UNIT 3

The market for transport services

Transport economics [TEC711S]
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In the course of this unit, you will learn:

• The law of demand and the main factors that impact upon the general demand for transport services as well as individual transport modes
• The theory of supply and the main factors that impact upon the supply of transport services
• The market and economic principles that underpin the provision of transport services and ensure that such services are provided to those that are willing and able to pay the market price
• The important role of the price mechanism in balancing the needs of the users and providers of transport services
• That even where transport markets are closely controlled and regulated by public authorities, underlying economic principles still apply.
• In simple terms, a market is a meeting place for buying and selling
• In a transport context a market is where the consumers of transport services are brought together with the provider of such services.
• In some cases, therefore, this market is quite rigidly defined, although it is difficult to consider a bus as an actual market place! In other instances, however, the ‘marketplace’ is less well defined, as it may not be an actual physical location and the market as such can be made up of a high number of inter-related activities that contribute towards the final transport service.
THE LAW OF DEMAND

• The demand for a good is the ‘number of units per unit of time that consumers purchase at any given price’

• In the demand for transport services, the decision as to whether to travel or not is based solely upon the price of that journey.

• As the price of transport services rises, the quantity demanded will fall. In simple terms, less people will travel.
Figure 3.1, Basic relationship between the price and the quantity demanded for transport services (theoretical and simplified)
Determinants of Demand

1. **Income**: all things being equal a general increase in incomes would enable more people to afford the use of transport services and hence increase demand.

   • A decrease in incomes on the other hand would be expected to have the opposite effect.

   • **Effect**:
     - increase in income shift the demand curve to the right
     - A decrease in income will shift the demand curve to the left
Figure 3.2, Change in the conditions of demand for transport services shown by a shift in the demand curve.
• rising incomes may not be expected to have a uniform impact across all transport modes.
• the demand for some may actually be expected to fall.
• Whereas the demand for private transport, rail services, freight services and air services for example may all be expected to rise with an increase in income, the demand for bus services may be expected to fall.
• This is because some individuals, with an increased income, will ‘trade up’ to a perceived better quality of transport -some for example will buy a car and hence no longer need or use public transport
• normal and inferior goods
• A normal good is where demand increases with increases in income,
• an inferior good is one that falls with increases in income.
Determinants of Demand cont..

2. The price of other goods and services

- **Substitute goods**
  - can either be inter modal, e.g. the bus verses the train, the car verses the bus and so on, or intra modal, such as the red bus versus the blue bus, the no frills ‘low cost’ airline versus the traditional airline.
  - Substitute transport services therefore are those that can be used to fulfil the same basic transport need.
  - Thus the closeness of the substitute goods will determine the actual size of the impact on the market.
Determinants of Demand cont..

• Complementary goods
  – are goods or services that are consumed at the same time. The price of petrol, for example, may be expected to impact upon the use of the car.
Determinants of Demand cont..

3. Fashions or trends

• A move towards the good or service will cause an increase in demand and shift the demand curve to the right, while a move away will have the opposite effect. Fashion has had a massive impact upon transport markets. Over the last thirty or so years, for example, there has been a big swing towards more fuel-efficient vehicles and less environmental harmful fuels, e.g. unleaded petrol. A rise in environmental awareness, for example, may cause a decrease in demand for transport services or a switch to less environmentally harmful modes of transport.
4. **Expectations of future price rises**

- how the price of transport services will change in the future will affect what is purchased today.
- For example, an individual may delay purchasing a motor vehicle if the situation regarding the future price of oil is unknown.
- On the other hand, a daily commuter may purchase a one-year season ticket if fares are expected to rise in the foreseeable future.
- Thus individuals may pull forward purchases where prices are expected to rise in the future, thereby increasing demand, whilst they will delay purchases where prices are expected to fall in the future, hence decreasing demand.
Determinants of Demand cont..

• Other factors specifically relating to the demand for trans

5. Demand for transport is a derived demand
• an individual’s demand for transport is instigated through their demand for something else
• Hence the need to work in order to earn an income generates a demand for transport.
• Few individuals demand transport services purely for their own merit.
• Even those with flashy cars only have a flashy car for some other purpose, i.e. to impress others!
Determinants of Demand cont..

6. Demand for transport is time specific

• when transport services are demanded they are demanded NOW.
• Unlike say a chocolate bar that can be purchased and consumed later,
• on the whole the demand for transport is required at an exact, or near exact, time.
• Another way of putting this is that the demand for transport has a very short expiry date, and due to the derived nature of demand, once that expiry date has passed then the need to make that particular journey will almost certainly no longer exist.
• Even where the ticket is purchased in advance, the actual journey that is purchased is made at a fairly specific time period in the future. Demand for transport is therefore time specific.
Determinants of Demand cont..

7. Demand for transport follows peaks and troughs
   • The demand for most goods and services follows some kind of cyclical pattern, whether that be throughout the year, throughout the month, week or day.
   • For example, the demand for the chocolate bar will be higher in the winter than in the summer and will also vary at certain points over the day.
   • With transport services, however, this particular issue is a major factor and especially acute. Most if not all will be familiar with the terms ‘the morning rush hour’ and ‘the evening rush hour’, and it is this very factor that these relate to.
   • Basically a substantially higher number of people need to travel (because demand is derived and time specific) to and from work between certain hours of the day.
THE THEORY OF SUPPLY

• As most individuals have a basic need to travel from one location to another, in a market based economy this presents an opportunity for other individuals to profit from that basic need.

• Trade is never a zero sum game, hence both parties should benefit otherwise the trade would never take place.

• In this example the first individual benefits by getting to where they want to go, whilst the second benefits from a financial reward for transporting that person to that location.

• Where a basic need exists, therefore, there will always be individuals willing to provide a good or service to meet that need at a given price.
basic assumption-in this case, the level of transport services provided to the market is only dependent upon the price of the service.

this raises the question of the relationship between price and the quantity supplied.

common sense would suggest that as the price rises the quantity supplied to the market will increase.
THE THEORY OF SUPPLY Cont..

Figure 3.6  Basic relationship between the price and the quantity supplied for transport services (theoretical and simplified)
Determinant of Supply

1. The cost of production
   - Cost is a large determinant of the supply of transport services.
   - Production costs are one half of the profit equation \( \text{profit} = \text{revenue} - \text{cost} \), and hence a change in the cost of transport operations will impact upon profits and thus the supply of services to the market.
   - In simple terms, an increase in costs will reduce the level supplied.
   - As all operators are assumed to be profit maximisers, an increase in costs reduces profits and hence some, but not all, operators will leave the market to seek better profit opportunities elsewhere Conversely, a reduction in costs will bring about an increase in supply.
   - A change in costs therefore will impact upon the basic price/quantity supplied relationship.
   - An increase in costs is shown by a shift in the supply curve to the left, whilst a reduction in costs is shown by a shift in the supply curve to the right
Figure 3.7 Change in the conditions of supply for transport services shown by a shift in the supply curve
Determinant of Supply Cont..

- At price $P$, the quantity supplied is given by $Q$. If costs increase, less transport services would be supplied at each and every price. This would be illustrated by a shift in the supply curve to the left to $S_{dec}$. Thus at price $P$, the quantity supplied would fall to $Q_{dec}$. Conversely, if costs were to fall this would be shown by a shift in the supply curve to the right. At price $P$, supply would increase to $Q_{inc}$. 
2. **Government policy**

- Governments intervene in transport markets to ‘guide’ the market to meeting its policy objectives.
- Government policy as such, particularly in public transport markets, has a very large impact on the supply of transport services, for instance in Namibia, Windhoek is growing at a fast speed of approximately 4.3% per year.
- Within twenty years Windhoek will have to cater for the mobility needs of 1 million residents.
- A key task for the City of Windhoek and the Government of Namibia is to plan for future transport needs and to cater for the growing population.
- Making the right land-use and transport planning decisions now will make Windhoek a lead example in sustainable development in Africa. And ensure that the mobility needs of current and future generations are satisfied.
Determinant of Supply Cont..

• At the most basic level government policy can be implemented through one of three general policy tools.
  
  – Firstly by **direct provision**, where the state takes on the full responsibility for providing transport services through public ownership of the means of production.
  
  – A second approach is where services may be provided by private sector companies however the state ‘steers’ the market to its desired objectives through the imposition of **taxes** and the provision of **state subsidies**.
  
  – The third and final general policy tool is through **regulatory/legislative measures**, where the state directly commands or prevents by law certain actions in order to achieve policy aims.

• All three forms of measures can impact directly upon the supply of transport services.

• A change to direct provision, i.e. nationalisation, may result in an increase in supply,

• Taxes and subsidies - the effects of these policy tools on supply are very similar to the impact of the costs of production,

• An increase in a tax on a good or service will decrease supply, as the cost of providing such services would rise. For
Determinant of Supply Cont..

3. The price of other goods and services that can be produced using the same factors of production

- Given that producers are assumed to profit maximise,
- then if the price of any good or service that could be produced using the same factors of production was to rise,
  - producers are likely to switch production to that particular market.
- This would cause a reduction in the level of supply at each and every price for the current good or service.
- Within transport markets opportunities for such changes are limited - a bus and a bus driver can only produce bus services.
- There may however be some movement between different transport market segments.
4. The price of goods in joint supply
   • the price of goods that are produced at the same time and best illustrated by an example from aviation.
   • The last twenty years or so have seen a massive increase in the level of air freight services.
   • The reason for this is due to the increase in passenger travel, as most air freight, around 60 per cent, goes via the cargo hold of passenger aircraft.
   • Hence rising passenger demand has been met by large increases in the supply of passenger planes, and with that increase has come more cargo holds within which freight can be carried.
   • Consequently, the increase in the available supply of passenger aircraft has automatically resulted in the increase of air freight capacity as these two products are goods in joint supply.
5. Natural shocks

• Natural shocks simply relate to natural events and disasters such as the weather, flood, drought, pests etc, or abnormal circumstances arising from war, fire, political events etc.

• The oil crisis in the mid-1970s, for example, when the price of oil quadrupled in the space of six months, was origin-ally sparked off by the Yom Kippur Israeli-Egyptian war that affected world supplies of crude oil.
6. Aims of the producer

- Highly relevant to the supply of transport services to the market are the aims of the producer.
- Although the underlying assumption is that profit maximisation drives producers’ market actions, this may be considered to be a long-term aim that may be pursued in the short term in a number of different ways.
- A switch in the emphasis of the aims of producers may result in a change in the level of supply to the market.
- If for example a bus operator decided that in order to maximise profits in the long run it needed to expand its market share in the present, this would almost certainly lead to an increase in supply at each and every price.
THE MARKET FOR TRANSPORT SERVICES

• Two different sides of the transport market, that of buyers (demand) and sellers (supply).

• These two concepts can be brought together in order to determine the market for transport services.

• As both the demand and supply curves use the same labelled axes, price and quantity, they can simply be drawn on the same graph
THE MARKET FOR TRANSPORT SERVICES

- Demand is shown by the line labelled D and supply by the line labelled S.
- These two lines intersect and this intersection produces a market price of Pe with the quantity traded shown by Qe.
- This is known as the equilibrium price and quantity, i.e. the point at which the market is in balance.
• This is the same diagram of the market as before, except in order to help focus thoughts a second price, \( P_{XS} \), has been added.

• This price is above the market clearing price of \( P_e \), and would result in an imbalance in the quantity supplied, shown by \( Q_S \), and the quantity demanded, shown by \( Q_D \).

• Such a situation would be known as excess supply, as the quantity supplied exceeds the quantity demanded

Excess supply in the Market
• In this case the second price that has been added to the graph, PXD, is set below the market clearing price and would result in the quantity demanded, QD, far exceeding the quantity supplied, QS.
• This would be known as excess demand, shown by QD - QS.
• In this case there exists a consumer demand that is not being met by producers.
• Again using bus services as an example, this would be most vividly illustrated by overcrowding on buses and long queues at bus stops.
• In order to meet this excess demand, some suppliers will increase the quantity being supplied.
the market for bus services in equilibrium at point a (demand = supply) with price $P_e$ and quantity traded $Q_e$.

Following an increase in rail fares, some rail consumers will change to a substitute service, in this case the bus.

This change in the conditions of demand for bus services is illustrated by a shift of the demand curve to the right from $D$ to $D_1$.

At the existing equilibrium price of $P_e$, therefore, there is now excess demand, as shown by $Q_{xd}$ minus $Q_e$.

This would result to the excess demand being eradicated through an increase in the price/fare by suppliers. This would cause a reduction in the quantity demanded, as shown by a movement along the new demand curve $D_1$ from point c towards point b.

The increased price however will also cause an increase in the quantity supplied, and hence a movement along the existing supply curve $S$ from point a towards point b.
Effect of an increase in the level of subsidy paid to bus operators on the market price and quantity traded of bus services.

• Prior to the increase in subsidy, the market is in equilibrium at point a with a market price Pe and quantity traded Qe.
• The increase in subsidy is shown by a shift in the supply curve to the right (this is akin to a reduction in costs), hence at price Pe there is now excess supply of Qxs minus Qe.
• This is the same situation as illustrated in the Figure above and would result in suppliers decreasing the price in order to fill the available capacity.
• The quantity supplied therefore would move along the new supply curve S1 from point c towards point b. As the price falls, the quantity demanded would increase, as shown by a movement along the existing demand curve D from point a towards point b. As before, the net outcome would be that the market would end up back in equilibrium at point b with a new price P1 and quantity Q1.