

Integrative Chains of Demand and Supply in Multimodal Freight Transport

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The article evaluates multimodal freight transport from the point of view of two economic factors, namely demand and supply. The objective of the paper is to present and evaluate criteria influencing supply and demand from theoretical and practical perspective. The origin and nature of commodities serve as recent catalysts in market economy. A suggestion is offered to evaluate freight transportation statistics by the value of commodities expressed in monetary units rather than tonne-kilometres as used before.

Key words: transport economics, multimodal transport, freight transportation, demand and supply, logistic chains, multimodal transport operator (MTO)

Introduction

The main objective of this study is to investigate the inter-reaction between demand and supply models in freight transport from the point of view of theory and its feasibility. The intention is to present a few theoretical models of supply and demand as introduced in theories of transport economics, logistics, strategic management, transport planning and control, and simulate an improved supply-demand model, emphasising the inter-reaction of the two. It should be noted in ad-

vance that the two factors are mainly viewed as separate macro-economic indicators in transport economics literature, with only few instances of visualising demand-supply chain as a coherent process. The attempt will be made to define the concept of multimodal transportation services and to apply the demand-supply chain method to multimodal freight transportation.

1. Terminology

The term "multimodal transport" applies to both freight and passenger transport in equal measure which in generalised terms means to transport a load by a combination of at least two different transport modes. Some authors previously viewed multimodal trans-

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portation as total transportation or co-ordinated services, and recently interpreting it as intermodal or combined transport, using these terms interchangeably (see Table 1). *"The field of transportation systems analysis has the following characteristics:*

Table 1. Defining the Concept of Multimodal Transportation

No	Author or Official Body	Year	Choice of Term	Definition	Source
1.	Lazer, William	1960	Total transportation	Total transportation system is the <i>integration of two or more modes of transportation</i> to provide shippers with more effective services. Specifically, the <i>total transportation system combines rail, air, truck, pipeline, and water carriers.</i> [...]	[44, p. 199]
2.	Locklin, D. Philip	1966	Co-ordinated services	It [co-ordinated transport] is used in the sense of joint <i>services by two or more agencies of transportation</i> such as result from the establishment of through routes and joint rates by rail and water lines or by any two transportation agencies	[17, p. 830]
3.	Benson, Don & Geoffrey Whitehead	1975	Intermodal transport	[Intermodal transport means] <i>utilising more than one mode of transport</i> , without having to break bulk	[4, p. 117]
4.	Coyle, John J. et al.	1992	Intermodal transport services	Intermodal transport services refers to the <i>use of two or more carriers of different modes</i> in the <i>through movement</i> of a shipment	[7, p. 289]
5.	ECMT*	1995	Combined transport	Combined transport, in the broad sense of the term (<i>road-rail, rail-inland waterways, land-sea</i>), <i>together with full-train loads or barge-train shipments</i> , is one of the few systems of transport that might help to improve the <i>balance of the modal split</i> , even though it is not yet capable of providing fully satisfactory solutions	[8, p. 138]
6.	UNCTAD***/ ICC***	1995	Multimodal transport	Multimodal transport is broadly defined as the movement of goods from one country to another by <i>at least two different modes of transport</i> (e.g. sea, land, air) performed under one contract. It used to be called "combined" or "intermodal" transport. There is still no uniform definition of these terms	[38, p. 11]
ECMT* – European Conference of Ministers of Transport					
UNCTAD*** – United Nations Conference on Trade and Development					
ICC*** – International Chamber of Commerce					

It is **multimodal**, covering all modes of transport (air, land, marine) and both passengers and freight.

It is **multisectoral**, encompassing the problems and viewpoints of government, private industry, and the public.

It is **multiproblematic**, ranging across a spectrum of issues that includes national and international policy, the planning of regional systems, the location and design of specific facilities, operational issues, and regulatory, institutional, and financial policies.

It is **multidisciplinary**, drawing on the theories and methods of engineering, economics, operations research, political science, psychology, other natural and social sciences, management and law" [Manheim, 1979, p. 3].

The latter interpretation of transport system by Manheim (1979) perfectly suits the objective stated in this paper and would help

to disclose the multi-sided nature of transportation services in general.

2. Demand for Freight Transportation

Demand for freight transport is generally described as arising in all cases where goods which are needed for: production, investment, consumption or distribution purposes or the creation of services – are not immediately available and must, therefore, be brought in over longer or shorter distances by the means of transport.

Demand for freight transportation may be classified according to a variety of criteria.

Schneider (1972) presented the classification of **macro-economic factors** (as seen in Figure 1), influencing demand for freight transportation by analysing it from the macro-economic point of view.

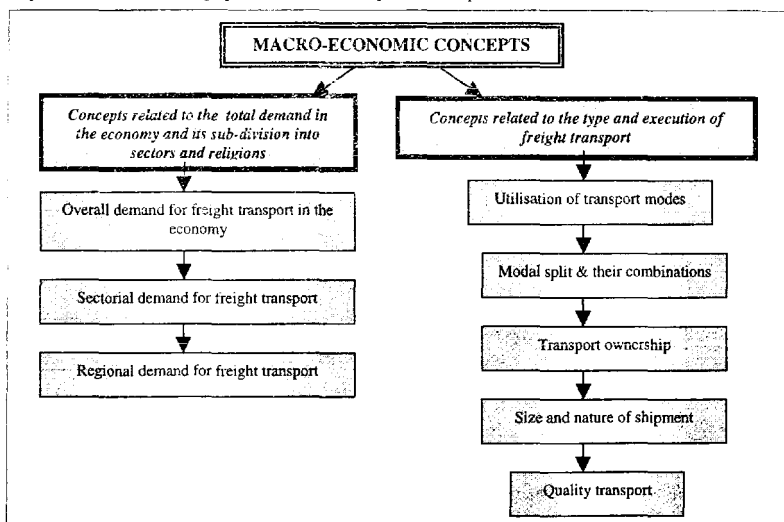


Figure 1. Classification of Criteria Affecting Demand of Goods Transport by Schneider (1972)

Button (1982) lays stress upon the derived nature of the demand for the vast majority of transport services. Button states that “the most pronounced characteristics of the demand for transport, for instance, is its regular fluctuation over time” [6, p. 43]. Button classifies the factors influencing the demand for transport into *three major categories*, namely:

- 1) price (P_a),
- 2) prices of other goods (P_p, P_2, \dots, P_w),
- 3) the level of income (Y).

Thus, the demand for a commodity (D_a) can be expressed as follows:

$$D_a = f(P_a, P_1, P_2, \dots, P_w, Y).$$

Though the main part of Button’s work is dedicated to passenger travelling demand and allocation of transportation services, this formula can be applied to freight transport as well trying to establish the demand elasticity towards the price of transport services.

Cooper, Browne and Peters (1992) made a contribution to the demand and supply indicators analysis by presenting a *detailed analysis of demand* and supply side of logistics within the European context. They have identified the changes in the Single European Market (SEM) which undertook logistics demand in a new direction. Among those impacts are:

- “the effects of 1992 and market integration;
- corporate plans for growth, amounting sometimes to a desire for global status;
- the need for large multinational companies to make their size count by concentrating their production facilities” [10, p. 21].

Simons (1995) has concentrated upon **micro-economic factors** influencing the demand side of the transport sector, in fact merging supply and demand for freight transport into a non-separable unity. The focus of his inves-

tigation lies upon the choices that are made in selecting an appropriate mode of transport, the transportation unit and modal relocation with the help of terminals and other logistic nodes. Thus, Simons emphasises the demand for specific characteristics of different transport modes and utilisation of transportation units. Simons comes up with a general view of incorporating macro- and micro-levels of demand and supply for transport as discussed further, in Chapter 4.

National Co-operative Highway Research Program (NCHRP) No 399 on Multimodal Corridor and Capacity Analysis Manual (conducted in 1998 in the USA) has established a more *generalised approach towards demand criteria* on passenger and freight transportation. According to this report, demand factors can be summed up as follows:

- economic trends,
- labour trends,
- demographic trends,
- vehicle and commodity characteristics.

NCHRP (1998) adopted the idea of direct influence of *time and traffic congestion* on transport demand patterns. Obviously, demand varies with the time period, by the hour of the day, between peak and off-peak, by the day of the week, and, consequently, by the month of the year. Thus, it is extremely important to account for variations in demand. According to NCHRP (1998), “congestion waiting time tends to ration the scarce capacity of transportation facilities in much the same way that congestion pricing would” [25, p. 14]. Apparently, the greater the waiting time due to congestion during a period of time, the more likely users will divert to other routes or time periods in order to avoid severe congestion. It has been discovered by NCHRP (1998) that businesses

and logistics nodes make location decisions based on congestion and are frequently observed to move from congested areas to less congested ones in order to meet the transportation needs.

NCHRP report (1998) was one of the first to mention demand factors affected by *time horizons*, specifically short- and long-term periods which are defined as follows:

“Long-term period. This is the period over which changes in land use, population, and economic activity cause the general demand for transportation to change” [25, p. 14].

“Short-term period. This is the period during which the behaviour of transportation users and systems may change but the total demand for transportation remains constant” [25, p. 14].

Thus, we can arrive to the *conclusion* that demand for freight transport is influenced by a synthesis of factors, affected by time determinant and traffic congestion on their own right. Most authors group these criteria under the headings of macro- and micro-economic tendencies. The shortcoming of such classification is seen in presenting technological, social and sometimes political features alongside the economic criteria of transport demand. This prevents from envisaging demand in freight transport as a co-related system with each criterion contributing to the whole market economy.

A more liable *proposition* would be to classify these determinants according to a world-accepted theoretical interpretation of business environment, namely PESTED analysis which breaks down to political, economic, social, technological, ecological and demographic criteria of freight transport demand. The proposal on interpretation of the integrated ap-

proach to freight transport demand and supply will be discussed and presented in a form of a figure in Chapter 4.

3. Supply of Freight Transportation

“The supply side includes the providers of transport services in the freight industry, generally taking the form of companies and owners of means of transport who seek to provide transport services in return for payment” [34, p. 57].

Though Button (1982) classifies price a one of major determinants in demand for transport, Schneider (1972) has allocated this criterion to the supply-side of transportation service. We can state that *price*, therefore, strictly speaking is considered as a *demand and supply dependent determinant* of transport demand. Schneider (1972) argues upon the relevance of price analyses in supply of transport. According to Schneider, the price components are as follows:

- tariff rates;
- calculated distance-rates for certain selected transport relations;
- general freight indices;
- charges for services ancillary to transport, etc.

Schneider considered that it is almost impossible to determine the supply-side of transport due to lack of reliable statistics and grimly predicted that “the predicative value and analytical usefulness of results concerning the influences of supply-determinants will remain correspondingly limited” [33, p. 12].

Sawdy (1972) reviewed supply problem in distribution system from a component (parts, materials, etc.) point of view, presenting a few unfavourable economic consequences related

to the total supply system. To mention a few cause-and-effect samples, they can derive in a form or shape of:

- 1) the vehicle which can be late on delivery because the components or materials are not ready for production or assembly;
- 2) sub-contractors' stocks that can rise with a danger of deterioration or obsolescence;
- 3) transportation costs that can rise because of the need to "rush" components in short supply or to speed up the delivery that is already late;
- 4) production and assembly costs that can rise because of materials or components shortage;
- 5) component stocks of the main contractor that can rise because of the need for a further buffer stock to protect against supply uncertainty.

Some uncertainty is, of course inherent in the situation because no one can predict what the customer will demand and when. But it is clear that *the difficulties are being aggravated because each company is taking separate action* designed to protect its own interests.

Schneider expressed the idea that "because of a lack of free and open communication, the total cost of supply becomes more expensive than it need be" [32, p. 68].

Colin (1987), while presenting transport supply issue from the marketing point of view, specifies the occurrence of a *logistical added value* in the movement of goods. Its brief mention in the study got a more wider reflection in a later work by Cooper (1995) and Simons(1995).

Cooper, Browne and Peters (1992) discuss the matters of transport supply in the view of interactions between the users and the provid-

ers of logistics services. According to them, the users of logistics services, such as manufacturers and retailers, have two choices:

- 1) either they can service their own logistics requirements by having an in-house capability,
- or
- 2) they can buy in specialist suppliers of logistics services.

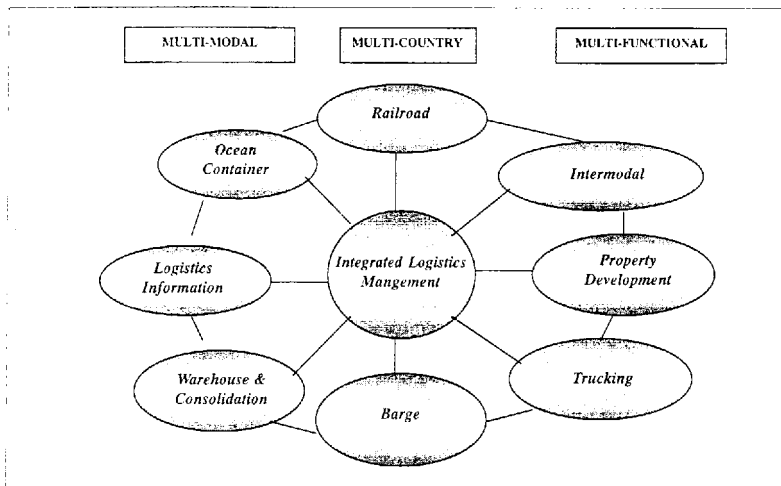
Thus, the user can choose to operate his own fleet of vehicles or apply hire-the-vehicle strategy after considering the total transportation costs and weighting the alternatives. Sometimes a transport service user has to apply trade-off techniques by choosing one alternative in favour of the other. In this case, one package of transport services has to be sacrificed even though it might look attractive but not feasible enough for a particular application.

Authors emphasise a considerable growth of "multi-service companies in logistics, *reflecting the need for integration within logistics function* and the signals from users about their future requirements" [10, p. 148]. Indeed, the emergence of multi-service companies, such as CSX Corporation (see Figure 2), Inc., has been a key development world-wide.

Cooper, Browne and Peters (1992) have distinguished two critical impacts on *the future of supply of logistics services in Europe*, namely:

- "the increasingly 'corporate' approach to business by companies offering road freight transport services,
- deregulation of road freight transport sectors in Europe, both at the international and national levels" [10, p. 148].

The authors have dedicated a considerable amount of their study on road transport services, as it becomes a common knowledge of rail transport giving in to the road traffic. Coo-



Source: adapted from [9, p. 127].

Figure 2. CSX Corporation, Inc. (as in 1991)

per. Browne and Peters identify at least 7 major services supplied by the road freight sector, one of the most important being *one-stop shopping for logistics services* where "one provider of logistics services can meet *all* the needs of a user, even when those needs are complex" [10, p. 190].

Simons (1995) points out the importance of the growth of intermodal and combined transport forms with the help of extensive applications of containers as the main transportation unit. He reckons that future looks bright for the latter services as they involve the co-operation between various modes in transport chain, singling out their best features and benefits for the user.

Though, presenting an optimistic judgement upon intermodal and combined transport, Simons underpins some serious problem ar-

cas that militate against co-operation from the integrator's viewpoint. To mention but a few:

- 1) *road transport* is highly fragmented and the market is over-saturated by its supply, though it offers a high degree of flexibility and a wide geographical coverage;
- 2) there has been notable optimism in *rail transport* back-up on political and public levels. But it needs high volumes to operate a reliable and regular network. It's not flexible as the road transport and has limited catchment area around the rail terminals with high local transport costs;
- 3) *inland shipping and rail transport* often cover only part of the total route, indicating that it is generally necessary to arrange supplementary road transport by other transport operators to or from the place of loading/unloading.

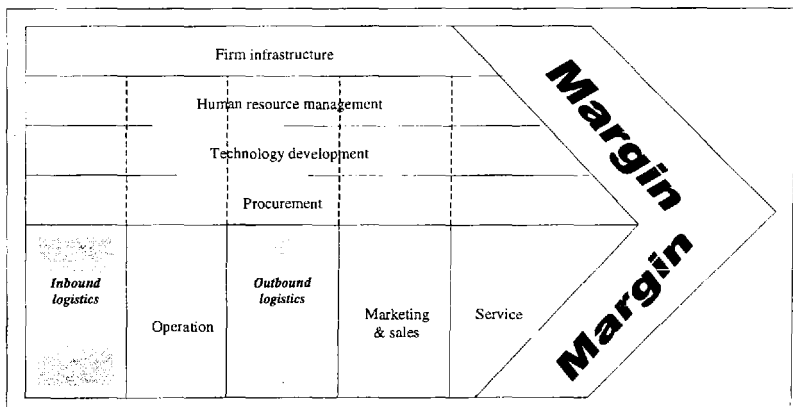
Cooper (1995) reflects upon the *value added service concept* in freight transportation as seen in Figure 3, stating that “in expended markets, right up to global level, there are significant value-adding opportunities available through the application of the “postponement” concept, to products in the supply chain” [11, p. 106].

Wroe Alderson introduced the postponement concept in 1950 as a way of reducing marketing costs because of risk and uncertainty costs are tied to differentiation of goods. He has identified the trend of individual institutions trying to shift the risk of owning goods to another institution. Thus, if the freight is postponed in the mid-process of delivery, it has to “rest” in a certain logistic nodes, let it be a warehouse or terminal. This is how suppliers view adding value to goods by keeping them in safety till the moment of further forwarding which eventually accumulates higher costs.

NCHRP report (1998) suggests three following criteria affecting freight transport supply:

- the infrastructure and the capacity of the transport system (i.e. links or logistic nodes of a certain type, the length of the links);
- the operational policies governing the use of the transportation system (i.e. speed limits, regulatory policies concerning the placement of signs and markings, limiting use of heavy operating vehicles, etc.);
- the quality and reliability of the components of the over-all transportation system (i.e. bridge weight restrictions due to unsafe loads, condition of rail track, etc.).

It can be assumed that authors, while presenting their arguments upon supply dilemma in freight transport, account for two main trends in the theoretical background of the topic in question. The first group of theoreticians details the transport system itself, by investigating means and options for suppliers – transport modes, their advantages and socio-economic benefits. The second group of authors takes a wider perspective of freight trans-



Source: adapted from Porter (1985) and [11, p. 133].

Figure 3. Elements of the Value Chain

port supply by analysing the demand-side (the basic needs for successful operation of transport services) of the matter.

4. Multimodal Freight Transport in Integrated Logistic Chains of Demand and Supply

The integrative approach to demand and supply in multimodal freight transport will be viewed from the following perspectives:

- 1) the growth of multimodal transport operators;
- 2) dissemination of logistics in the transport industry and among small and medium-size shippers;
- 3) structural approach to macro- and micro-economic levels in freight transport.

4.1. The Growth of Multimodal Transport Operators

“Multimodal transport operator (MTO) means any person who concludes a multimodal transport contract and assumes responsibility for the performance thereof as a carrier” (UNCTAD/ICC, 1991). This definition is questionable as it does not cover the ownership dilemma of a transport supplier. Thus, it is not clear whether MTO acts as an intermediary and contracts carriers from the transport market or actually supplies the transport modes himself.

The ownership of MTO has been discussed in the past by the following authors: Meier (1970), Bowersox (1978), Colin (1987), Coyle, Bardi & Langley (1992), Lambert & Stock (1993), Kaspar (1993), Turro (1993) and UNCTAD/ICC (1995). While some theoreticians are in favour of the emerging MTO phenomenon, the other are predicting grim times

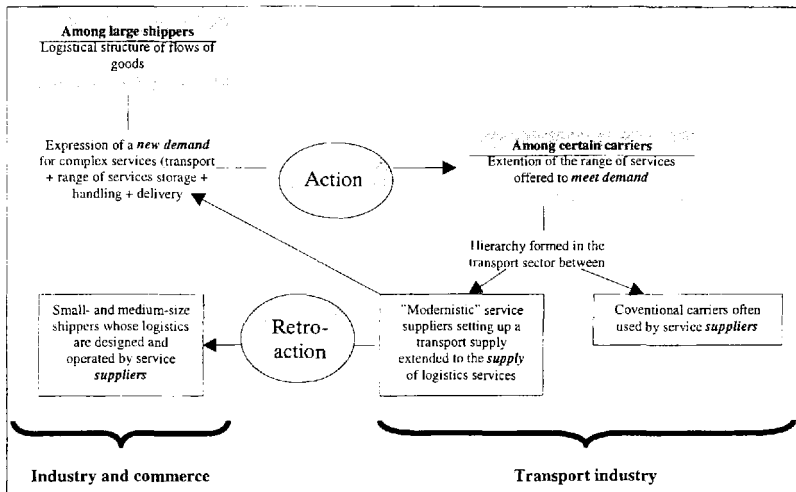
for the structure of the transport sector turning monopolistic.

Meier (1970) investigates theoretical implications of MTO ownership pointing out to advantages of such phenomenon in the market. He states that the fundamental advantage of MTO is the “responsibility for the shipment origin, over-the-road, and destination movements”, and adds that it all be “the integrated responsibility of one carrier” [28, p. 360]. Other MTO advantages, mentioned by Meier can be summarised as follows:

- 1) integration of rates;
- 2) one contract instead of a few at the present state;
- 3) ability to control the progress of freight movement;
- 4) ability to expedite the handling of merchandise traffic;
- 5) MTO growth on national and international levels;
- 6) possibility to eliminate under-used rail lines in favour of motor truck service;
- 7) possibility to influence and make regulatory changes.

Thus, Meier concludes that the integration of freight traffic flows can be exercised by one transport mode owner or by a carrier who has a combination of modes under his ownership. It can be very dangerous for a fair competition in case an MTO acquires more transport modes under his ownership, actually eliminating his competitors. This can be viewed as a threat for a monopolistic approach towards the transport sector. This macro-economic problem has been identified by Turro (1993) two decades after Meier predicted the growth of MTO.

Turro (1993) views MTOs as an inevitable change in the European market where big conglomerates “swallow” one transportation com-



Source: adapted from [8, p. 41].

Figure 4. Dissemination of Logistics in the Transport Industry and Among Small and Medium-sized Shippers by Colin (1987)

pany by another, especially it poses threat to small and medium-sized transport companies (discussed a bit later). In the words of Turro, "the high disaggregation of road carriers (especially in the southern countries) and barge companies makes such a transformation almost unavoidable" [45, p. 173].

MTOs provide the most competitive supply options, such as door-to-door, non-scheduled, flexible services, including the emerging service package for passengers too, where they can enjoy privacy and "status". No transport mode on its own could offer such services with improving standards and quality.

4.2 Dissemination of logistics in the transport industry and among small and medium-size shippers

Colin (1987) notices that the changes in transport demand have direct impact on the chan-

ging structure of freight transport supply. As the demand for transport services becomes more and more complex, a transport company has to satisfy the need not only for a transport mode itself but also for ancillary services, like goods storage, insurance, handling, trans-loading, etc. (see Figure 4).

Obviously, small and medium-sized (SMEs) transport companies are under constant pressure from transport demand market, failing to satisfy the total range of services required by customers.

The problem of transport supply market changes, identified by Colin (1987), has its implementation in company split to "conventional" and "modernistic" firms.

- a) "Conventional" firms that confine to a limited activity, for example, haulage, and which usually operate only one transport mode or a specific transport techniques

(e.g. SAVAM technique used by bulk freight carriers). Most transport SMEs belong to this category of classification,

- b) *“Modernistic” firms* escapes from the confines of modal operating problems, as the transport mode increasingly less relevant, actually joining the market segment of MTOs.

Bowersox (1978) identifies MTOs as auxiliary users being *analogous to wholesalers* – “purchasing a major share of their inter-city or line-haul transport from the legal forms of transport” [7, p. 125]. Thus, it indicates the purchasing power of MTOs, acting both as a supplier and a catalyst for demand for freight transportation (discussed in Chapter 4.1).

4.3 Structural approach to macro- and micro-economic levels in freight transport

Transport sector does not operate in an empty space – it has all kinds of factors influencing its growth and development. Simons (1995) has proposed a schematic interpretation of the environment of transport sector and its major internal and external interactions. As far as all factors are influential and interrelated, it is a challenge on its own to attempt and present them as a figure. Figure 5 presents a close image of Simons (1995) proposed structure of freight transportation sector, pointing out supply and demand chains being the major players in freight transportation market.

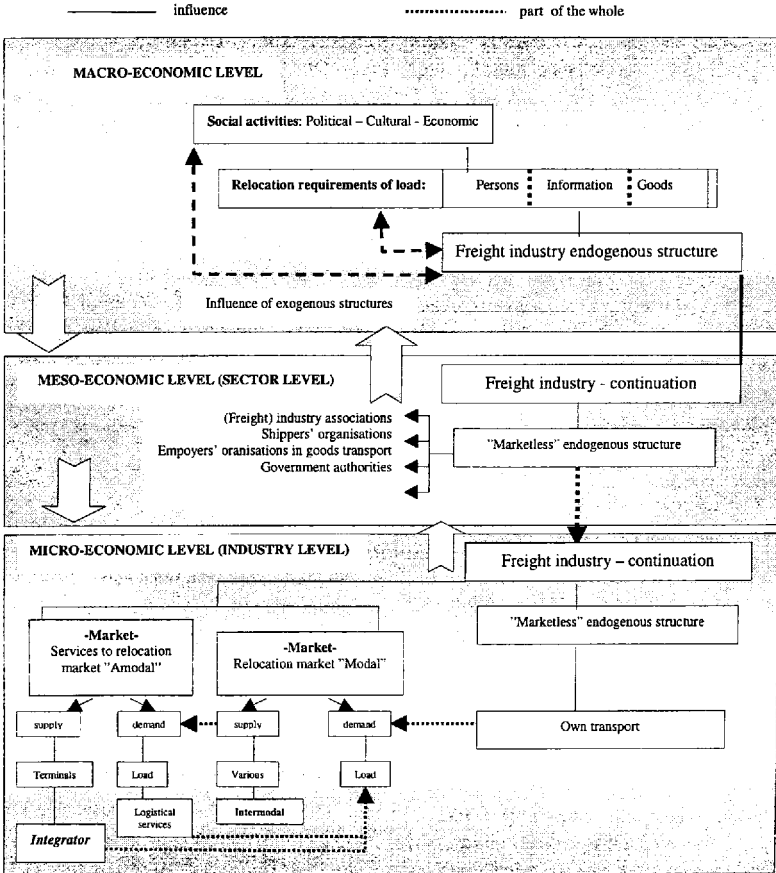
Simons uses a variety of new terminologies to differentiate among certain factors in this structure. He uses “endogenous” and “exogenous” structures to denote factors related to the transport sector itself and ones exerting an impact on the endogenous structure from outside the sector, respectively. Simons also

introduces a notion of “marketless” in the freight industry, emphasising that “the actors in this category are not confined to the public sector but also include numerous industry associations and business organisations” [41, p. 54].

The basis of market interpretation for Simons is the *nature of goods*. He contradicts a well-known economic perception of substitutes: he quotes Quinet (1993) and Verhoeff (1981) who suggested that substitutes in transport are most impossible due to goods having different origin and destination. Thus, *economic theory of substitutes* is also questioned by Simons. Simons (1995) and Gerondeau (1997) both point out to a factor mainly ignored by transport theoreticians in the past, namely *the actual value of goods*. This sounds like a very reasonable observation as no actual value of freight has been ever recorded due to the complex process of collecting such data.

Gerondeau (1997) has dedicated a whole chapter in his study to name it very ironically – “Freight Transport: Kilograms of Feather and Kilograms of Lead” – indicating that the current units of measure (i.e. tonne-kilometres) are meaningless and does not represent the actual picture of freight flows. It is not enough to present the actual list of commodities moved by each transport mode or by combined transport, the value (not cost, not price) should be taken into consideration to evaluate the actual picture of what makes demand and supply in transport sector tick. It has been seen that the economic value of a tonne kilometre could vary from one (like bulk freight – grain, coal, gravel) to one hundred (like designer clothes, jewellery, antiquities, etc.), or even more.

A measure unit, a vehicle kilometre, can be still acceptable in cases like:



Source: adapted from [41, p. 85].

Figure 5. Methodology of Freight Transport Structures

- a) network congestion;
- b) in possible transfers from one mode of transport towards another.

According to Gerondeau (1997), "it is possible to convert the activity of the different

modes of transport in *truck units* (TUs) and in *truck-kilometre units* (TKUs), keeping in mind that the average rail freight wagon load is generally equal in Western Europe to that of a heavy, high-load truck when empty travel is

accounted for” [15, p. 302]. The reason why Gerondeau chooses a TU as a starting point is the fact that “road transport is by far the dominant mode” [15, p. 303].

Unlike the tonne kilometre, it would give a more realistic image of the physical aspect of freight transport and would also make possible to monitor changes in time and markets prices per unit of transport moved.

Concluding Remarks

The multimodal transport (MT) approach promotes thinking in terms of transportation rather than of transport modes. This implies the consideration of the impact (discussed in previous chapters in terms of demand and supply, market changes, costs and prices) on one mode from changes in another. The MT approach to transport demand and supply therefore embodies the simultaneous consideration of all available modes of transport, taking into account all means and operations related to:

- 1) terminals;
- 2) loading and unloading facilities, including storage facilities if required;
- 3) combination of more than one transport modes;
- 4) in case of market changes, infrastructure and amending regulations.

Thus, auxiliary users, “modernistic firms” or MTOs (discussed in previous chapters) can be equally treated as an *integrated logistic chain of supply and demand in the multimodal freight transportation* concept because they act as:

- **demand-side of multimodal transport**– searching for the most advantageous and beneficial option package among unimo-

dal (providing service only by single mode of transport) or multimodal (providing services by a combination of transport modes) transport companies,

- **supply-side of multimodal transport**– offering a broad range of transportation services to satisfy a wide range of customers – wholesalers, retailers, exporters and importers, and even other transport companies.

Besides, it has become obvious that the integrated logistic chains of supply and demand are equally applied to domestic and national freight traffic flows, including goods in transit as well. The global approach to multimodal freight forwarding implies its *multimodal, multisectoral and multiproblematic approach* and manifests that economic and legal barriers to this phenomenon are eliminated worldwide to gain the most plausible economic effects.

The demands on transport organisations and the quality of transport supply are increasing, to a large extent due to structural change in the goods market itself, and require corresponding technical and organisational measures on the parts of transport enterprises, where the solution of multimodal transport chains sounds very plausible.

The changing customer behaviour plays a paramount importance in the range and options transportation companies can offer today. With the increasing pace of life, a tendency is observed that goods are wanted as quick as possible with a short span of time and with the most efficient quality of service a company can provide.

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PAKLAUSOS IR PASIŪLOS INTEGRACIJA ATLIEKANT MULTIMODALINĮ KROVINIŲ TRANSPORTAVIMĄ

Santrauka

Straipsnyje apžvelgiamas multimodalinis krovininių transportas iš ekonominių paklausos ir pasiūlos pozicijų. Pateikiami kai kurie paklausos ir pasiūlos kriterijai ir krovininių transportavimo veiksniai, įvertinamas teorinis ir realistinis jų pritaikymas. Turint omenyje, kad paklausa ir pasiūla yra ekonominiai veiksniai, lemiantys bendros ir transporto rinkos pokyčius, daroma išvada, kad prekių prigimtis ir pobūdis yra rinkos veiksmų katalizatorius. Siūloma ekonominius krovininių transportavimo rodiklius (tonkilometrus) keisti prekių (krovinio) vertės parametrais, išreikštais pinigine verte.

Siūloma vertinti multimodalinį transporto operatorių (MTO), kaip transporto sektoriaus paklausos ir pasiūlos katalizatorių, dėl šių priežasčių:

1) MTO ieško pačių ekonomiškiausių, kokybiškiausių ir efektyviausių patikimų krovininių vežėjų, kurie gabentų krovinį remiantis sutartimi – tuo skatinama krovininių vežėjų paklausa;

2) Siūlo platų transporto paslaugų pasirinkimą nuo sandėliavimo, krovos darbų iki draudimo ir višiškos atsakomybės už krovinio gabenimą; aptarnaujamas platus vartotojų ratas – nuo didmeninių ir mažmeninių prekybininkų iki individualių vartotojų.

Raktiniai žodžiai: transporto ekonomika, multimodalinis transportas, krovininių transportavimas, paklausa ir pasiūla, logistikos grandinės, multimodalinis transporto operatorius (MTO)

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