THE SMEED REPORT AND ROAD PRICING: THE CASE OF VALLETTA, MALTA

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ABSTRACT

In 1964 the Ministry of Transport in the UK published a seminal paper on Road Pricing, namely 'Road Pricing: The Economic and Technical Possibilities' which became known as the Smeed Report, named after the Chair of the Report. The Report detailed seventeen requirements for a road pricing system, which were seen as either important or desirable. These requirements are as relevant today as they were 46 years ago. The Smeed Report requirements can be used as a basis against which to assess schemes which have been implemented and those which have failed to advance beyond the drawing board. One scheme that has been successfully implemented recently is the Valletta road pricing scheme, the Controlled Vehicular Access system, in Malta. The aim of this paper is to compare the Valletta scheme against the Smeed requirements, with the intention of ascertaining whether there are any lessons that can be learnt which are of benefit to those, world-wide, considering the introduction of a road pricing scheme.

Keywords: Road User Charging, Smeed, Valletta, Malta

1.0 INTRODUCTION

Road pricing aimed at addressing the issue of congestion has a long history in the economic literature dating back to the work of Dupuit (1844), Pigou (1920) and Knight (1924). Interest in road pricing was stimulated in the UK by the publication of what became known as the Smeed Report for the Ministry of Transport (1964) titled 'Road pricing: The Economic and Technical Possibilities'. The report stated that:

> 'Charges would be in the nature of prices for using the roads, the prices varying from one place and time to another according to the costs – notably the congestion costs – involved in driving in a particular area at a particular time.'

It goes on to state, in the introduction to the report, that 'when a pricing system is used on the roads, a useful general rule upon which to base prices is that the road user should pay a sum equal to the costs he imposes upon others' (Ministry of Transport, 1964). An economic rationale for road pricing, while important does not necessarily result in public acceptance and there is also the issue of the operational requirements of a road pricing scheme.

A number of schemes exist worldwide, most notably in Central London and Singapore (Santos, 2005) and Stockholm (Eliasson, 2008). Other schemes have been considered but have failed to materialise in cities such as Edinburgh (Gaunt et al, 2006; Rye et al, 2008) and Cambridge (Ison et al, 2008). One scheme that was introduced without a great deal of publicity was the Controlled Vehicular Access system in Valletta, Malta. This road pricing scheme was introduced on 1st May 2007 replacing what was known as a V-licence, an annual charge over and above the annual road licence, required to enter the city.

The aim of this paper is to compare the Valletta scheme against the Smeed requirements, with the intention of ascertaining whether there are any lessons that can be learnt which are of benefit to those authorities, world-wide, considering the introduction of a road pricing scheme.

The following section outlines the basic economic underpinning of road pricing and section 3 details what the Smeed Report viewed as being the most important requirements for a workable road pricing scheme. Section 4 briefly describes the Maltese road pricing scheme and section 5 seeks to use the Smeed criteria as a means of analysing that road pricing scheme. Section 6 offers a number of conclusions.

2.0 THE ECONOMIC UNDERPINNING OF ROAD PRICING.

Simple economic theory, as put forward by Walters (1961) can be used to analyse the basic issues surrounding road pricing. In Figure 1 the horizontal axis measures the flow of traffic in terms of vehicles per hour along a particular road and the vertical axis relates to motorists generalised costs namely, the cost of fuel, wear and tear of the vehicle and the time taken to complete a particular journey. As the flow of traffic increases the marginal private cost (MPC) of motoring also increases, due to the additional time taken, with time having a monetary cost.

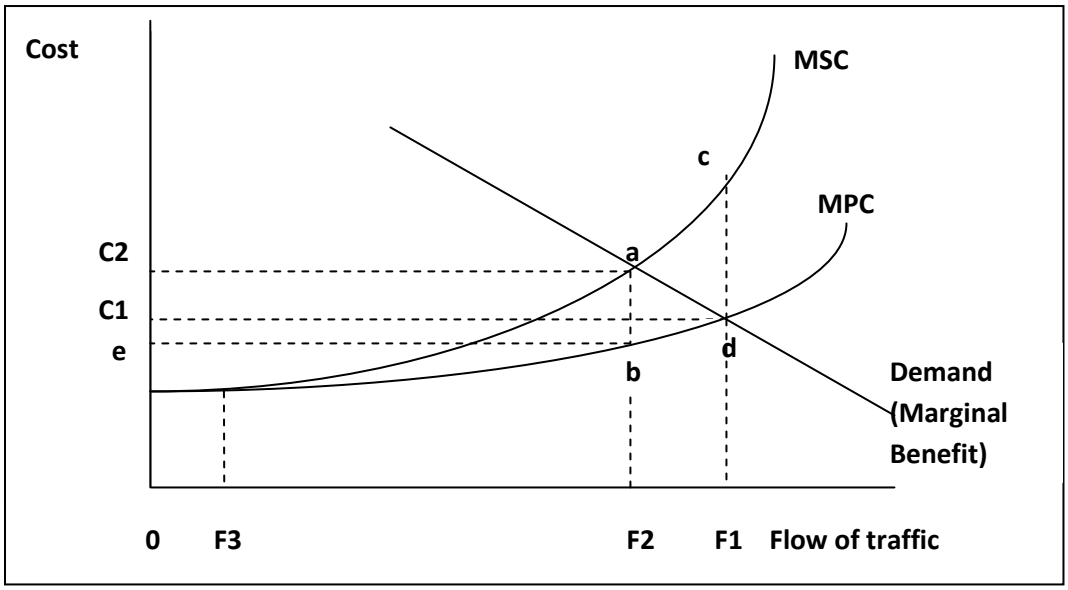

Figure 1. The basic economics of congestion and road pricing.

Assuming motorists behave rationally then they will equate MPC with the marginal benefits (MB), as measured by the demand curve. As such, there is equilibrium, at point d with a flow of traffic equal to F1 at a cost of C1 to motorists. At a flow of F1 motorists have not taken into account the congestion costs. Congestion costs are defined by Santos (2005) as 'the dead-weight loss of inefficient pricing of scarce road resources'. The marginal social cost (MSC) curve measures the MPC plus congestion and at a flow of traffic F1 congestion can be seen as cd in Figure 1.

In order to take account of congestion then the MSC curve should be equated to MB represented by point a in the Figure. In order to achieve this point, the flow of traffic should be reduced to F2 and this could be achieved by introducing a road user charge of ab. This

would increase the cost of motoring to C2 and remove the dead-weight welfare loss area represented by adc. The introduction of a road price as in Figure 1 would lead to an amount of revenue equivalent to C2abe. See Ison (2004) for a more detailed account of the economics underpinning road pricing.

While the economics of road pricing, as outlined above, is relatively simple the transfer of theory into practice is more problematic. Placing to one side the issue of public and therefore political acceptance (see Ison, 2000 and 2005 for a detailed account of these issues) the operational requirements are also worthy of discussion.

3.0 THE SMEED REQUIREMENTS OF A ROAD PRICING SCHEME

In 1962 the Smeed Panel was set up by the Ministry of Transport in the UK tasked with studying the technical feasibility of options for improving the price system in relation to the use of roads and the associated economic considerations. There was no requirement to consider either the social or the political aspects of such a measure, although as they point out, the technical, economic, social and political aspects are inextricably linked.

In the Forward to the Report it was stated that 'Economists have claimed that considerable net benefits could accrue to the nation if vehicle owners had to pay higher charges or taxes when they used congested roads than when they use uncongested ones'.

The Report was published in 1964 and among other things it set out a list of what it perceived to be the operational requirements of a road pricing system. The list as it said 'forms the basic specification for a road pricing system' and comprised of nine requirements regarded as being important (Ministry of Transport, 1964: p7). In addition, a further eight requirements were seen as being desirable. This list has been subsequently added to. The important requirements of a road pricing system were seen as follows (the list being taken verbatim from the Smeed Report (1964: p7):

- Charges should be closely related to the amount of use made of the roads.
- It should be possible to vary the prices to some extent for different roads (or areas), at different times of the day, week or year, and for different classes of vehicle.
- Prices should be stable and readily ascertainable by road users before they embark upon a journey.

- Payment in advance should be possible, although credit facilities may also be permissible under certain conditions.
- The incidence of the system upon individual road users should be accepted as fair.
- The method should be simple for road users to understand.
- Any equipment used should possess a high degree of reliability.
- It should be reasonably free from the possibility of fraud and evasion, both deliberate and unintentional.
- It should be capable of being applied, if necessary, to the whole country and to a vehicle population expected to rise to 30 million. In 1964 the number of private car licensed was 7.2 million, a figure that had increased to over 27 million in 2008 (Department for Transport, 2009).

Eight additional requirements were considered desirable, although not so important as listed below:

- Payment should be possible in small amounts and at fairly frequent intervals, say amounts not exceeding £5 and intervals not exceeding one month. This does not exclude payment in larger amounts where preferred.
- Drivers in high-cost areas should be made aware of the rate they are incurring.
- At the same time the attention of drivers should not be unduly diverted from their other responsibilities.
- The method should be applicable without difficulty to road users entering from abroad.
- Enforcement measures should impose as little extra work on the police force as possible and should therefore lie within the capacity of traffic wardens.
- It should be preferable if the method could also be used to charge for street parking.
- The method should, if possible, indicate the strength of demand for road space in different places so as to give guidance to the planning of new road improvements.
- The method should be amenable to gradual introduction commencing with an experimental phase.

Other criteria have been subsequently added including:

- The need for drivers' privacy.

- The ability of drivers to be able to check the balance on their account.
- The integration of technology such that the system should be integrated with other technologies (May, 1992 cited in Santos, 2005).

This paper will follow, what Smeed calls, the nine 'most important requirements' of a road pricing system plus three of the additional requirements, namely how any scheme deals with those entering from abroad, road user privacy and the integration of technology.

Before turning to the case of Valletta, Malta in terms of the Smeed criteria, it is worth exploring the nine important requirements, referring to the economics of road pricing were possible.

Requirement 1 adds a complexion to any authority considering the introduction of a road pricing scheme. Since rather than a set amount for entering a charging zone, as with the £8 charge for entering the London congestion zone between the hours of 7am and 6.30pm, the charge would need to vary, with Smeed suggesting, the most obvious way being in terms of time or distance travelled.

Requirement 2 also introduces an element of complexity since it states that the charge should be variable depending on different roads and the time of day, week or in fact year and thus accounting for the spatial and temporal differences in the occurrence of congestion. In terms of Figure 1 this would mean charging ab if demand was as seen and the flow of traffic was F1. This would remove the welfare loss area of acd. Demand is however 'derived' and as such if it were to reduce then, according the requirement 1, the charge should also reduce. In fact if demand was such that traffic flow was between 0 and F3, then there should be no charge, given that there is no divergence between MPC and MSC.

In terms of schemes that have been implemented or considered then the Cambridge congestion metering scheme that was trialled in the early 1990's generated a great deal of interest given the fact that a basic tenet of the scheme was that it aimed to charge for congestion whenever and wherever it appeared. The charge would vary based on a combination of speed and distance travelled indicating that the particular vehicle was in a congested situation. Congestion, for example, was seen to be a vehicle failing to travel half a kilometre in a three minute period (see Ison, 1996 for more details).

While it could be argued that the Cambridge congestion metering scheme had merit in terms of getting somewhat close to the economic ideal set out in Figure 1, it also contained certain weaknesses not least in terms of Smeed's requirement 3. This requirement said the price

should be stable and ascertainable before a journey is undertaken. With congestion metering, the charge would occur when congestion was being experienced and as such it would not be possible to ascertain the charge prior to undertaking the journey, it being an ex-post payment. As such, this creates a difficulty in terms of the compatibility between requirement 2 and 3. With other schemes prices are stable and readily ascertainable.

For the reasons detailed above and because of the level of sophistication associated with the scheme the authority abandoned the idea of introducing congestion metering in 1993.

In terms of requirement 4 and payment then schemes like the London congestion charging scheme have made it very easy to make payments in advance. Payment can be made by phone, the internet, at shops and petrol stations. There are 150 pay-points at retail locations, 100 machines in car parks, over 100 BT internet kiosks within the zone and more than 1,500 retail locations.

The issue of fairness, and requirement 5, is one of the difficult issues when considering road pricing. The introduction of any road pricing scheme could be considered as unfair since relatively poor road users are asked to pay the same road price as relatively rich road users. It may be possible to deal with the issue of fairness through the use of exemptions. Equally, the use of revenue from road pricing can be put forward as a means of addressing the situation. In terms of Figure 1, the revenue can be identified as C2abe and this needs to be carefully utilised not least since there are primarily two groups affected by the introduction of a charge, namely the motorist who continues to use their vehicle after the charge is introduced, and therefore have to pay the road price, and those who are priced off the road.

The UK government was aware of this when considering the legislation surrounding road pricing. In the Department for Transport consultation paper ‘Breaking the Logjam’ it stated that ‘local authorities which bring forward pilot road user charging schemes should be able to retain 100% of the net revenue generated for at least ten years from the implementation of a scheme – provided that there are worthwhile transport-related projects to be funded’ (Department of the Environment, Transport and the Regions, 1998).

Relating to requirement 6 and simplicity, Trevik (2003) suggests that when implementing a road pricing scheme, then starting with a crude system is most likely to succeed. This can be refined and developed in time. The ROCOL study (2000) in the UK suggested that any Mayor considering implementation of a road pricing scheme ‘brought forward for early implementation would have to use less advanced technology and proven systems, with an

eye to compatibility with eventual development into a more sophisticated electronic scheme (House of Commons Transport Committee, 2003), keeping it simple for road users to understand. There is another dimension in terms of keeping it simple, namely as stated by Rom (1994) 'Citizens are understandably sceptical of complicated governmental programs. Congestion pricing programs that do not rely on complex strategies of implementation will be more politically attractive than those that do'. Borins (1988) follows a similar line when he argues that the experience from the Hong Kong experiment reveals that a sophisticated road pricing scheme 'may be difficult, perhaps even impossible, to introduce in a democratic urban polity'.

Requirement 7 relates to reliability. Reliability is important not least in terms of the need to 'sell' any road pricing scheme to the public. This may mean simply getting the scheme in place, in the first instance, with no attempt to change driver behaviour. According to Santos (2005) the automatic number plate recognition software used by the London scheme has a 90% accuracy.

A scheme that is free from fraud and evasion was given as the 8th requirement. With the implementation of any road pricing scheme there is a real need to avoid fraud or evasion, since both would bring the scheme into disrepute. In terms of the London Congestion Charging then a scheme involving the registration of vehicle licence plates on a data base is open to potential fraud and evasion. This requires a system of penalty charge notices.

A national scheme requires a particular type of technology and certainly not the type of scheme in operation in London. Ochieng et al (2010) provide a detailed account of current feasible technologies in this area.

One scheme that has been successfully implemented recently however, is the Valletta road pricing scheme in Malta. The following section provides a brief background to the scheme before a comparison between the scheme and the Smeed requirements is undertaken.

4.0 BRIEF BACKGROUND TO THE VALLETTA ROAD PRICING SCHEME

Malta is an island state, and in fact one of the smallest nations in the European Union. It includes the islands of Malta, Gozo and Comino and comprises a total land area of 316 km2 with a population of 410,290, one of the highest population densities of all Member States (National Statistics Office, 2010a). It has 297,776 licensed vehicles on the road of which

76.3% are private vehicles and it has one of the highest rates of motorization in Europe (National Statistics Office, 2010b). In addition, it has some 2,227 km of road infrastructure. With increased private car use, the limited road infrastructure and the realisation that supply could not keep pace with demand congestion was increasingly becoming a problem. This was particularly acute in the historic city of Valletta, the capital and Central Business District. It is a city with a day-time population of 50,000, a figure that reduces to 7,000 out of working hours.

Figure 2 provides a map of Valletta and its suburb Floriana, which as can be seen are located on a peninsula, sitting between two natural harbours. Access is limited, and around 35,000 vehicles pass through Floriana on a daily basis. The problem of congestion within the fortified city of Valletta has been recognised for a number of years, so much so that the Government introduced what became known as the V-licence in the 1960's providing access for vehicle owners into Valletta, initially for an annual payment of €23, increased to €46 in the mid 1990's. Over time this measure became a means of generating revenue rather than a means to manage demand for road space.

In response to this on 1st May 2007 Valletta introduced a road pricing scheme. The issues surrounding implementation have been documented elsewhere, and as such will not be detailed in this paper. There is however a need to provide background information on the Valletta road pricing scheme. Based on Attard and Ison (2010) the road pricing scheme, or Controlled Vehicular Access (CVA) system as it is called is based on the principle of timed access. Hourly charges are applied after the first 30 minutes (with a maximum capping per day of approximately €6) within the zone. Cameras monitor vehicles entering and exiting the zone and a charge is calculated. The objective of the scheme is to reduce commuter traffic and its resulting peak hour congestion, and to re-distribute traffic to shorter trips throughout the day. The scheme uses similar technology to that of the London scheme with, colour and monochrome cameras, data communication infrastructure, automatic number plate reading technology, a data centre, a billing and payment gateway, a bill notification system, and enforcement. As in London, the data captured through the system is utilised so as to identify vehicles accessing the charging zone, and necessary charges are computed based on established rates, taking account of the exemptions as allowed by the Transport Authority. A direct link to the national vehicle registration database allows for vehicle ownership to be verified. While the scheme was expected to be self-financing and one that would generate additional revenue, the current charges, as they stand do not generate much surplus revenue. Between the period May 2007 and August 2009 the system had charged a total of

€2,125,826, nearly a million a year (Times of Malta, 2009). This does not compare well with the revenues generated by the previous V-licence which amounted to €1.4million in 2004 (Attard and Ison, 2010). In a recent public speech the Transport Minister was quoted saying that "the CVA isn't working properly – I think it's too cheap" (Schembri, 2010). This shows the Government's intentions to increase the charges to make the system more efficient in deterring people to travel to Valletta by car.

Figure 2. The location of Valletta and Floriana. Drawn by author.

5.0 THE SMEED REQUIREMENTS AND THE VALLETTA ROAD PRICING

Having outlined the Valletta road pricing scheme (CVA) this section aims to compare the scheme with the Smeed requirements. A comparison of the nine requirements and the Valletta scheme can be seen in Table 1.

Table 1. The Smeed requirements and Valletta road pricing.

Smeed Requirements	**Valletta Road Pricing Scheme**
Charges should be closely related the amount of use made of the roads	Although the charge is not directly related to the use of the road, the charge is however time-based in that the first half an hour is free, the second half hour is €0.82 and each hour following is charged €0.82. There is a maximum charge of €6.52.
It should be possible to vary prices to some extent for different roads, at different times of day, week or year, and for different classes of vehicle	Prices vary according to the time spent in the zone, time of day (charging times during weekdays are between 0800-1800 and on Saturday between 0800-1300), different days of the year (public holidays and Sundays are free), and exemptions allow for different classes of vehicles to be charged accordingly.
Prices should be stable and readily ascertainable by road users before they embark upon a journey.	Prices are available online and are fixed to particular times of day ensuring drivers are aware of the charge prior to undertaking the journey.
Payment in advance should be possible.	System allows for pre-payment (with a 10% discount to encourage automatic debit), and a number of methods for payment.
The incidence of the system upon individual road users should be accepted as fair	A range of exemptions aimed at ensuring fairness, these include exemptions based on residency, support for the commercial community, emergency, senior citizens relatives, motorcycles, and electric vehicles. In addition residency is determined through the amount of hours a vehicle spends during night time (0200-0500). So residency is attached to the vehicle not to the person.
The method should be simple for road users to understand	Negative feedback was not registered upon the implementation. The advertising, the straightforward billing system (including automatic access to photographs and customised bills), customer care and the payment methods all made the system simple for road users to understand.
Any equipment used should possess a high degree of reliability.	The Contract between Government and Operator requires a 98% reliability rate from the Operator.
It should be reasonably free from the possibility of fraud and evasion	There is no evidence of fraud or evasion recorded by the system.
It should be capable of being applied, if necessary, to the whole country	Technology is flexible enough to be implemented countrywide, particularly with the decreasing prices and size of camera technology. In Valletta the system was already planned to be extended further.

Taking each of the requirements in turn:

Use made of the road

The Smeed Report (Ministry of Transport, 1964) clearly indicated the need for a charge which reflected road usage. Whilst in many systems around the world this does not happen

(the case of London's Congestion Charging is one example), Valletta's CVA system charges according to time spent inside the zone. Although not necessarily driving on the roads, the system records the time a car spends on the road within the zone and charges accordingly. If a vehicle is registered to be utilizing private space within the zone, such as a private garage then the car is exempt from payment as it is seen not to utilize public road space (at least whilst standing).

Variation in price both spatial and temporal

This criterion is partly met in the case of the Valletta CVA system. There is no variation in cost wherever you are in the charging zone since it would have not been feasible to differentiate according to place. The reason for this is that the CVA zone is an area of less than 0.8km2, as shown in Figure 3. There are however variations in the costs associated with various types of vehicles and time of entry.

The charge is applicable between 0800-1800 on weekdays and Saturdays between 0800 and 1300 whilst Sundays and Public Holidays are free. The first 30 minutes are free and users are charged €0.82 per hour up to a maximum of €6.52 per day. These charges apply to usage by non-registered (exempt) users. Table 2 displays the exemptions and discounts available to various types of users and vehicles.

Even though not perfectly in line with the interpretation of the Smeed Report the CVA system allows for price variations in the case of vehicle type and its use and time (related to exemptions from payment). Most of the above exemptions, such as the exemptions on construction vehicles, doctors, deliveries and so on are aimed to remove the burden of the CVA system on both residents and businesses that would be at a disadvantage when compared to other commercial centres in the island, in that they would have to incur higher costs of living and operation.

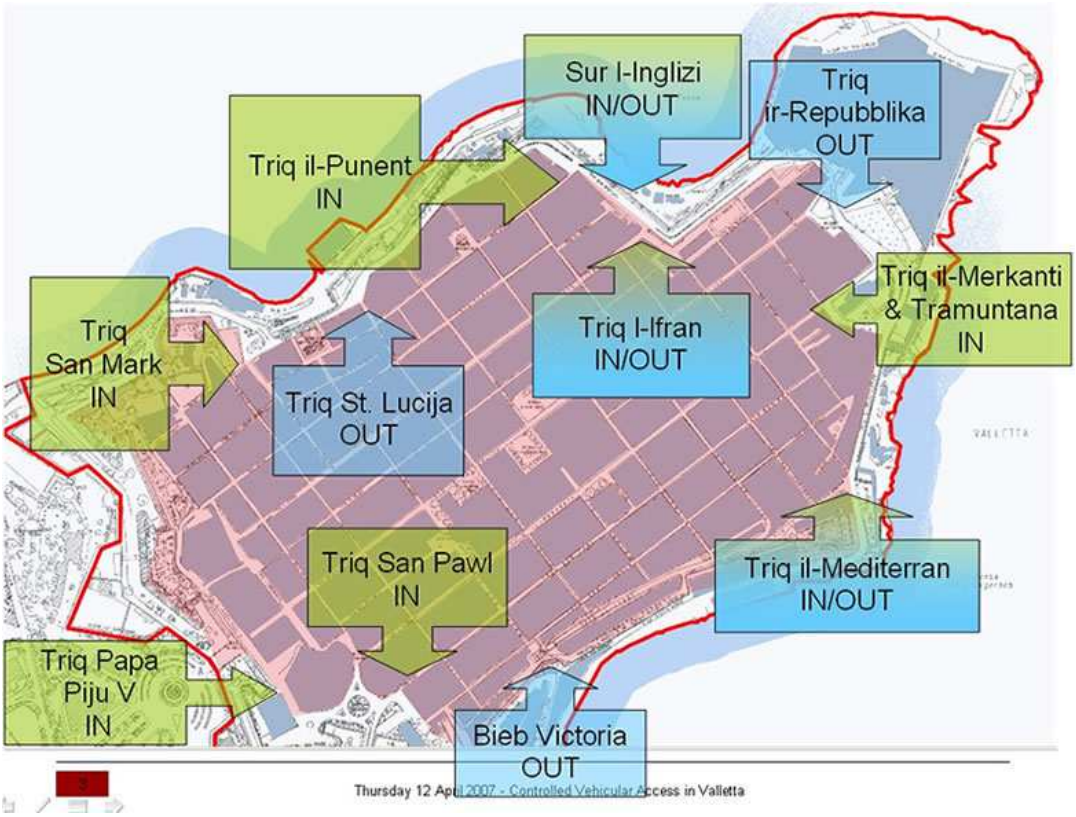

Figure 3. The Controlled Vehicular Access Zone and the location of cameras. Source: http://www.cva.gov.mt/en/CVA_boundary_map.html (last accessed 21 February 2013)

Table 2. Exemptions and discounts in the CVA System. Adapted from http://www.cva.gov.mt/en/exemption_procedures.asp (accessed 21 February 2010).

Type of User/Vehicle	**Description of Exemption**
Resident's vehicles.	Fully exempt however vehicle needs to satisfy a minimum criterion of being in the zone for a specified number of nights, between 0200 and 0500, every month.
Non-resident vehicle with access to private garage/parking space.	Exempt upon payment of an annual fee of €46.50.
Service vehicles for works (mostly related to construction vehicles).	Exempt during the period of works.
Service vehicles for deliveries.	Exempt during non-charging hours and between 1300 and 1600 during weekdays.
Vehicles owned and used by disabled persons working in Valletta.	Provided with an annual credit of €46.50 to be utilized to access Valletta. Above this credit normal charges apply.
Vehicles owned by relatives of residents over the age of 61.	First generation descendant are fully exempt. Where these do not exist up to two vehicles of other relatives will be exempt from the charges upon payment of an annual charge of €46.50.

Vehicles owned and used by the Valletta market hawkers.	Exempt during market hours and 90 minutes before and after opening and closing times.
Vehicles used by service providers such as in the electricity, drainage, water, and communications sectors.	Exempt from the charges upon payment of an annual charge of €46.50 for each vehicle entering the zone.
Vehicles used by medical practitioners in Valletta.	Exempt from charges upon payment of an annual charge of €46.50.
Vehicles used by the Police, emergency services and army.	Exempt from charges.

Prices should be stable and readily ascertainable

In the case of the Valletta CVA system, the information related to the charges and the charging zone are easily available and clearly understood. Bills are issued every month unless a threshold amount is not reached, in which case a bill is issued only after three months. Payment is to be effected within a month. In its three years of operation the CVA system has only reported one incident when the public accused it of lack of information.

When the first penalties for late payment were published in 2007, the general public was not made aware of the fees. In some instances the penalty was higher than the actual cost of the bill itself. The penalty charges for late payment, even though available on the website and in small print on each bill were not publicised enough to deter people from paying late. In the end the Government agreed to refund some late payments (Busuttil, 2007).

Payment in advance

The Smeed Report (Ministry of Transport, 1964) suggested that advance payment and credit facilities should be available. The CVA system allows for both. The payment terms and penalties are described in Table 3.

Fairness of the system

The concern over equity and fairness as perceived in the Smeed Report and as reported by Santos (2005) revolve around the payments made by the individual motorist and his/her ability to pay. The usage of road space and therefore the impact of that vehicle on the road and its environment are the same, whether coming from a relatively rich or poor motorist. The CVA system does not even identify the user but rather focuses on the vehicle itself with the system monitoring the vehicle usage trends over time (particularly in the establishment of residency).

Table 3. Payment and penalties for the CVA system. Adapted from http://www.cva.gov.mt/en/access_tariffs_and_penalties.asp (accessed 21 February 2010).

Description	**Payment / Penalty**
Payment before invoice (credit) and automatic debit	10% discount
Payment at invoice	1 (full rate)
Payment after 1 month after the invoice	2% of invoice or €5.82 (Lm2.50), whichever is the higher
Payment after 2 months after the invoice	Further increase of 2%
Payment after 3 months after the invoice	100% (amount due doubles)

In making the road pricing scheme fair many recognise the use of revenues as detailed above, as a possible means of making the system fair (see Jones, 1998), however the Government of Malta did not commit the revenues of the CVA system to particular projects. This move was a strategic one, in that the Government did not want to over-publicize the revenue generation aspect of the system and therefore be accused of implementing yet another tax. This is contrary to the approach adopted in London where the revenues were earmarked for public transport.

On the other hand, the design of the CVA system could allow for the possibility of introducing the Smeed understanding of fairness by differentiating between vehicle models, their engine size and fuel type. This could be achieved since the system is linked to the national vehicle registration database which holds all the information about the Maltese vehicle fleet (Mamo and Dalli, 2009). If the system had to evolve in this manner then pricing would not only be based on the relatively rich or poor car owners but also on their contribution to environmental pollution. This functionality could be the next evolutionary step for the CVA system.

Simple to understand

Although the scheme is a relatively simple one, with all the information clearly described on a dedicated website, developed by the Operator (www.cva.gov.mt), there were and are still some drivers that are not aware of the details of operation, particularly with reference to charging hours, the specific charge, payment methods and exemptions.

CVA Technology Ltd, the system operator handled 12,121 calls at its customer service centre between May and December 2009 compared to the same period in its first year of operation (2007) where 13,208 calls were received at its offices (Gatt, 2010).

It is very difficult to gauge how simple the system is based only on the information available, as this would suggest that the operational information is clearly defined and therefore simple to use. However in real terms there are still many that do not have the full picture.

Reliability

In its call for tenders issued in 2005 the Maltese Government stipulated that margins of error of more than 5% related to the identification of vehicles entering and leaving the Charging Zone shall not be acceptable (Government of Malta, 2005). This provided guidelines for interested operators to ensure their systems were reliable. Today the CVA system operates at 96 - 98.5% accuracy (Sacco, 2009). This includes the reading of the cameras and the manual checks carried out by the operators reviewing the data captured.

Free from the possibility of fraud and evasion

Given that the system is operated using cameras, enforcement is carried out instantly with offenders (or late payments) being fined according to the published penalties. In the case of other offenders not registering a valid registration number or repeated abuse, the cases are forwarded to the Police. On the other hand the system also supports police investigations when vehicles are stolen or involved in crime. The number of contestations has consistently reduced following the first year of operation. Figure 4 shows the percentage decline.

Capable of being applied nationally

The CVA system is designed in a manner that is expandable to other areas or the whole island if necessary. The 2005 call for tender required interested parties to submit annual prices for the Valletta scheme, a lump sum for the expansion of the system to include Floriana and the cost of additional camera locations. The intention of the Government was evidently that of expanding the system in the future.

Dealing with those entering from abroad

In the case of Malta it is much harder to manage foreign number plates as details of those number plates might not have been included in the national vehicle registration database. Unless registered in the system foreign number plates are read by the system but are currently not charged.

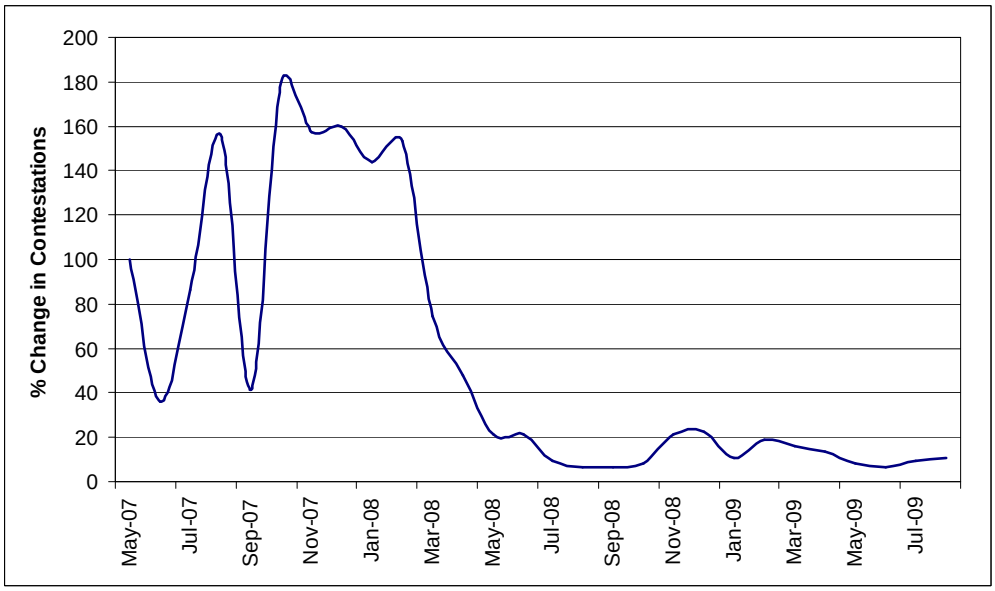

Figure 4. Percentage Change in the Number of Contestations between the period May 2007 and August 2009. Source: Gatt, 2010.

As an island however Malta has a relatively low percentage of foreign number plates and therefore the overall impact is minimal. In addition vehicles with a foreign number plate can only remain in circulation for a very limited time period (15 days) before compulsory registration is done and the vehicle is issued with a local number plate (and therefore registered in the database). It is only in the case of foreigners on holiday where foreign number plates can be retained for a maximum period of seven months (Government of Malta, 2009a; 2009b). Given the geography of the island and the limited access to the European mainland such occurrences are limited.

Road user privacy

With the exception of some references on local newspapers to the protection of individual's privacy, the CVA system was never officially investigated by the Data Protection Commissioner to be in violation of driver or individual privacy. The call for tender stipulated very clearly that the Operations had to comply with Data Protection Regulations. The system currently holds images for nine months after payment in order to process and verify payment particularly by credit card (MaltaToday, 2010) and images are only available to individuals upon online registration for the purpose of validating bills.

Any access to personal data is prohibited unless the Contracting Authority (i.e. Government) gives permission. This is generally the case when the Police require information related to criminal investigations.

Integration of Technology

The CVA system is designed to manage and bill entries into and out of the charging zone. The billing relies on paper or electronic bills issued and sent to individuals on a monthly basis. Online payments, SMS and web notification are all integrated into the current system however the Contract does not foresee any further development within this Contract period (until 2017).

6.0 LESSONS FOR OTHERS CONSIDERING THE IMPLEMENTATION OF A ROAD PRICING SYSTEM

Following the Smeed Report requirements and the subsequent implementation of the Valletta road pricing system there are a number of lessons which would appear to be of relevance to those authorities considering the implementation of a scheme. Essentially:

- The system should be easy to understand.
- The system should be transparent, providing users with all the information they need prior to their journeys.
- The system should be reliable and credible and as such minimizing fraud and evasion.
- The system should be flexible however this should not preclude a user friendly interface.
- The system could be extended, if and when required.
- The system should be adaptable to the changing needs of the authorities and type of controls or restrictions to be placed.
- The system should be fair. The exemptions method, although cumbersome on the system itself due to the various permutations, should be used to incorporate fairness and equity as much as possible without affecting the basic principles of road pricing.
- As seen in the case of Valletta, the system should not be intrusive both on the individual (in terms of privacy) and the environment, particularly in sensitive, historic areas.

These requirements would certainly match those of other schemes implemented elsewhere. It is also evident that despite the geographic differences of the various places where road pricing has been implemented their success is based on achieving a system that is fair and easy to understand and operate.

7.0 CONCLUSIONS

The Smeed requirements would appear to be as valid today as they were in 1964. In the case of Valletta a few requirements are not fully satisfied but these are areas which future schemes would need to consider, including the developments of the Valletta system itself.

Even though Valletta did not predicate its system on the Smeed Report, there is a surprising similarity in the way the system was implemented and how the various Smeed requirements have been incorporated. This similarity supports the validity and importance of these requirements for road pricing to be successfully implemented. And even though road pricing schemes are not common, and geographically very distinct there are important lessons to be learnt and important considerations to be made when contemplating road pricing schemes.

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