variation in import demand in some of the products analysed. A possible explanation for this may be the level of aggregation used. A more disaggregated approach, which will use variables expressing demand to particular products, may account for a larger share of the variance.

Conclusion

This article sought to find a set of variables which could be used as appropriate bases for segmentation of countries. As a starting point, a large set of variables commonly used in studies dealing with this question was collected. An attempt was made to test their suitability as bases for segmentation using statistical significance in explaining variation in import demand among countries as the criterion.

The results show that there is no need to use a large set of variables, which is often seen in studies of this kind. In most cases a smaller set of variables can be used without loss of explained variance, thus simplifying and reducing the costs of data collection.

Some of the variables most commonly used for purposes of countries classification were found insignificant. Among them GNP and GNP distribution in the analysis for industrial products and population in the analysis for consumer goods. On the other hand, trade figures, variables

measuring consumption and production of energy, and monetary situation were found to have strong explanatory value for variation in import demand for industrial goods and raw materials. Different measures of income and stability of the currency were found to be most important for explaining the variation in import demand for consumer goods.

In two ways international marketers can make use of our findings. First, by adopting the procedure suggested for identification of appropriate bases for segmentation. Anecdotal evidence suggests that international companies do not follow a conscious strategy of segmentation, but rather rely on their intuition when they segment their markets. At best, they tend to use as bases for segmentation a single variable, most typically income per capita or GNP (*Marketing Week*, 1987). The procedure suggested in this study may be used by marketers to identify small sets of the most important measures of demand for their products. Of special value in this connection is our finding that a smaller set of variables may suffice. This may considerably simplify the process of data collection for the benefits of the marketers.

Second, this study may provide specific insight regarding the appropriate bases for segmentation of LDCs. These countries begin to offer greater market opportunities and attract much business attention. Yet our knowledge of the market conditions in these countries is small and availability of data is strictly limited. Therefore the contribution made by this study may be of great value for marketers to these countries.

Future research may extend the method suggested in this article in two directions. First, it may test it on disaggregated levels, corresponding to narrower definitions of industry, and identify small sets of the most important measures of demand in these industries. Second, it may use different bases as the criteria to judge the performance of the statistical data (for example, diffusion patterns).

Notes

1. There are several definitions of a developing economy. The most commonly used are those of the UN and of the World Bank. While these definitions are based on slightly different criteria, they establish relatively similar lines between developed and developing countries. The definition of the UN was chosen for this study since it is the more common one.
2. The desired proxy for demand was $PX - M$, where P = domestic production; X = export; M = import. Since domestic production is reported in the ISIC system and the translation at the level of aggregation used in this study was not possible, we were unable to use this proxy.

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Appendix 1: Countries Included in the Study

Afghanistan	Haiti	Peru
Algeria	Honduras	Philippines
Angola	Hong-Kong	Saudi Arabia
Argentina	India	Senegal
Bangladesh	Indonesia	Sierra-Leone
Benin	Iran	Singapore
Bolivia	Iraq	Somalia
Brazil	Jamaica	South Yemen
Burma	Jordan	Sri Lanka
Burundi	Kenya	Sudan
Cameroon	Korea-South	Syria
Central African Republic	Kuwait	Tanzania
Chad	Lebanon	Thailand
Chile	Liberia	Togo
China	Libya	Trinidad and Tobago
Colombia	Madagascar	Tunisia
Congo	Malawi	Turkey
Costa-Rica	Malaysia	Uganda
Cuba	Mali	United Arab Emirates
Dominican Republic	Mexico	Uruguay
Ecuador	Morocco	Venezuela
Egypt	Nepal	Zaire
El-Salvador	Nicaragua	Zambia
Ethiopia	Nigeria	Zimbabwe
Ghana	Pakistan	
Guatemala	Panama	
Guinea	Paraguay	Total: 78 countries

Appendix 2: Product Groups of Which Import Figures Were Used as the Independent Variables

Consumer goods

Household equipment: SITC 775
TV and radio receivers: SITC 761762
Passenger vehicles: SITC 781785786

Industrial goods

Non-electric machines: SITC 71
Electric machines: SITC 72
Transportation equipment: SITC 73
Source: UN (1988).

Appendix 3: The Independent Variables

Consumer goods

Notation	Definition	Main source
INFLATIO	Average rate of (currency) inflation	3
INCOMEPC	Income per capita	3(9)
INCOMECH	Rate of change (per cent per year) in income per capita	3(9)
EDUCATIO	Expenditures on education as percentage of government budget	1(11-13)
ILLITERA	Illiterates as percentage of population over 15	1 (8)
UNIVERSI	Number of students in higher education per 100,000	1(10-13)
URBANIZA	Percentage of population living in urban areas	3
LIFEEXPE	Average life expectancy	3
CALORIES	Per capita consumption of calories per day	1
FOODCONS	Expenditures of food as percentage of family expenditure	3
INDEX	Average annual change in consumer price index	1(4)
WOMENEDU	Number of women graduating high school per 100 men	3
INCOMEHI	Percentage of national income earned by top 20 per cent	3
INCOMELO	Percentage of national income earned by bottom 20 per cent	3
IMPORTCH	Rate of change in imports	1(3)
INTEREST	Ratio between interest on savings and interest on loans	3
BABYBORN	Number of births per year, per 1,000 women in fertile age	5
BABYDIED	Baby mortality, per year, per 1,000 babies	5
ELECTRIC	Consumption of electric energy (kWh) per capita, per year	1
SIZE	Population	1
SIZECH	Population growth rate	1
IMPORT	Total annual volume of imports (\$M)	1(3)
Total: 22 variables		

Industrial goods

Notation	Definition	Main source
AGRICULT	Agricultural output as percentage of GDP	3(11-13)
INDUSTRY	Industrial output as percentage of GDP	3
AGRICUCH	Rate of change in value of agricultural production	3
INDUSTCH	Rate of change in value of industrial output	3
ENERGYC	Industrial energy consumption	6
ENERGYP	Industrial energy production	1
ELECTP	Annual production of electricity (kWh)	1
GNP	Gross national product (M\$/year)	3
GNPCH	Rate of change in gross national product	3
RESERVE	National reserves (\$M)	1
DEBT	External national debt (\$M)	1
EXPORT	Total value of exports (\$M)	1(3,10)
IMPORT	Total value of imports (\$M)	1(3)
EXPORTCH	Export growth (per cent/year)	3(10-13)
IMPORTCH	Import growth (per cent/year)	1(3)
INTEREST	Ratio between interest on savings and interest on loans	3
GOVERNEX	Government expenditures as percentage of GNP	3(8)
RDEMPLOY	Number of scientists, engineers, technicians	2
ELECTRIC	Consumption of electric energy (kWh) per capita, per year	1
Total: 19 variables		

Sources:

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Appendix 4: Factor Analyses Results

Consumer goods

	1	2	3	4	5
INFLATIO	0.087	0.018	-0.159	0.062	(0.804)
INCOMEPH	0.400	-0.023	(0.759)	-0.067	-0.078
INCOMECH	0.507	0.038	0.058	-0.409	-0.322
EDUCATIO	0.053	-0.185	-0.252	0.513	-0.111
ILLITERA	(-0.857)	-0.100	0.073	-0.119	-0.138
UNIVERSI	(0.787)	-0.127	-0.061	0.034	0.110
ORBANIZA	(0.797)	-0.012	0.356	0.154	0.094
LIFEEXPE	(0.875)	0.173	0.206	0.025	0.001
CALORIES	(0.552)	0.076	0.604	-0.192	0.057
FOODCONS	(-0.687)	(0.513)	0.181	-0.188	0.038
INDEX	0.189	-0.010	0.032	-0.149	(0.831)
WOMENEDU	(0.728)	0.007	0.093	0.070	0.268
INTEREST	-0.038	(0.848)	-0.222	0.124	-0.035
INCOMELO	-0.308	0.418	-0.172	(-0.794)	-0.064
INCOMEHI	-0.010	0.247	0.130	(0.906)	0.060
ELECTRIC	0.222	(0.696)	0.133	0.037	0.079
BABYBORN	-0.781	-0.277	0.292	0.059	0.025
BABYDIED	(-0.789)	-0.166	-0.166	0.095	0.037
SIZE	-0.038	(0.875)	-0.144	-0.268	-0.076
SIZECH	-0.424	-0.167	(0.724)	0.132	-0.057
IMPORT	0.429	(0.599)	0.130	-0.395	-0.258
IMPORTCH	0.013	0.149	-0.385	-0.241	-0.501

Industrial goods

	1	2	3	4
AGRICULT	0.081	0.021	(-0.831)	-0.255
INDUSTRY	0.141	-0.032	(0.781)	0.385
AGRICUCH	0.274	-0.006	0.438	0.224
INDUSTCH	0.101	(0.908)	0.018	0.082
RDEMPY	(0.914)	0.306	0.049	0.026
ELECTRIC	(0.726)	-0.056	0.330	-0.089
ELECTP	(0.955)	0.170	0.120	0.040
ENERGY P	(0.869)	0.043	0.276	0.056
ENERGY C	(0.934)	0.207	0.030	0.103
GNP	(0.888)	0.087	0.296	-0.059
GDPCH	0.218	(0.820)	0.097	0.109
RESERVE	0.390	0.108	(0.724)	-0.246
DEBT	0.494	-0.146	(0.556)	-0.179
EXPORT	0.545	0.147	(0.729)	-0.254
EXPORTCH	0.008	(0.815)	0.068	-0.088
GOVERNEX	0.001	-0.048	0.132	(0.828)
IMPORT	0.626	0.326	(0.573)	-0.209
IMPORTCH	0.147	(0.770)	-0.138	-0.195

Note: In parentheses: variables used as bases for factor identification