A COMPARATIVE ANALYSIS OF THE TRANSPORTATION SECTOR IN THE EASTERN MEDITERRENEAN REGION

Ü. Şenesen[1], G. Günlük-Şenesen[2]

1) Ümit Şenesen
Faculty of Management
Istanbul Technical University
Macka 80680 Istanbul
Turkey

2) Gülay Günlük-Şenesen
Faculty of Management
Istanbul Technical University
Macka 80680 Istanbul
Turkey

1. INTRODUCTION

The purpose of this paper is to conduct a comparative study of the transportation (including transportation services and transport equipment manufacturing subsectors) and the communication sectors in the Eastern Mediterrenean region limited to Greece, Turkey and Yugoslavia only due to data availability. The methodology is based on two-group industry modelling in the context of input-output analysis whereby multiplier decomposition forms the basis for comparison. The data comprise the most recent input-output tables of Greece, Turkey and Yugoslavia which belong to the years 1977, 1979 and 1984 respectively.

The paper consists of five parts: Part II will deal with a brief comparison of the three countries with respect to some indicators regarding their transportation sectors. The data basis is commented on as well. In Part III we introduce the tools of our analysis, namely own direct, own indirect and cross effects multiplier matrices which are the components of the Leontief inverse matrix in multiplicative form. Internal propagation ratios are also derived to measure the degree of dependency of the transportation sector on the rest of the economy. The findings of the analysis are reported comparatively in Part IV. Finally the general conclusions reached are discussed in Part V.

2. A GENERAL OUTLOOK AND THE DATA

The countries under examination are in the Eastern Mediterrenean region but are not homogeneous in terms of their areas and populations, let alone their geographical conditions. Thus carrying the comparison in terms of relative rather than absolute figures is believed to be more informative. Turkey has the largest area and population but as Table 1 shows, her transportation activities lag behind that of the other two. Yugoslavia is leading in railway transportation of passengers and freight while Greece has a significant dominancy in all others.

International comparison via statistical data always face the problem of consistency in basic definitions. This bottleneck is very much limiting when the sectoral breakdown of production is under consideration. The input-output tables of Greece and Turkey follow the guidelines of United Nations System of National

TABLE 1 BASIC INDICATORS REGARDING GREECE, TURKEY AND YUGOSLAVIA

			GREECE	TURKEY	YUGOSLAVIA
Area	(1000 km²)		132	779	256
Population	(millions)		10	51	23
GNP	(US $)	*	3,680	1,110	2,300
RAILWAYS	(km/km²)		18.78	10.49	36.68
	(pass.-km)	*	150	127	n.a.
freight	(ton-km)	*	73	152	1249
HIGHWAYS	(km/km²)		805	389	455
cars		#	115	19	123
trucks & buses		#	59	11	12
FLEET (100tons+)			2599	817	479
Total DWt	(million tons)		55	6	4
AIRWAYS	(pass.-km)	*	630	48	273
freight	(ton-km)	*	7.91	4.43	4.02

* per capita # per 1000 persons

Source: Britannica World Data 1987 and World Development Report 1988 (The World Bank)

Accounting, thus have a common standard basis whereas the Yugoslavian input-output table comprises only the socially-owned activities (86% of the whole) with emphasis on physical production. This is one fundamental difference. The next variation is equally important. The breakdown of production activities into industries is not identical; the Greek table has 35 industries, the Turkish one 64 industries and the Yugoslavian one 37 industries. This fact alone limits the scope of the present study because the Greek and Yugoslavian input-output tables do not offer detailed information on transportation activities as the Turkish one does. The input-output table for Turkey enables to study the structure of both the transportation services subsector and the transport equipment manufacturing subsector in terms of their industries; information on intersectoral transactions of modes of transportation (railway, highway, waterway and airway transportation) services as well as on rail, highway, water and air transport equipment manufacturing industries is available. (For a detailed analysis of the structure of the Turkish transportation sector see (1)). Therefore a common basis for comparison is forced to be constructed via an acceptable aggregation of the relevant industries: we classify the production activities into 19 industries. The transportation sector is defined under three headings: Transportation services (TRS), Communication (COM) and Transport Equipment Manufacturing (TRM) subsectors. This broad classification still is not applicable to the Yugoslavian case for which the transportation sector is expressed in terms of Transportation and Communication services (T+C), Transport Vehicles (VHC) (excludes shipbuilding) and Shipbuilding (SHB).

Intercountry transportation activities among the three countries will not be studied here due to data limitation. Also the import dependency structure of the transportation industries will not be dealt with since interindustry import flow tables are not available for Greece and Yugoslavia. The final note on our data basis relates to the periods of the three input-output tables: The Greek table belongs to the year 1977, the Turkish one to 1979 and the Yugoslavian one to 1984, thus the implications of the coming analysis should be taken with some reservation in this aspect as well.

The percentage shares of the transportation subsectors within economic activity in each country are summarized in Table 2. The relative importance of the transportation sector does not differ much in these countries. We observe that TRS (T+C in the Yugoslavian case) is leading in general with the exception of public consumption, fixed investment and imports for both Greece and Turkey and imports for Yugoslavia. The share of TRM (VHC) in imports is expectedly higher for all three countries.

TABLE 2. RELATIVE IMPORTANCE OF THE TRANSPORTATION INDUSTRIES

	GREECE '77			TURKEY '79			YUGOSLAVIA '84		
% Shares in	TRS	COM	TRM	TRS	COM	TRM	T+C	VHC	SHB
Interm. dem.	11.8	0.1	3.4	9.5	0.2	2.9	29.6	1.7	0.2
Interm. sup.	5.3	0.2	5.3	10.1	0.5	2.9	10.4	1.6	0.2
Total prod.	8.4	1.1	2.2	10.0	0.4	2.1	3.6	1.9	0.2
Total val.ad.	6.3	1.8	1.4	10.3	0.5	1.6	6.4	2.7	0.1
Wage income	10.9	1.4	2.6	5.4	0.1	1.8	9.2	2.8	0.8
Capit. income	3.6	2.2	0.4	13.0	0.7	0.8	n.a.	n.a.	n.a.
Priv. consump.	6.5	5.9	0.5	12.0	0.4	1.1	n.a.	n.a.	n.a.
Public cons.	1.3	0.1	1.8	0.2	1.4	0.3	n.a.	n.a.	n.a.
Fixed investm.	0.5	-	0.8	1.3	-	7.0	n.a.	n.a.	n.a.
Exports	12.1	0.3	0.3	16.9	0.3	1.2	9.3	4.6	2.7
Imports	3.3	0.4	8.1	3.1	0.1	5.8	2.5	5.4	1.6
Labor force	7.0		n.a.	2.9		n.a.	4.8	n.a.	n.a.

Source: 1. Input-Output Table of the Greek Economy, 1977 (Center of Planning and Economic Research, Athens)
2. 1979 Inter-Industry Transactions Matrix of Turkey (State Institute of Statistics, Ankara)
3. D.Kracun, "A cost-push model of galloping inflation: the case of Yugoslavia", p.522-30.

3. DECOMPOSITION OF THE TOTAL EFFECT OF AN INJECTION IN INPUT-OUTPUT ANALYSIS

The total (direct+indirect) impacts of an injection into any industry i on other industries can be studied through the

elements of the well known Leontief inverse matrix ,$(I-A)^{-1}$, which links industrial production (x) to final demand (y), A being the input-output coefficients matrix:

$$x = (I-A)^{-1} y = My \qquad (1)$$

Here an injection means an increase in one of the final demand components of the same industry. The total effect of an injection can be decomposed into three components in line with the nature of economic linkages: an injection into industry i will naturally induce an increase in this industry's production. This is called "the own direct effect". The production increase of industry i generates intermediate input demand from other industries. This is known as "the cross effect". These other industries, when faced with an increased demand for their production, in turn will increase their input requirement from industy i as well as from each other creating "the own indirect effect". (2), (3).

Decomposition of the total effect proves to be a useful tool in studying especially the structure of the transactions among industry groups; that is, if industries whose activities share a common basis are brought together, then the extent and nature of interdependencies among these groups will be revealed. Thus we will group the production activities (industries) into two strategic groups. The first group, the transportation sector, will be formed by the three industries related directly to transportation (TRS, COM and TRM for Greece and Turkey; T+C, VHC and SHB for Yugoslavia). The second group will comprise the rest of the 16 industries, namely the nontransportation sector (see Table 3). This approach has common features with those adopted for Japan in (4) and (5). A detailed exposition of this methodology can be found in (1) where the structure of the four Turkish transportation service industries and four transportation equipment manufacturing industries are analysed.

For any country, let X1 and Y1 denote vectors of outputs and final demands respectively for the 3 transportation industries and X2 and Y2 denote vectors of outputs and final demands respectively for the 16 nontransportation industries. We will also partition the input-output coefficients matrix A of order (19;19) into 4 submatrices in line with the type of transactions between the two sectors. Then the basic input-output accounting identity becomes

$$\begin{bmatrix} X1 \\ \hline X2 \end{bmatrix} = \left[\begin{array}{c|c} A11 & A12 \\ \hline A21 & A22 \end{array}\right] \begin{bmatrix} X1 \\ \hline X2 \end{bmatrix} + \begin{bmatrix} Y1 \\ \hline Y2 \end{bmatrix} \qquad (2)$$

Here A11 of order (3,3) contains the input-output coefficients within the transportation sector and A22 of order (16,16) contains those within the nontransportation sector. Then A12 of order (3,16) captures inputs demanded by the nontransportation sector from the transportation sector and A21

of order (16,3) captures inputs in reverse direction.

The own direct, cross, and own indirect effects multiplier matrices (M1, M2 and M3 respectively) are the components of the Leontief inverse matrix (M) in multiplicative form: M = M3*M2*M1.

TABLE 3. THE SECTORS & INDUSTRIES OF THE ECONOMY

TRANSPORTATION SECTOR

For Greece & Turkey:

1.	Transport services	(TRS)
2.	Communication	(COM)
3.	Transport equipment manufacturing	(TRM)

For Yugoslavia:

1.	Transport services & Communication	(T+C)
2.	Vehicle production (exc. Ships)	(VHC)
3.	Shipbuilding	(SHB)

NONTRANSPORTATION SECTOR

4.	Agriculture	(AGR)
5.	Mining	(MIN)
6.	Food-Beverages-Tobacco	(FBT)
7.	Textiles	(TXT)
8.	Wood Products	(WDP)
9.	Chemicals	(CHM)
10.	Petroleum	(PET)
11.	Rubber & Plastics	(R+P)
12.	Glass & Cement	(G+C)
13.	Iron & Steel	(I+S)
14.	Metal Products	(MTL)
15.	Machinery (nonelectrical)	(MCH)
16.	Electrical machinery	(ELM)
17.	Electricity-Gas-Water	(EGW)
18.	Construction	(CON)
19.	Nontransport services	(NTS)

The multiplier matrix of own direct effects, M1, is defined by

$$M1=\begin{bmatrix}(I-A11)^{-1} & 0\\ 0 & (I-A22)^{-1}\end{bmatrix} \text{ or in short, } M1=\begin{bmatrix}B & 0\\ 0 & T\end{bmatrix} \qquad (3)$$

M1 captures only the consequences of intersectoral activities within each sector. B and T are referred to as internal matrix multipliers.

The multiplier matrix of cross effects, M2 embodies the consequences of input demand of each sector from the other one:

$$M2 = \begin{bmatrix} I & B*A12 \\ T*A21 & I \end{bmatrix} \qquad (4)$$

M2 is the open-loop multiplier as opposed to M3 which captures the closed-loop effects due to the circular flow of inputs between the two groups. L and K are known as external matrix multipliers.

$$M3 = \begin{bmatrix} (I-B*A12*T*A21)^{-1} & 0 \\ 0 & (I-T*A21*B*A12)^{-1} \end{bmatrix} = \begin{bmatrix} L & 0 \\ 0 & K \end{bmatrix} \qquad (5)$$

Hence, the total effects multiplier or the Leontief inverse matrix M can be redefined using (3), (4) and (5):

$$M = \left[\begin{array}{c|c} L*B & L*B*A12*T \\ \hline K*T*A21*B & K*T \end{array}\right] \qquad (6)$$

If we divide the elements of M1 by the corresponding elements of M, we get the internal propagation ratios which measure the extent of dependency of the transportation sector on the nontransportation sector and vice versa.

The M, M1, M2 and M3 multiplier matrices as well as internal propagation ratios for Greece, Turkey and Yugoslavia are computed separately and the findings are reported below.

4. THE STRUCTURE OF THE TRANSPORTATION SECTOR IN GREECE, TURKEY AND YUGOSLAVIA

The findings of the study are summarized in Tables 4-10. The linkages among the transportation and nontransportation industries are presented in Tables 4-7 against the scale of coefficients in the multiplier matrices for practical purposes.

It should be noted that the ij th element of any multiplier matrix shows the relevant (total, own direct, cross or own indirect) effect on the i th industry of an injection into the j th industry. Thus row elements imply the affected industries and column elements imply the affecting ones.

One common feature of the Tables 4-7 is that communication services industry has the weakest links with the rest of the economy; the multiplier effects are very small, therefore do not appear in the summary tables with the exception of Turkey where NTS is affected considerably by COM.

4.1 Total effects

The backward linkages of the Greek and Turkish transportation industries are more or less at the same level as can be seen in Table 4, but these linkages are much stronger in Yugoslavia with significantly higher values. It is striking to

see that transport equipment manufacturing industries have higher backward linkages than transport services and communication industries in each of the three countries.

Total effects generated by transportation services and communication industries on themselves are generally lower than total effects generated by transport equipment manufacturing induustries on themselves.

TABLE 4. THE INDUSTRIES MOSTLY AFFECTED (DIRECT & INDIRECT) BY TRANSPORTATION INDUSTRIES (Outstanding Column Elements of $(I-A)^{-1}$ = M Matrix)

Total Effect Coeffi-cients	GREECE '77			TURKEY '79			YUGOSLAVIA '84		
	TRS	COM	TRM	TRS	COM	TRM	T+C	VHC	SHB
1.200-1.399			TRM			TRM	T+C	VHC	
1.000-1.199	TRS	COM		TRS	COM				SHB
0.600-0.699									NTS
0.500-0.599									MTL
0.400-0.499							NTS	MTL	
0.300-0.399								NTS	
								I+S	I+S
0.200-0.299	NTS						PET		T+C
	TRM			PET		I+S			CHM
									AGR
0.100-0.199	PET							T+C	EGW
			I+S			NTS	AGR	AGR	PET
			NTS				MTL	EGW	ELM
							VHC	MIN	MIN
							EGW	CHM	MCH
							I+S	PET	
0.080-0.099			ELM	NTS			CHM	R+P	WDP
				TRM		TRS			
0.060-0.079			MTL	MIN			R+P		FBT
			WDP				MIN	WDP	VHC
	MIN		MIN					MCH	CON
0.030-0.059						PET	FBT	TXT	TXT
						ELM	MCH	ELM	G+C
			G+C			CHM	WDP	FBT	
				R+P		R+P	TXT	CON	
	R+P					MIN	CON	G+C	R+P
	WDP					WDP			
Backward Linkages	1.859	1.040	2.142	1.672	1.255	2.057	3.096	3.659	4.527

NTS seems to be the most outstanding industry in terms of absorbing the effects from the transportation sector industries in every country. It has either the highest or the second highest total effect coefficient in every column. Another common feature

in Table 4 is that PET generally receives rather high effects from the transport services, whereas I+S gets similar effects from the transport equipment manufacturing industries in the three countries.

An asymmetry in Table 4 also deserves mentioning: Yugoslavia has many more industries affected by the transportation sector compared with Greece and Turkey.

The industries that have the highest effects on transportation industries are shown in Table 5. Again Yugoslavia has the highest forward linkage levels among the three countries.

TABLE 5. THE INDUSTRIES THAT HAVE HIGHEST (DIRECT & INDIRECT) EFFECTS ON TRANSPORTATION INDUSTRIES
(Outstanding Row Elements of $(I-A)^{-1} = M$ Matrix)

Total Effect Coeffi-cients	GREECE '77			TURKEY '79			YUGOSLAVIA '84		
	TRS	COM	TRM	TRS	COM	TRM	T+C	VHC	SHB
1.200-1.399			TRM			TRM	T+C	VHC	
1.000-1.199	TRS	COM		TRS	COM				SHB
0.300-0.349							NTS		
0.250-0.299				I+S			SHB		
							WDP		
0.200-0.249				CON			G+C		
				G+C			CON		
			TRS				I+S		
							MTL		
0.150-0.199							MCH		
							ELM		
							R+P		
							VHC		
							FBT		
							CHM		
0.100-0.149				WDP			AGR		
				MTL			MIN		
				CHM			EGW		
				R+P			TXT	T+C	
0.050-0.099				ELM		TRS			
				TRM					
				MCH				SHB	
	TXT			EGW				NTS	
				FBT				MCH	
				MIN			PET	MTL	
0.030-0.049	FBT			TXT				WDP	
	AGR			PET				I+S	
				AGR				CON	
								ELM	
								G+C	
Forward Linkages	1.361	1.015	1.712	2.898	1.066	1.572	4.630	2.005	1.258

Turkey is the second for TRS and COM, but Greece becomes second with a whisker for TRM.

In all three countries transport equipment manufacturing industries are affected mostly by TRS (T+C in Yugoslavia). The industries that have the highest effects on TRS in Greece are mainly agriculture based industries (TXT, FBT and AGR). The situation is reverse in Turkey and Yugoslavia. I+S, CON and G+C in Turkey and NTS, SHB, WDP, G+C, CON and I+S in Yugoslavia come into the picture as the outstanding effect creating industries on transport services industry.

It should be noted that, when compared with Greece and Turkey, Yugoslavia has built up much more complex relationships among its industries as can be seen both from the levels of backward and forward linkages and from the number of industries that either affects or affected by the transportation industries significantly.

TABLE 6. THE INDUSTRIES MOSTLY AFFECTED BY TRANSPORTATION INDUSTRIES
(Outstanding Column Elements of M2 Matrix)

Cross Effect Coeffi-cients	GREECE '77			TURKEY '79			YUGOSLAVIA '84		
	TRS	COM	TRM	TRS	COM	TRM	T+C	VHC	SHB
.400-.499									MTL
									NTS
.300-.399							NTS	MTL	
.200-.299								I+S	
	NTS						PET	NTS	I+S
.100-.199				PET		I+S			CHM
	PET								AGR
									EGW
			I+S			NTS			ELM
			NTS		NTS		AGR		MIN
.050-.099								MIN	PET
				NTS			MTL	EGW	MCH
				MIN			EGW	CHM	WDP
			ELM				CHM	AGR	
							I+S	PET	
	MIN						R+P	R+P	FBT
.030-.049			MTL				FBT	WDP	
			WDP				MIN	MCH	
			MIN				MCH	ELM	CON
				R+P		ELM	TXT	TXT	TXT
							WDP		
	R+P		G+C				CON	FBT	G+C
Sum	1.490	1.033	1.512	1.432	1.188	1.523	2.230	2.526	3.233

4.2 Cross effects

The cross effects are presented in Tables 6 and 7. We observe that the ordering of the industries mostly affected by transportation industries and the values of the related coefficients given in Table 4 remain almost unchanged in the columns of the cross effect multiplier matrix M2 as shown in Table 6. This implies that cross effects dominate both the direct and indirect own effects; i.e. the external matrix multipliers of the transportation sector (L) and the internal matrix multipliers of the nontransportation sector (T) are almost nil as can be seen in the corresponding submatrices of M and M2 (L*B*A12*T ≈ B*A12).

TABLE 7. THE INDUSTRIES THAT HAVE HIGHEST EFFECTS ON TRANSPORTATION INDUSTRIES
(Outstanding Row Elements of M2 Matrix)

Cross Effect Coeffi-cients	GREECE '77			TURKEY '79			YUGOSLAVIA '84		
	TRS	COM	TRM	TRS	COM	TRM	T+C	VHC	SHB
.100-.199				G+C					
				I+S			NTS		
				CON			G+C		
.050-.099				WDP			WDP		
				CHM			CON		
				R+P			MIN		
				EGW					
.030-.049	TXT			MIN			MTL		
	AGR			FBT			CHM		
	FBT						I+S		
							R+P		
							ELM		
							MCH		
							EGW		
							TXT		
							PET		
Sum	1.206	1.006	1.066	1.988	1.025	1.115	1.863	1.146	1.021

The picture however is quite different for the row elements of M2 as seen in Table 7. Although for Greece the industries affected by an injection into the transportation sector show the same pattern for both M and M2, the differences between the forward linkage levels and the sum of the cross effects for Yugoslavia are enormous. This is an outcome of the own direct and indirect effects being superior to the cross effects; i.e. the external matrix multipliers of nontransportation sector (K) and the internal matrix multipliers of transportation sector (B) have nontrivial elements as revealed by the related submatrices of M and M2 (K*T*A21*B ≠A21). Consequently Turkey takes the leading

position for transport services industry in M2 matrix.

The industries, though present in Table 5, that do not appear in Table 7 are heavy industries (MTL, ELM and MCH) for Turkey, whereas they are agriculture based industries (FBT and AGR) for Yugoslavia. This indicates that the own direct and own indirect effect matrices (B and K respectively) for the above named industries are determining the nature of the relationship.

4.3 Own direct and indirect effects

The own direct and indirect effects of the transportation sector for the three countries are presented in Tables 8 and 9.

TABLE 8. OWN DIRECT EFFECTS (B Submatrix of M1)

GREECE '77

	TRS	COM	TRM	Sum
TRS	1.023	0.003	0.016	1.042
COM	0.001	1.000	0.001	1.002
TRM	0.215	0.001	1.393	1.609
Sum	1.239	1.004	1.410	

TURKEY '79

	TRS	COM	TRM	Sum
TRS	1.057	0.017	0.025	1.099
COM	0.002	1.010	0.002	1.013
TRM	0.084	0.013	1.266	1.362
Sum	1.143	1.039	1.293	

YUGOSLAVIA '84

	T+C	VHC	SHB	Sum
T+C	1.113	0.034	0.074	1.221
VHC	0.090	1.268	0.030	1.388
SHB	0.021	0.002	1.158	1.180
Sum	1.224	1.304	1.262	

The TRM (VHC and SHB for Yugoslavia) industry appears to be the leading one in both directions within the transportation sector in all three countries as shown by the column and row sums in Table 8. COM industry is the weakest one both in terms of direct and indirect own effects as can be seen in Tables 8 and 9. TRM (VHC and SHB for Yugoslavia) is preserving its leading position

with regard to the indirect effects created by an injection into itself on the three transportation industries in each country. On the other hand the indirect effects created by injections into the three transportation industries are highest on TRS (T+C for Yugoslavia) (see the row sums of this industry in Table 9).

The own direct and indirect effect coefficients are given in absolute terms, whereas the internal propogation ratios reflect the proportion of the direct effect in the total effect. Therefore the latter are more suitable for cross country comparisons of the extent of dependency of the transportation sector on the rest of the economy. The direct impact of an injection into TRS (T+C for Yugoslavia) within the transportation sector is more or less at the same level in average terms in all three countries. In terms of its effect on the transportation sector TRM is expectedly the most related one on the rest of the

TABLE 9. OWN INDIRECT EFFECTS (L Submatrix of M3)

GREECE '77

	TRS	COM	TRM	Sum
TRS	1.0028	0.0002	0.0040	1.0071
COM	0.0004	1.0000	0.0003	1.0007
TRM	0.0012	0.0001	1.0014	1.0027
Sum	1.0045	1.0004	1.0056	

TURKEY '79

	TRS	COM	TRM	Sum
TRS	1.0115	0.0060	0.0446	1.0621
COM	0.0008	1.0007	0.0012	1.0027
TRM	0.0022	0.0008	1.0043	1.0073
Sum	1.0145	1.0074	1.0502	

YUGOSLAVIA '84

	T+C	VHC	SHB	Sum
T+C	1.093	0.102	0.157	1.353
VHC	0.016	1.021	0.032	1.070
SHB	0.002	0.002	1.004	1.008
Sum	1.112	1.125	1.193	

economy in each country due to its strong linkages with the other manufacturing industries (see the column means in Table 10).

Besides TRM is the least dependent one among the transportation industries with regard to its sensitivity to the injections made into TRS and COM. A distinct feature of the Yugoslavian economy as reflected by its general average internal propogation ratio (64.82) is that the transportation sector industries have the closest links with the nontransportation sector of the economy. With regard to the level of complexity in interindustrial production structure Turkey ranks second after Yugoslavia (the general average internal propogation ratio is 78.67 for Turkey and 86.74 for Greece).

TABLE 10. INTERNAL PROPOGATION RATIOS

GREECE '77

	TRS	COM	TRM	Mean
TRS	99.63	91.33	73.70	88.22
COM	66.86	99.998	56.73	74.53
TRM	99.28	93.23	99.86	97.46
Mean	88.59	94.85	76.77	86.74

TURKEY '79

	TRS	COM	TRM	Mean
TRS	98.52	71.43	30.60	66.85
COM	63.03	99.93	54.36	72.44
TRM	96.87	93.72	99.56	96.72
Mean	86.14	88.36	61.51	78.67

YUGOSLAVIA '84

	T+C	VHC	SHB	Mean
T+C	90.55	20.55	27.72	46.27
VHC	81.18	97.91	43.24	74.11
SHB	88.80	33.86	99.61	74.09
Mean	86.84	50.77	56.86	64.82

5. CONCLUSIONS

Although insufficiency of data is a serious drawback in reaching conclusions regarding various modes of transportation both within and among the countries under examination, several interesting points could be mentioned about the general structure

of the transportation sectors in Greece, Turkey and Yugoslavia.

First of all, the Greek and the Turkish transportation industries do not differ significantly in terms of their backward linkages. The forward linkages of the transportation sector in Turkey are considerably stronger than those in Greece. Furthermore these linkages are outstanding for heavy industries in Turkey and for agriculture based industries in Greece. Yugoslavia, on the other hand, exhibits exceptionally high levels for both backward and forward linkages of the transportation sector with a greater number of industries. This is an indication of the rather developed complexity in her interindustrial production structure when compared to Greece and Turkey.

Speaking in terms of individual industries NTS is outstanding in absorbing the effects from the transportation sector in each country. This might well be due to the high level of aggregation of the service industries, but it is still worth mentioning. Another common feature of the three countries is that PET is highly affected by TRS (T+C in Yugoslavia) and I+S is sensitive to TRM (VHC and SHB in Yugoslavia) remarkably.

The interindustrial analysis focusing on the transportation sector in all three countries might shed light on the direction of a possible regional cooperation based on the comparative advantages. However this analysis cannot go beyond providing rather general conclusions unless an aggreement upon standard guidelines for a common data basis at utmost detail is reached.

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