The Impact of a Reduced Rate of VAT on Restaurants

Economic Policy Division
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1. Scope of this Report

The communication on VAT rates other than standard VAT rates which the Commission presented to the European Parliament and the Council in 2007 concluded that the application of reduced VAT rates to locally supplied services poses no real detriment to the smooth functioning of the internal market and may, under certain conditions, have positive effects in terms of job creation and of combating the informal economy. It is therefore appropriate to allow Member States the possibility of applying reduced VAT rates to the labour-intensive services covered by the temporary provisions applicable until the end of 2010 as well as to restaurant and catering services.

With respect to the supply of alcoholic and/or non-alcoholic beverages in the framework of restaurant and catering services, it may be justified to provide a different treatment of those beverages from the treatment provided for in the framework of the supply of foodstuffs; it is appropriate to provide explicitly that a Member State may include or exclude the supply of alcoholic and/or non-alcoholic beverages when applying a reduced rate to the supply of restaurant and catering services.

On 5 May 2009, the Council of Finance Ministers officially adopted an amendment to the VAT Directive 2006/112/EC. This amendment is giving to all Member States the option to apply a reduced VAT rate for restaurant services, including all types of beverages. The new rules (Directive 2009/47/EC) were published in the Official Journal of the EU on 9th May, and entered into force on 1st June 2009. The first country to make use of this option was France, where the VAT rate for restaurant services was reduced from 19.6 per cent to 5.5 per cent as from 1 July 2009. The reduced rate is, however, not applying to alcoholic beverages. According to Ministry of Finance statements, in France, by September 2009 around 40 per cent of restaurants surveyed had reduced their prices, although not to the full extent of the VAT reduction. So far, Belgium and the Czech Republic have expressed interest in the possibility of reducing VAT on restaurants.

The VAT rate situation at EU level for the hospitality industry is as follows:

- 1 standard rate at no less than 15%;
- 1 or 2 reduced rates at no less than 5%;
- Option for all Member States to apply the standard or a reduced rate to accommodation services; and
- Option for all Member States to apply the standard or a reduced rate to restaurant services, including all types of beverages.

The aim of this report is to analyse the impact of a possible reduction in the VAT rate on restaurants on the Maltese economy in general, the tourism industry and the effect on various industries linked to tourism demand as well as the effect on public finances. The terms of reference for this report are included in Annex 1.

1.1 International Experience

It is worth noting that in the EU, eight Member States already charge a rate of VAT on restaurants below 15 per cent. Included are the majority of Malta's main competitors in tourism which already charge a rate of VAT below 15 per cent. These include Cyprus (8 per cent), Greece (9 per cent) and Spain (9 per cent). However, there are a number of other southern European countries which either charge two separate rates or charge the full rate. These include Portugal (12 per cent/ 21 per cent), Slovenia (8.5 per cent/ 20 per cent), Italy (10 per cent) and Turkey (18 per cent).

Table 1.1: VAT rates in 2008 in European Countries

	Rates				Hotels	Restaurant services				Bar & café services			Food and beverages bought in a shop		
	Standard	Reduced	Super reduced	Parking		Restaurant	Take away	Delivery at home	Alcoholic beverages	Bars & cafés	Night clubs	Alcoholic beverages	Food	Non-alcoholic beverages	Alcoholic beverages
Austria	20	10	-	12	10	10*	10*	10*	20	10*	10*	20	10	20	20**
Belgium	21	6	-	12	6	21	6	6	21	21	21	21	6 • 12 • 21	21	21
Bulgaria	20	7	-	-	7* • 20	20	20	20	20	20	20	20	20	20	20
Cyprus	15	5 • 8	-	-	8	8*	8*	15	15	8	15	15	0 • 5 • 15 luxe	15	15
Czech Republic	19	9	-	-	9	19*	9	19	19	19	19	19	9 • 19	9	19
Denmark	25	-	-	-	25	25	25	25	25	25	25	25	25	25	25
Estonia	18	5	-	-	5*	18	18	18	18	18	18	18	18	18	18
Finland	22	8 • 17	-	-	8	22	17	17	22	22	22	22	17	17	22
France*	19,6	5,5	2,1	-	5,5	19,6	5,5	5,5	19,6	19,6	19,6	19,6	5,5	5,5	19,6
Germany	19	7	-	-	19	19	7	7 • 19*	19	19	19	19	7	19	19
Greece*	19	9	4,5	-	9	9	9	9	19	9	19	19	9	9	19
Hungary	20	5	-	-	20	20	20	20	20	20	20	20	20	20	20
Ireland	21	13,5	4,4	13,5	13,5	13,5	13,5	13,5	21	13,5	21	21	0 • 13,5 • 21	21	21
Italy	20	10	4	-	10	10	10	10	10	10	20	10	4 • 10	4 • 20	20
Latvia	18	5	-	-	5*	18	18	18	18	18	18	18	18	18	18
Lithuania	18	5 • 9	-	-	5*	18	18	18	18	18	18	18	18	18	18
Luxembourg	15	6	3	12	3	3	3	3	3	3	3	3	3	3	12 • 15
Malta	18	5	-	-	5	18*	18	18	18	18	18	18	0	18	18
Netherlands	19	6	-	-	6	6	6	6	19	6	6	19	6	6	19
Poland	22	7	3	-	7	7	7	7	22	22	22	22	7	22	22
Portugal	21	5 • 12	-	-	5	12	12 • 21*	12	12	12	12	12	5 • 12 • 21	5 • 12	12 • 21
Romania	19	9	-	-	9*	19	19	19	19	19	19	19	19	19	19
Slovakia	19	-	-	-	19	19	19	19	19	19	19	19	19	19	19
Slovenia	20	8,5	-	-	8,5	8,5 • 20*	8,5 • 20*	8,5 • 20*	20	20	20	20	8,5	8,5	20
Spain	16	7	4	-	7	7	7	7	7	7	7	7	4 • 7	7	16
Sweden	25	6 • 12	-	-	12	25	12	12	25	25	25	25	12	12	25
United Kingdom	17,5	5	-	-	17,5*	17,5	17,5 • 0**	17,5	17,5	17,5	17,5	17,5	0***	17,5	17,5
Norway	25	8 • 14	-	-	8	25	14	14	25	25	25	25	14	14	25
Switzerland	7,6	2,4	-	-	3,6*	7,6	2,4**	2,4***	7,6	7,6	7,6	7,6	2,4	2,4	7,6
Iceland	24,5	7	-	-	7	7	7	7	24,5	7	7	24,5	7	7	24,5
Macedonia	18	5	-	-	18	18	18	18	18	18	18	18	18	18	18
Turkey	18	8	-	-	8	18	18	18	18	18	18	18	18	18	18

Note: In Malta 5% for pre-booked bed and breakfast, half or full-board stays in hotels when making use of the hotel's restaurant services.

Source: HOTREC

1.2 The VAT Rate on Restaurants in Malta

Effectively, Malta also charges a reduced rate of VAT on a proportion of expenditure in restaurants. In Malta, accommodation services are already charged at the reduced rate of 5 per cent where accommodation includes “bed and breakfast”, “half board” or “full board”, as the case may be, which is included in the price of such accommodation. According to the data of the VAT department around 44 per cent of the tax base related to expenditure in restaurants (excluding catering) is already being charged at the reduced rate of 5 per cent. This means that in effect, the effective (average) tax rate applicable on the whole sector is around 12 per cent. Therefore, at a macroeconomic level, we are effectively analysing the impact of reducing the VAT rate from 12 per cent to 5 per cent.

Clearly, the impact of this policy or the impact of the failure to reduce the VAT rate will depend on what Malta’s main competitors will do. In particular, since most of Malta’s direct competitors in tourism already charge a reduced rate, a further erosion in competitiveness is less likely if Malta does not reduce its VAT rate. This also means that if Malta reduces its VAT rate, it will gain competitiveness. Nevertheless the possibility that Malta’s competitors reduce their VAT rates further should be monitored closely by Malta since it may affect Malta’s relative competitiveness.

2. Country Studies on Factors affecting Tourism Demand

Although the proposal to reduce VAT on restaurants will affect both tourism expenditure as well as Maltese expenditure in restaurants, a significant proportion of the positive impact is likely to arise from tourism. It was therefore deemed important to emphasise the positive role of tourism in the economy and how the policy under consideration could affect tourism. In particular this depends on the responsiveness of tourism earnings to the price charged tourists in restaurants in Malta during their visit. In this context a literature review of studies on tourism demand was considered essential.

The literature indicates that tourists are sensitive to several economic variables. Income in the origin country is a primary explanatory variable. A priori, according to demand theory, positive income elasticity indicates that a commodity is normal, while a negative value indicates that it is an inferior good. Income elasticity greater than unity characterizes luxury goods where budget shares increase with increases in income, while necessities, having elasticity values between zero and less than one, experience falls in their budget shares with increases in income.

Additionally, besides being sensitive to their own income, tourists are also sensitive to prices. Tourism demand often depends on two price elements: the cost of travel to the destination and the cost of living in the tourist destination. Unlike many other imports, tourism services are bought at the point of supply (destination). Consequently, transport costs form a large proportion of the expenditure associated with this consumption. Destination choice and the quantity of what is demanded (consumed) are influenced by the cost of transport as well as the cost of such services.

Secondly, many international tourists include multiple destinations in their itinerary. This has important implications for the level of demand for a given destination. For example, higher than expected prices in one destination may result in the consumption of fewer tourism services with compensating or offsetting amounts being consumed in another destination. Alternatively, tourists may avoid visiting a high cost destination altogether. Moreover, additional variables that were used occasionally are weather indices, trade flows between countries, and special events.

2.1 Malta

An internal estimate of tourism demand for Malta using annual data points to a long run income elasticity of 1.58 and an own-price elasticity of -1.34. In the short run the income elasticity is estimated at 0.15 and the price elasticity is -1.09. A similar exercise using quarterly data from 1996, allowing for seasonal factors, suggests a long term income elasticity of 0.63 and a price elasticity of -1.13. In a structural econometric model of the Maltese economy developed by Cordina (1996), the short-run price elasticity of demand is measured at -1.2 and the long run price elasticity of demand is measured at -1.9. Substituting the long run equation for bed capacity into the long run equation for tourism earnings yields an income elasticity of 0.3.

Another study Mangion, Durbarry and Sinclair (2004) which examines UK tourism expenditure at the level of budgeting wherein consumers allocate their expenditure between the three Mediterranean destinations, Malta, Spain and Cyprus through the

AIDS model, indicates that Malta appears to be the most price sensitive destination for the UK outbound market, with an own-price elasticity of -2.54 per cent. This is followed by Cyprus whose price elasticity is -2.27 per cent; while at -1.54 per cent Spain is less price sensitive than the two islands. UK tourism demand for Malta is strongly influenced by prices in Spain, the resulting cross-price elasticity being 4.12 per cent.

Additionally Spain and Cyprus' income elasticities are estimated at around 1 per cent with Cyprus being slightly more affected by changes in income in the UK market. The respective elasticity values are 1.18 per cent for Cyprus, 1.09 per cent for Spain and -0.74 per cent for Malta. The negative sign on Malta's income elasticity implies that Malta may be considered by the UK market as inferior since as income increases, tourism demand for Malta declines. However, this result is not confirmed by the other studies.

Table 2.1 Elasticity Estimates of Tourism Demand

Study	Income Elasticity		Price Elasticity		Coefficient of Adjustment
	Long run	Short run	Long run	Short run	
EPD (2003)	1.58	0.15	-1.34	-1.09	-0.43
EPD (2009)	0.63		-1.13		
Cordina (1996)	0.3		-1.9	-1.2	-0.63
Mangion et al. (2004) study on UK tourism expenditure on:					
Malta	-0.74		-2.54		
Spain	1.09		-1.54		
Cyprus	1.18		-2.27		
Aslan et al. (2009) study					
Turkish Study	0.060	0.040	-0.320	-0.230	0.720
Munoz (2004) study on:					
Canary Islands	2.900	1.200	-1.900	-0.700	0.400
Munoz et al. (2006) study on:					
Balearic Islands	2.020	0.920	-1.650	-0.760	0.500
Cyprus Economics Research Centre (2008)					
Direct flight	1.0/3.2		-0.77/-0.65		
Indirect flight			-0.24/-0.19		
Croatia	3.300	5.000			
Durbarry (2002) study on France's long-run outbound tourism demand in:					
UK	1.016		-1.706		
Spain	1.001		-1.778		
Italy	0.989		-1.857		
Garin-Munoz et al. (1998) study on tourism flows to Spain					
Dynamic model	2.070	0.900	-0.240	-0.100	

2.2 Spain

A study by Garin-Munoz and Perez Amaral (1998) models the foreign demand for tourist services in Spain. The results of this study show that income, price and exchange rate were significant in the determination of international tourist flows to Spain. Income appears to be the single most important determinant of international tourism demand. The estimated income elasticity is 1.41. This value above unity confirms the hypothesis that foreign travel demand to Spain is a luxury. The estimated price elasticity is -0.30. This suggests that this demand is price inelastic. To explore the possibility that prices have not only an instantaneous effect but also that past prices affect current tourist flows, the authors have estimated the same model adding lagged price as a regressor, which turned out to be insignificant, suggesting that the impact of prices is confined to the current period. The estimated exchange rate elasticity is 0.50 and statistically significant. The positive sign means that a depreciation of the exchange rate will increase the international tourist flows to Spain.

Moreover, a dynamic version of the former model with a lagged dependent variable was also estimated. In this model the lagged dependent variable is significant with a coefficient of 0.56 and a t-statistic of 2.40, suggesting the possible existence of dynamics. The rest of the coefficients lose some significance and according to the authors should be interpreted as short-run elasticities. The long-run elasticities, more comparable to those of the static model were 2.07 for the income elasticity, 0.57 for the exchange rate elasticity, -0.24 for the price elasticity and -0.21 for the dummy variable for the Gulf War. The point estimates of the coefficients are not too different from those of the static model, which could be taken as an indication of the robustness of the estimates of the static model.

2.3 Cyprus

A study by the Economics Research Centre of the University of Cyprus (2008) was commissioned in order to analyze the determinants of tourism demand in Cyprus. In order to estimate the demand for tourism in Cyprus, the explanatory variables used were grouped into the price variables and three additional groups: variables that describe the origin-destination relationship, variables that are destination specific and variables that are origin specific. The price variables used were the relative cost of living in the destination with respect to the origin and the price of crude oil to approximate for general transportation costs. The proxy for cost of living is the reciprocal of the PPP conversion factor, which represents the purchasing power of one Euro in the country.

The study shows that overall tourists tend to be insensitive to the relative cost of spending their holidays in Cyprus and more likely to go to Cyprus if the transportation cost, in terms of cost and inconvenience of travel, is less. However, when adjusting the sample for the most important factor of transportation cost, that is, a direct flight to Cyprus, the insensitivity to the cost of their holidays is reduced significantly.

The coefficient on price in this study is between -0.77 to -0.65 in the first set of regressions reflecting direct flights and between -0.24 to -0.19 in the second set reflecting indirect flights. This result is in line with economic intuition. Tourists that have direct flight connections are more price-sensitive; they might consider Cyprus as

a possible destination because of the convenience of the direct flight or can exploit directly advertised packages to Cyprus that are most of the times accompanied by a direct flight or they might be last minute travellers, less probable when there is a flight connection. According to this study, the cost of travel is also driven by other costs such as transportation costs, costs of organized tours or the alternative cost of leisure, which are all independent of the cost of living in the destination country. In general, the results on the price coefficients suggest that the general level of prices in destinations is taken into account by travellers when making travel decisions and only the fluctuations in prices over time are unimportant.

The coefficient on the price of crude oil enters all specifications with a negative sign and is statistically significant, consistent with economic theory. Demand for travel, regardless of destination, is reduced when transportation costs are higher, which is more pronounced for Cyprus towards which travel involves at least one flight. The coefficients on GNP for the origin are all positive and statistically significant and are implying an income elasticity of between one and three, suggesting that tourism is a luxury good.

In sum, the main findings are that tourism to Cyprus from countries with direct flights to Cyprus has a price elasticity of about 0.7, while overall tourism to Cyprus is less responsive to price changes as shown by a price elasticity of about 0.2. It is possible that tourists who come to Cyprus with at least one flight connection have a strong, unobserved preference to come to Cyprus that lowers the overall sensitivity to prices. Transportation cost, overall and origin-specific is shown to be quite important for choosing Cyprus as a destination.

2.4 Turkey

Aslan, Kula and Kaplan (2009) presented a dynamic model used to estimate the demand function of tourism in Turkey with respect to its nine major clients, that is, Germany, Russia, United Kingdom, Holland, France, Austria, Iran, Bulgaria and Ukraine. With an adjustment coefficient of 0.72 the results show an income coefficient of 0.04 in the short-run and 0.06 in the long-run and an own-price elasticity coefficient of -0.23 in the short-run and -0.32 in the long-run. The estimated coefficient for the income variable suggests that the demand for tourism in Turkey is not dependent on the economic situation in nine major clients. This means that, contrary to previous studies, tourism in Turkey is not considered as a luxury by nine major clients.

Moreover, tourism in Turkey appears to be very sensitive to prices. Consistent with demand theory, relative prices are negatively related to tourism demand. This means that a 1 per cent decrease in relative prices leads to an increase in demand for tourism of around 0.2 per cent in the short-run and 0.3 per cent in the long-run. Thus, elasticities in both the short- and long-run demonstrate that the values of both income and price elasticities in the long-run are greater than their short-run corresponding items, suggesting that tourists are more sensitive to income/price changes over the long-run.

2.5 Croatia

A study by Merver and Payne (2007) provides long-run elasticity estimates associated with the aggregate foreign tourism demand for Croatian destinations using the autoregressive distributed lag (ARDL) approach. According to this study, besides being sensitive to their own income, tourists are also sensitive to prices. Tourism includes two price elements: the cost of travel to the destination and the cost of living in the tourist destination. In an attempt to recognize the role of currency fluctuations and relative prices on the demand for tourist destinations in Croatia, two alternative real exchange rate measures are used in this study: the index of the real effective exchange rate calculated with producer prices, and the index of the real effective exchange rate calculated with consumer prices.

With the exception of one case, the parameter estimates for these two measures are positive, meaning that the real depreciation of the Croatian unit of money should have a positive impact on foreign tourist demand. However, the estimated parameters are statistically insignificant in all cases, suggesting that currency fluctuations and relative prices do not have a significant impact on tourism demand. Finally, the average world oil price per barrel in U.S. dollars, serving as a proxy for transportation costs, is negative in only two cases. In all other cases, the parameter estimates yield an incorrect coefficient sign and are statistically insignificant. Additionally, this study indicates that in the long-run tourism demand is income elastic, while the real exchange rate and transportation costs (proxied by oil prices) do not have any statistically significant impact on tourism demand in Croatia.

2.6 Italy

The study by Guizzardi and Mazzocchi (2009) provides a strategy for modelling the effect of the business cycle on tourism demand under the rationale that tourism cycles are heavily influenced by lagged effects of the overall business cycle. Two alternative models are estimated, the first with a latent cycle component (LCC) and the second based on specific economic explanatory variables (XCV). Based on the smoothed estimates of the cyclical and irregular component of the LCC model, the estimated price elasticity is negative and greater than one. The authors argue that this result may be overemphasized because of specification effects, as price elasticities of nights spent tend to be higher when a trend is included. At any rate, suppliers need to take into account the strong impact of prices to support competitiveness of their products. Instead, the Dollar/Euro exchange rate is significant for inbound demand only. This finding is consistent with the fact that the main outbound destination for Italian tourists is the Euro area (a market share of 57 per cent).

The policy implication from the XCV model is that it can be used for calibrating countercyclical interventions in tourism policy. In fact, the XCV modelling approach opens the way to identifying the specific impacts of economic policy instruments on tourism dynamics. Among these instruments, the VAT rate for overnight stays might play a relevant role. Italy's VAT is 10 per cent compared to 7 per cent of Spain, 5.5 per cent of France and 8 per cent of Greece. As this model shows, this price differential has a significant and large influence on demand. Accordingly, the authors conclude that a policy decision towards the harmonization of VAT rates with the main competitors would be very effective, as well as being in line with the rationale of the EU single market.

2.7 France

In the paper by Durbarry (2002), the Almost Ideal Demand System (AIDS) model was used to estimate France's long-run outbound tourism demand in the UK, Spain, and Italy. In this study, the author concluded that changes in quantity demanded due to changes in price and income are very important especially in the field of tourism when provisions need to be effected to service the industry well in advance. Service providers are interested in how demand is affected by changes in price, for example, due to a change in value added tax in the destination and also the reaction of tourists when income changes. In this respect, Durbarry argues that the own-price and income elasticities of demand are relevant.

In all three destinations the own-price elasticities are greater than unity, implying that they are highly price elastic. In the case of the UK, the own price elasticity indicates that a 1 per cent increase in its tourism price will decrease French tourism demand by around 1.7 per cent. France, being the UK's main tourist generating country, has important effects on the amount of tourism receipts, employment, hotel bookings and tax revenue. In Spain (-1.778), as well as in Italy (-1.857), French tourism demand is elastic in both cases, although higher in the latter case. These estimates provide evidence that in all the three destinations tourism demand is very sensitive to price changes in the destinations. This implies that tourism demand is volatile and any change in the pricing policy affecting tourism prices in the destinations would lead to a more than proportionate change in the demand for tourism by the country's residents. Additionally, in this study, the income elasticities of UK (1.016), Spain (1.001) and Italy (0.989) are all positive and around one, implying that a one percent increase in real expenditure would lead to a proportionate increase in demand.

2.8 Balearic Islands

Munoz and Martin (2006) identify and measure the impact of the main determinants of the inbound international tourism flows in the Balearic Islands. Taking into account the changing structure of consumer preferences, a dynamic model is estimated. The results suggest that the demand is heavily dependent on the evolution of economic activity in each of the origin countries and on the relative cost of living of tourists in the destination. The estimated short-run price elasticity is -0.76 while the long-run effect of prices on tourism demand is -1.65. These results with an adjustment coefficient of 0.5 indicate that tourism in the Balearic Islands is very sensitive to prices. The short-run elasticity could lead to the conclusion that revenues could be increased by increasing prices. However, the long-run elasticity may be a reflection of the numerous alternative sand and sea holiday destinations. Meanwhile, the coefficient of income elasticity in the short-run is 0.92 while in the long-run it is 2.02. The price of travel elasticity is -0.30. The short-run results show that tourism to the Balearic Islands is considered by foreigners as a non-luxury service. However, the long-run income elasticity suggests that tourism is very dependent on the economic conditions of the generating countries.

2.9 Canary Islands

Munoz (2004) presents a dynamic model of international tourism demand to Canary Islands. The empirical analysis exploits the panel structure of the dataset by a

Generalized Method of Moments estimation of a dynamic model taking into account unobserved country-specific effects. A dynamic model where the lagged dependent variable is included as regressor is used to obtain short-run and long-run elasticities. The short-run income elasticity coefficient is 1.2 while the long-run coefficient is 2.9, and the short-run price elasticity is -0.6 and the long-run price elasticity is -2.6, with an adjustment coefficient of 0.4. In brief, the results suggests that tourism demand to Canary Islands must be considered as a luxury good and is highly dependent on the evolution of relative prices and cost of travel between origin and destination country.

2.10 Conclusion

Income elasticity has often been found to exceed one, confirming the luxury nature of tourism travel. However, certain destinations can be regarded in a particular source market as a necessity with income inelastic demand.

The own-price elasticity is normally negative, although magnitudes vary considerably among studies. Generally, elasticity estimates show negative values ranging from 0 to -2.5 in the long run, depending on the destination, model used and econometric technique. However, two important findings particularly relevant for this study, emerge from these elasticity estimates:

1. Long run elasticities typically exceed (in absolute terms) their short run counterparts. This is in line with the demand theory implying that consumption depends on what people expect to earn throughout their lifetime, while fluctuations regarded as temporary having less effect on their consumption spending. **This indicates that lower tourism prices may take time to fully influence foreign demand**;

2. Whilst tourist demand is typically found to be price elastic (i.e. greater than 1) with respect to an aggregate tourism price, the partial elasticity with respect to a specific component of the tourist price (typically travel costs, accommodation, cost of living and exchange rates) is often found to be inelastic (i.e. less than 1). **This indicates the importance of using the correct partial elasticity with respect to the specific price component**.

Studies which focus on tourism demand for Malta do not converge on the income elasticity estimate, possibly depending on variations in the model used, time period of analysis and econometric technique.

More importantly for the purpose of this exercise, all the studies concur that demand tends to be price elastic. Estimated long run own price elasticities range from -2.54 (Mangion et al, 2004), -1.9 (Cordina, 1996), -1.34 (EPD, 2003) to -1.13 (EPD, 2009). This is indicative of the significant competitive pressures the tourism industry in Malta is generally operating in. Maintaining price competitiveness remains essential in the tourism sector unless Malta manages to become a high-end tourist destination. However, it is worth noting that none of the studies on Malta surveyed here distinguish between different price components. Studies on Malta also confirm that long-run elasticities tend to be higher than short run elasticities.

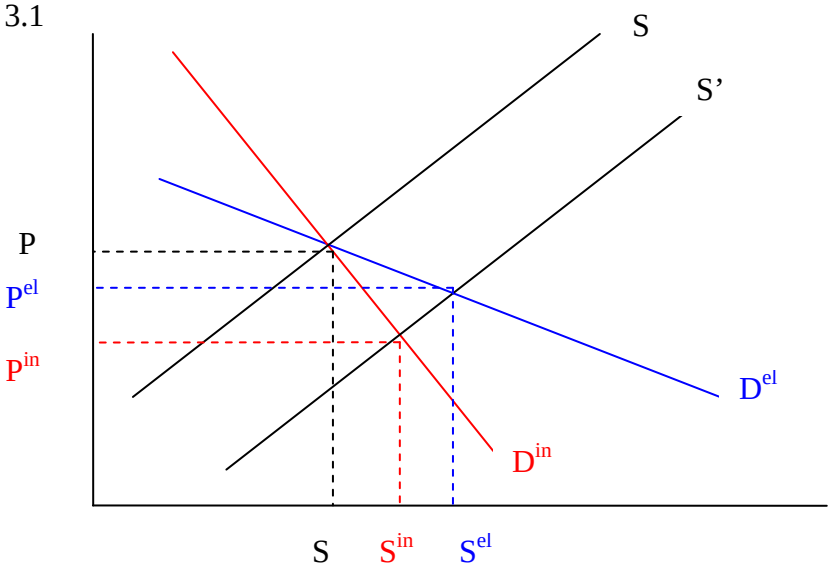
3. Theoretical and Empirical Considerations

The main impact of a reduced VAT rate will primarily depend on the extent to which the tax reduction is passed through to the final goods price, the impact on consumer demand and the effect of higher demand on employment. Ultimately it is thus a question of elasticities and market structures. This section draws heavily from the Final Report: Study on Reduced VAT applied to Goods and Services in the Member States of the European Union, by Copenhagen Economics, May 2007. It will focus on two major determinants, the elasticity of demand and market structures.

3.1 The Price Elasticity of Demand, Market Structures and Pass Through

If we assume a competitive market structure, the more responsive demand is to price changes, the higher will be the impact on demand and the lower will be the degree of pass through. This is illustrated in Figure 3.1, where a reduction in VAT is illustrated as an outward shift in the supply curve. It is clear that the more elastic the demand is, the higher the effect on output but the lower the degree of pass through to final goods prices.

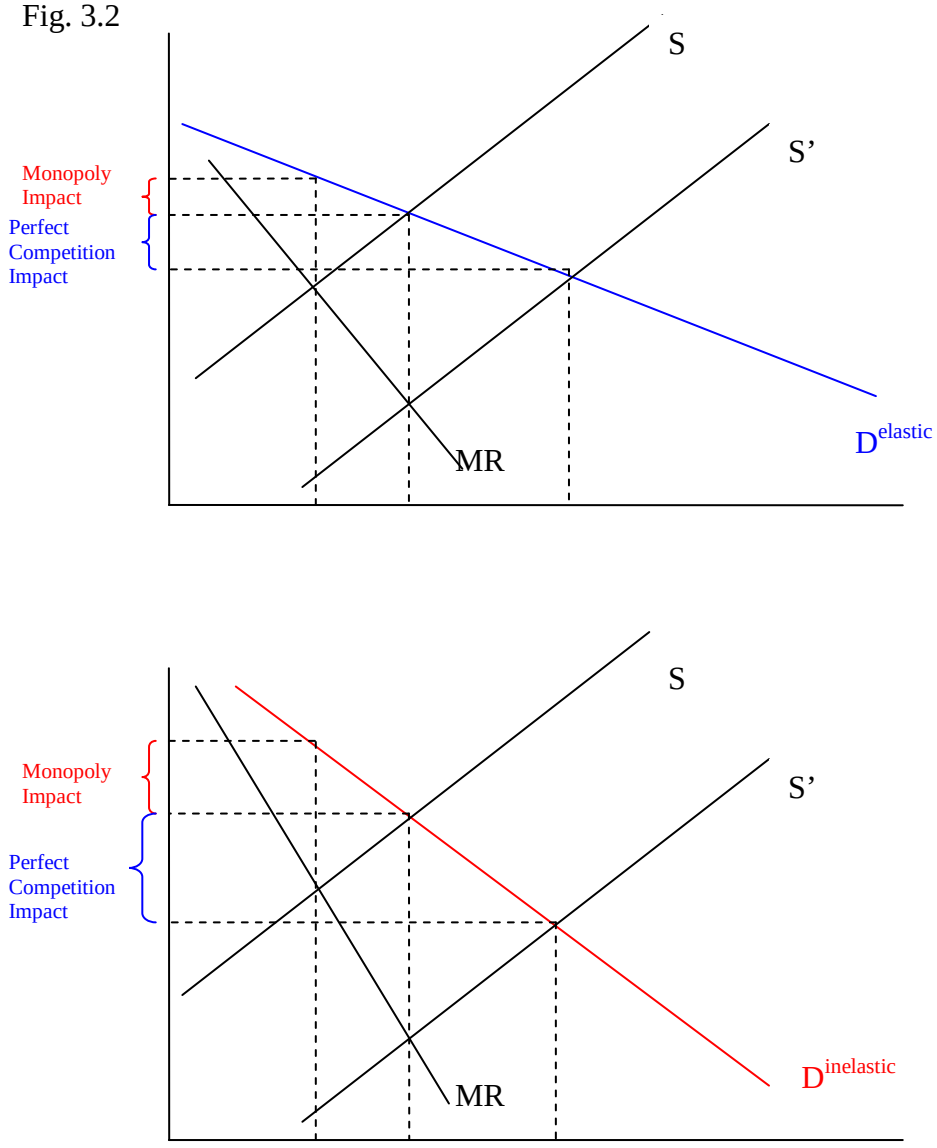
Fig. 3.1



However, Stiglitz (1988)[1] suggests that the degree of pass through could be significantly lower if perfect competition is no longer assumed. This is illustrated in Figure 3.2 where we have introduced the marginal revenue curve (MR) as distinct from the demand curve to account for a monopoly situation. Figure 3.2 shows the case of an elastic and inelastic demand. It is clear that the degree of pass through is higher in the case of perfect competition than in the case of monopoly, irrespective of the elasticity of demand. This occurs because the slope of the marginal revenue curve is always steeper than that of the demand curve. Following a reduction in VAT, the increase in output required to ensure profit maximisation (i.e. where marginal cost = marginal revenue) in the case of a monopoly is less than the increase required under perfect competition.

[1] Stiglitz, J.E. (1988), *Economics of the Public Sector*, New York, Norton

Fig. 3.2



Perfect competition and monopoly situations are two extremes which do not characterise the restaurant sector in Malta. The theoretical results become much more complicated once intermediate market structures which typically characterise the sector are considered. Theoretically, the results will depend heavily on supply and demand elasticity. Stiglitz (1988) shows that as the demand curve becomes more inelastic, the incentive to pass through the reduced VAT in the final goods prices practically disappears. Putting it differently, demand needs to be highly sensitive to price changes for there to be any incentive to pass through the reduced VAT to the final goods prices. When demand is price inelastic, firms have the possibility to maintain prices unchanged and thereby increase profit margins by the amount of the VAT reduction.

3.2 Empirical Results

Theory suggests that the effect of a reduction in VAT will depend heavily on the price elasticity of demand. This is primarily an empirical question. The degree of pass

through will also depend on market structures which can also be considered as an empirical question. The Copenhagen Economics Study includes a good review of the literature on the impact of VAT reduction, and also empirically estimates the likely degree of pass through, the effect on output and employment.

3.2.1 The Degree of Pass Through

The Copenhagen Economics Study indicates diverging conclusions in the literature on the degree of pass through. However, most of these divergences appear to be explained by differences in market structures across industries. There appears to be a strong correlation between competitive pressures and the degree of pass through. Industries characterised by significant market imperfections tend to exhibit low or insignificant pass through. The Study also estimated the degree of pass through observed in various EU Member States following a significant change in the VAT rate on specific commodities. The degree of pass through ranges from no pass through to full pass through.

Pass through was more than 100 per cent in certain cases. But this occurred only in cases where VAT was increased. When VAT was reduced, the degree of pass through ranged from no pass through to 82 per cent pass through in the case of Sweden's reduction of VAT on books in 2002. These are in line with empirical findings that suggest that the degree of pass through is not symmetrical. Whilst total pass through is evident in the case of VAT increases, pass through is partial or inexistent in the case of VAT declines.

Of particular interest for the study of the reduced VAT rate on restaurants is the case of Portugal. When the VAT rate on restaurants in Portugal was reduced by 5 percentage points, the degree of pass through measured by the Copenhagen Economics Study was estimated at a mere 19 per cent.

3.2.2 The Impact on Demand and Production

The impact on demand and production will depend on both the degree of pass through as well as the price elasticity of demand. The Copenhagen Economics Report estimates demand elasticities for a number of sectors. These range from -1.94 in the accommodation services to -0.18 for rental of housing. In some cases the price elasticity of demand was found to be insignificantly different from zero. The food category includes both restaurants and meals prepared at home. This is estimated at -0.42 and is statistically significant. Unfortunately, the elasticity with respect to restaurants only is not estimated. Given that meals prepared at home are likely to be price insensitive, demand for restaurants is likely to be higher than 0.42 in absolute terms. The study suggests that overall, the elasticity for the standard leisure goods is estimated at -0.3 and for the luxury goods it was estimated at -0.8. Demand for restaurants can be classified anywhere within this range.

3.2.3 The Impact on Employment

Clearly higher demand will increase output and demand for labour. However, the demand elasticity for labour is likely to be less than 1. Increased demand can also trigger new capital investment or other productivity enhancing measures implying that

labour demand may rise by less than the increase in output. The more labour intensive an industry is the higher are the likely positive effects on employment in the sector resulting from the increase in output.

One should however note that the Report is based on a partial equilibrium analysis. In a general equilibrium analysis, especially if the model imposes fiscal neutrality, the overall impact on employment is likely to be less or possibly negative if the employment gains in the sector subject to a reduced VAT rate is offset by employment shedding in other sectors. This could arise because the measure itself shifts demand away from (productive) sectors with a high VAT to (less productive) sectors where VAT has been reduced. But more significantly, under fiscal neutrality conditions, the reduced VAT rate has to be accompanied by an increase in other taxes or an increase in the full rate of VAT. This can have negative consequences on the economy in general and on employment.

The Copenhagen Economics Report indicates that the elasticity of labour demand to output ranges from 0.3 to 0.7 in the short term and 0.5 to 0.9 in the long term. Interestingly, the restaurant sector has the highest long term elasticity (0.9) and the second highest short term elasticity (0.7) suggesting that a reduction in VAT in restaurants is likely to have significant employment effects assuming full pass through.

3.3 Conclusion

Empirical results suggest that the reduction in VAT in restaurants in the EU Member States in general is not likely to be passed through totally to the consumer. In case of VAT reductions, the highest pass through estimate observed was 82 per cent in the case of Sweden's reduction of VAT on books in 2002. In the closest case to the scenario under consideration, the estimated pass through was 19 per cent. This will significantly reduce the impact on output and demand. This will be partly offset by a relatively high price elasticity of demand which probably ranges from -0.42 to -0.8. This means that of the remainder of the price effect which is passed through to the consumer, the restaurant sector will display among the highest output effect. Moreover, because the restaurant sector is among one of the most labour intensive sectors, it will also display a significant impact on employment. This is confirmed by a relatively high output elasticity of labour demand which reaches 0.9 in the long term.

4. Analysing the Competitiveness Level of the Restaurant Sector

Lowering of costs from the 'producer' end is not always reflected on the final price. The extent of which any reduction is passed to the consumer depends largely on the type of market structure the 'firm' is operating in. Chapter 3 of this study confirms that market structures play an important role in the likely pass through of a reduced VAT on final goods prices. For such purpose, it is important to look closely at the structure of the restaurants sector.

4.1 Brief Description of the Restaurant Sector

Unless otherwise stated, the restaurants and catering sector referred in this section is loosely defined following the statistical nomenclature NACE where they are classified under Section H55.3. In Malta, this is made up of approximately 1,500 outlets, including outlets in hotels. Restaurants account for an important part of the sector in terms of both gross value added (GVA) and employment. The restaurant and catering sector tends to be a relatively labour intensive sector. In Malta the sector is heavily dependent on tourism, so employment levels tend to be seasonal. In addition, the labour force is, on average, much younger and less skilled than in other sectors, and also employs a higher percentage of women. Additionally, restaurants are generally classified as micro-enterprises, with fewer than 10 persons employed. On average, each restaurant and catering establishment in the EU employs around 5.4 employees.

4.2 Possible sources of Market Power

Market structures depend on various factors and considerable challenges are faced in classification of markets. In economics, markets are classified according to the structure of the industry serving the market. Industry structure is categorized on the basis of market structure variables which are believed to determine the extent and characteristics of competition. Those variables which have received the most attention are number of buyers and sellers, extent of product substitutability, costs, ease of entry and exit, and the extent of mutual interdependence.

Market structure is important in that it affects market outcomes through its impact on the motivations, opportunities and decisions of economic actors participating in the market. In highly stylised examples, perfect competition and monopolistic competition, where freedom of entry is possible, super normal profits are eliminated in the long-run. On the other hand, in the case of pure monopoly, the impossibility of entry ensures that super-profits are made. The text-book models also illustrate the importance of rivalry between existing firms, the extent of product differentiation and the threat of substitution. Perhaps the best-known approach is the 'five-forces' approach, namely:

1. the intensity of rivalry among existing firms;
2. the threat of entry;
3. the threat of substitutes;
4. the power of buyers;
5. the power of suppliers

A cursory glance at the restaurants market in Malta suggests a competitive market, resulting from the presumed intensity of rivalry among restaurants and the free-entry conditions[2]. However, this can be misleading, as the market is probably more characterised by monopolistic competition – with many seller of differentiated products, both in terms of price and location. This is very important due to product substitutability. Since the market definition is partly conditioned by non-static consumer perceptions, it is difficult to ascertain whether a market is characterised by monopolistic competition.

4.3 Measurements of Market Power

Traditional proxies like price levels, concentration ratios or profit margins often used as measures of market power. All indicators have their short-comings. Bearing these caveats in mind, this section analyses the intensity and durability of observed consumer prices as an indication of market structures. Whilst other indicators were considered, availability of data exclusively for restaurant sector dictated our choice of observed price movements as an indicator of possible market imperfections.

4.3.1 Observed Price Movement

Final prices of goods and services as measured by the HICP exhibit constant variation, mainly resulting from the interaction of demand and supply, from the prices of 'inputs' and also reflecting policy changes exogenous to the control of the firm. Chart 4.1 illustrates the price inflation for the restaurant sector from January 1999 to June 2009 for Malta, Spain, Cyprus, Greece, and Portugal. Those countries were selected on the basis that they are similar to Malta in terms of development (measured by PPS) and due the importance of the tourism sector for their respective economy. As can be noted from the chart, restaurant prices in Malta tended to exhibit marked periodical changes, with an accentuated decline at the start of 2003, probably as a result of removal of levies on specific imports. It is also notable, that the inflation generated in the sector moved closely with that registered in the selected economies. From mid-2007, the inflation tended to be higher than most of the selected economies. Given that a similar pattern was observed for food and electricity prices, which are an important inputs to this industry, one cannot exclude the possibility that inflation differential in the sector is unrelated to market structure in the sector itself.

To resolve this issue it is important to look at the visual relationship between the restaurants prices and the prices of inputs (such as food). This can provide useful insights on the competitiveness of the market. Chart 4.2, shows the changes in prices for the restaurants sector sub-index, the food and non-alcoholic beverages sub-index, and electricity and gas sub-index. The data suggests that changes in restaurant prices are closely related to input prices, especially with the prices of food and beverages. However, an element of price smoothing is also evident. For instance, the water and electricity price increases in 2005 and 2006 were not passed on to consumer prices whilst their reversal in 2007 and the beginning of 2008 were similarly not translated into lower restaurant prices. This suggests that restaurants have some limited ability to absorb changes in their input costs in profit margins.

[2] The free-entry condition is rather debatable in this sector due to the high fixed cost of entry, mainly in the form of immovable property

Chart 4.1: Annual HICP for Malta and Selected Economies (COICOP 1111)

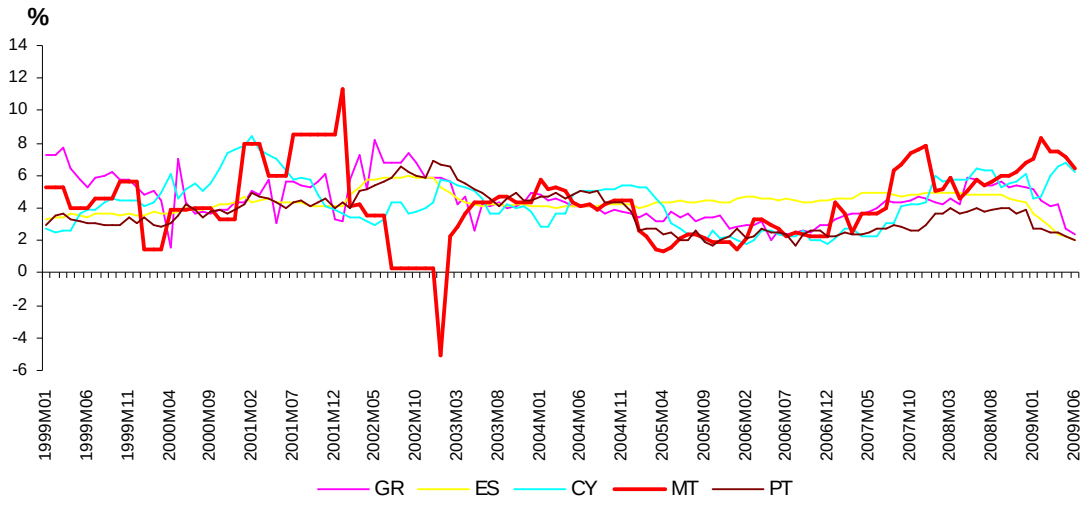
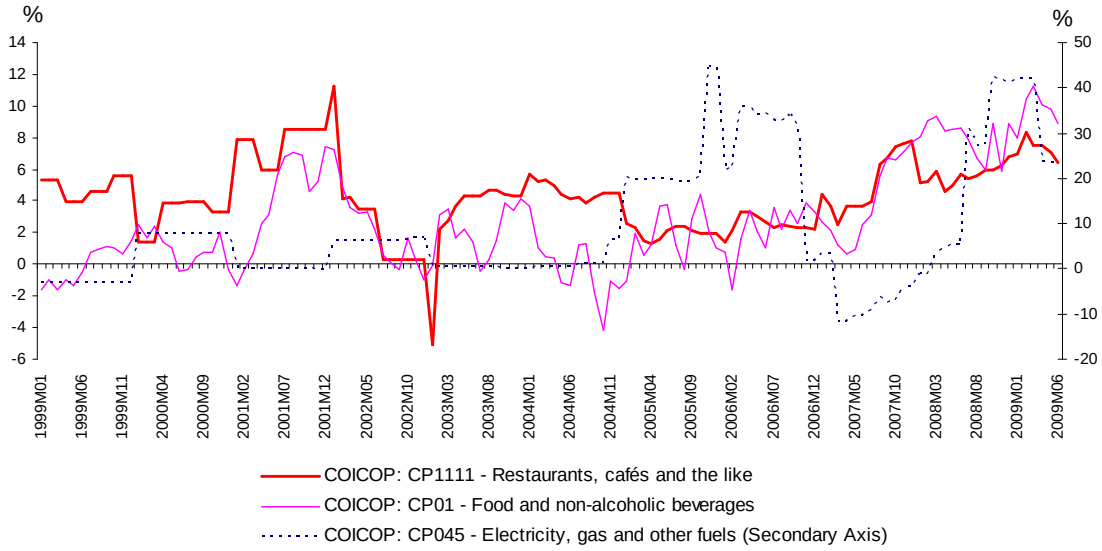


Chart 4.2: Annual HICP Malta



4.4 Drawing inferences about Market Competitiveness

Although the hypothesis that market imperfections exist in the restaurant sector cannot be excluded, it is difficult to obtain a precise estimate of its degree. Despite the presence of numerous operators in the sector, a certain degree of market power is present in the sector which allows operators to smoothen prices to a certain extent. This is probably resulting from the fact that the market is characterised by differentiated products, both in terms of price, quality of service and location.

Overall, the hypothesis of less than full pass-through to final goods prices cannot be refuted. This is also supported by the empirical evidence on the EU Member States presented in Chapter 3. Given that it is impossible to determine the exact degree of pass-through likely to result in Malta following a removal of VAT on restaurants this study will proceed by undertaking two different scenarios, one with full pass through and another scenario with partial pass through.

5. Modelling the Reduction in VAT using SAMM

To analyse the economic impact of a reduction in VAT on restaurants, use was made of the Structural Annualised Econometric Model for Malta (SAMM) at the Economic Policy Division (EPD) within the Ministry of Finance, the Economy and Investment. SAMM is a Keynesian structural model incorporating more than 1,600 variables, 378 behavioural equations and 278 identity equations. In view of its Keynesian nature, output and employment is driven by demand. Therefore, this model is ideal for analysing short- to medium term policy options like the proposed measure being analysed.

One of the main attributes of SAMM is its ability to analyse the impact of policy measures on different industries. The model is based on an input/output structure and is thus able to capture inter-industry linkages in the Maltese economy and multiplier effects. This is the main benefit of using this model as opposed to a partial equilibrium analysis. At the same time, it can be considered superior to an input output model since it is able to capture better short-term behavioural effects related to the final demand components. Its main drawback is its inability to capture supply-side effects in the long run. Given that such effects are not expected to materialise in the short to medium term, SAMM remains an ideal model to analyse the impact of the reduced VAT on restaurants.

5.1 The Expected Impact of the Reduction in VAT

Primary effects:

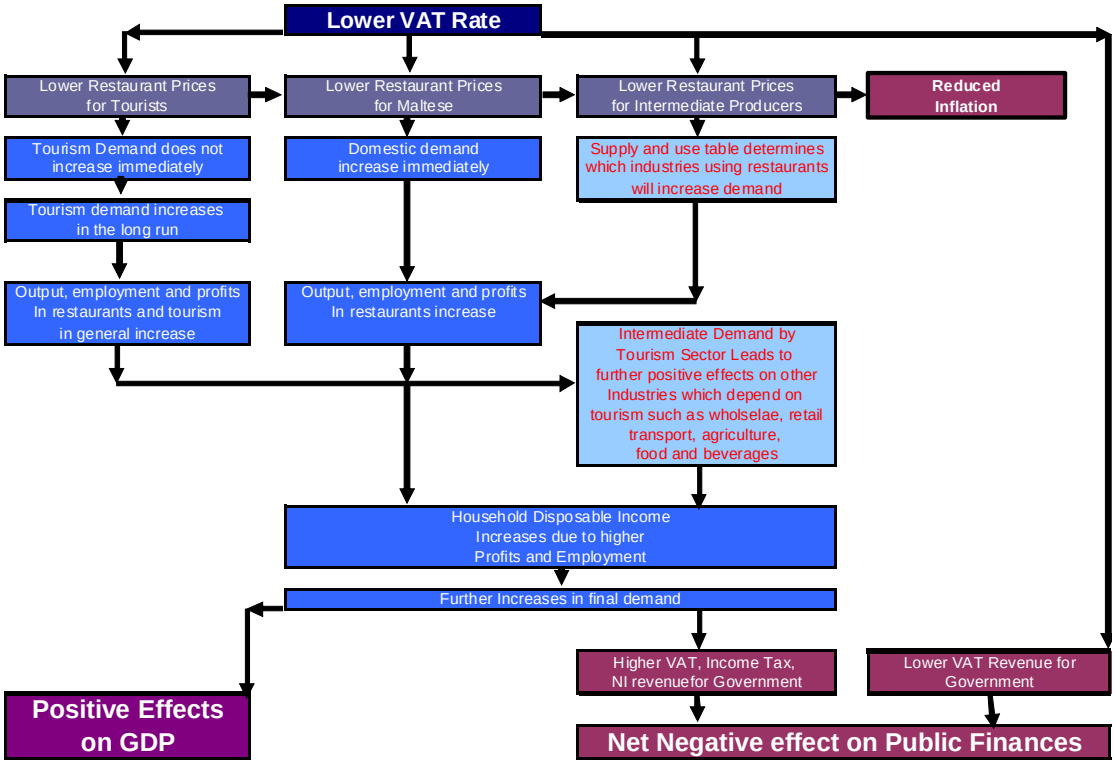
The immediate effect of the reduction in VAT on restaurants is to reduce prices of restaurants for both domestic consumers and for tourists. The impact on domestic consumption and on exports will depend on the elasticity components of domestic and foreign demand.

One would expect the domestic impact to be bigger than the impact on exports in the short run on the assumption that domestic consumers are able to adjust consumption patterns faster than tourists who are unlikely to change their plans for vacation immediately as a result of a change in restaurant prices. Also, one may contemplate that domestic demand is more price elastic than foreign demand simply because domestic consumers are likely to be more aware of the measure than tourists.

The empirical literature analysed in Chapter 3 also suggests that the impact will vary over time. The immediate impact will be limited compared to the effect of the measure in the long term. This is due to different price elasticity of demand in the short term and the long term. The adjustment to a long-term equilibrium will depend on the error correction term in the export equation. The model suggests a relatively slow adjustment to long term equilibrium.

The reduction in VAT is also likely to reduce the costs of production for those industries which make use of restaurants as an intermediate service. Other prices may consequently decline, improving competitiveness of other sectors. However, most of the impact will come from final demand components, namely domestic consumption and exports.

Fig 5.1: The Impact of the Reduced VAT Rate in Restaurants in SAMM



Secondary effects:

Because one of the main effects of the reduction of VAT on restaurants is on the tourism sector (at least in the long-term), the significant multiplier effects involved are likely to be an important consideration in this analysis. Sectors which are highly dependent on tourism are expected to be affected more positively. These are likely to include agriculture, food and beverages, wholesale and retail sector, hotels, and transport.

Third round effects:

Higher output and lower costs of production are likely to increase profit margins particularly in the hotels and restaurants sector. Higher output will also result in higher employment and therefore an increase in total wages paid in the economy. The model assumes that average wages do not rise on the assumption that there are enough unemployed resources in the economy. This is a reasonable assumption especially during the crisis. Higher profits which are then distributed to shareholders and higher wages paid in the economy as a result of the increase in employment will raise aggregate household disposable income. This will in turn have a further positive effect on domestic consumption through the income effect. Imports will also rise as a result of the higher domestic and foreign consumption, partly offsetting some of the positive effects on the economy.

All these changes will also affect public finances. Directly as a result of the reduction in VAT on restaurants, Government will have to forego VAT revenue. Estimates by the Ministry of Finance based on 2008 data indicate that this direct impact would be roughly EUR 32 million. If allowance is made for the effect of the recession in 2009, the tax base in 2010 is likely to be less due to lower expenditure by Maltese and tourists. EPD estimates that in 2009 the tax base will be reduced by 10 per cent[3], and recover slightly by around 1.5 per cent in 2010. As a result of a lower tax base, the direct impact of the reduced VAT on restaurants is estimated at EUR 30 million in 2010.

The total impact on public finances is likely to be less than EUR 30 million due to some claw back resulting from the positive effect of the measure on economic activity. This will primarily include:

1. higher VAT revenue resulting from increased consumption of other goods and services as a result of the increase in household disposable income;
2. higher income tax and NI revenue as a result of the increase in employment;
3. higher income tax as a result of the higher profits by the sectors which are positively affected by the measure;
4. higher revenue from import duties as a result of the increased consumption

5.2 Limitations and Further Considerations

To ensure that there is direct and separate feedback from restaurant prices to tourism earnings it was necessary to tailor the model by incorporating restaurant prices directly in the tourism earnings equation. The literature review suggests that it is very important to ensure that the correct partial elasticity is used. For this purpose, a separate study[4] was undertaken in order to estimate the responsiveness of tourism earnings to restaurant prices, other prices remaining unchanged. The partial elasticity estimate from this study was incorporated in the model to ensure that the model captures only the responsiveness of tourism earnings to a change in the specific price of restaurants and not the responsiveness to an aggregate tourism price change with which the model was originally designed.

The partial equilibrium analysis was carried out using an error correction specification. The results of this analysis are by themselves important in their own right. Different specifications of the model were also tested. It is beyond the scope of this report to enter into the specific details of these estimations. However some important conclusions are worth highlighting.

First of all it is evident that, in line with SAMM estimates and in line with various international and local studies on tourism, demand tends to be price elastic. The (long-run) elasticity with respect to the aggregate tourist price was estimated at -1.13 on the basis of quarterly data.

Secondly and more directly related to the scope of this analysis, when different prices of various components of tourist expenditure were used in the export equation, rather

[3] This is roughly in line with the decline in tourism earnings evident in the first half of 2009.
[4] Appendix 2 includes the results of this partial equilibrium analysis.

than a single average price of tourism, the elasticity of tourist demand to the price of restaurants was estimated to range from -0.56 to -0.72 depending on the model specification utilised. Therefore, the elasticity with respect to the price of restaurants only is less than unitary. The most reliable model suggests a price elasticity of -0.65 and this was imposed directly in SAMM. It is also important to note that this is the elasticity of total tourist expenditure to the price of restaurants and not the elasticity of tourist expenditure on restaurants to its own price.

Thirdly, the error correction models (including the equation in SAMM) reveal that the price of restaurants has no significant direct bearing on tourism earnings in the short term, but only in the long term. This conforms to international studies analysed in Chapter 2. Moreover, the error correction term[5] of -0.24[6] suggests that the adjustment to long term fundamentals is relatively slow. This implies that the beneficial effect of this measure on tourism will not materialise immediately, probably after 2010.

This does not apply to domestic expenditure. In this case, the price of restaurants is a significant determinant in both the short term and the long term, as evidenced by the statistical significance of the coefficients on the price variables. The partial elasticities are also higher in the domestic expenditure equation although these are not strictly comparable. Whereas the domestic equation refers to expenditure in restaurants and hotels only, the tourism equation refers to total tourism expenditure inclusive of hotels and restaurants and other tourist expenditure components. Therefore, the immediate benefit of this measure will mostly come from domestic consumption and only gradually will foreign demand adjust to this measure. This is in line with a-priori expectations.

Another limitation of the model is the lack of a separate category for restaurants and one for hotels. As a macroeconomic model designed to forecast the macroeconomic variables, restaurants and hotels in SAMM are amalgamated in line with national accounts data. Therefore, in model terms it was necessary to model the decline in VAT on restaurants and hotel services altogether. As a result, the shock imposed on the model (i.e. the VAT reduction) had to be scaled down in line with an estimated proportion of expenditure going to restaurants only.

Another important consideration relates to competitiveness. The model assumes that other competitor countries do not adjust their VAT rates. If this were to be the case, relative prices of tourism will not be affected and most of the benefits resulting from competitiveness gains will not result. The only benefits will come from domestic sources which are assumed to be imperfect substitutes to the provision of catering services abroad. It is important to note that if competitor countries also reduce their VAT, the negative budgetary impact will be even larger since it will not be compensated by the beneficial effects of the measure on the economy.

[5] The error correction term represents the speed of adjustment to long term equilibrium. A coefficient of -0.5, for instance, means that 50 per cent of the short-run disequilibrium between what happens immediately following a change in the explanatory variable, and what should eventually happen in the long-run is corrected in the next period. Further (50 per cent) corrections are made until long-run equilibrium is achieved. The higher the absolute value of the error correction term, the faster the adjustment to long-term equilibrium.

[6] This estimate refers to the partial equilibrium estimates. In SAMM, the error correction term is slightly higher and is estimated at -0.48. The adjustment to long-term fundamentals is thus slightly faster in SAMM.

Also one has to contemplate the consequences of not implementing this measure if our competitors are doing so. In that case the results will be the opposite. The positive effect on the economy would be reversed and Malta would lose competitiveness in tourism. Moreover, although the budgetary impact would be less, government would still collect lower revenue as a result of the negative impact on the economy from the lower external demand.

It was deemed important, in line with the terms of reference of this exercise, to ensure that the baseline replicates a recessionary scenario. A recessionary scenario for 2009 was therefore included in the baseline forecasts, with a recovery in 2010 and 2011.

Finally, it is worth highlighting that the model assumes that the reduction in VAT is completely passed through to the final price and excludes the possibility that restaurants maintain prices at their current levels. This would effectively mean that Government would have to incur the highest budgetary costs since the economy would at best be unaffected positively and at worst affected negatively if competitor countries reduce their VAT rates and pass through the reduction in their prices.

It is important to note that the higher the level of market imperfections and the lower the pass through to final prices, the lower will be the expected positive impact and the higher will be the negative budgetary impact. Internal studies could not determine the extent to which the VAT reduction will translate into a lower final price[7]. This could range from no pass-through to total pass-through although both extremes are unlikely. Therefore, in order to aid policymakers it was necessary to model the policy under different assumed pass-through levels.

5.3 Results from the Baseline Scenario

What follows is an analysis of the main results of the baseline scenario representing the impact of the reduced VAT rate on restaurants assuming full pass-through and competitiveness gains (i.e. Malta's competitors do not revise their VAT downwards accordingly). As expected, and given the assumptions under the baseline scenario, the reduction of the VAT on restaurants is expected to have a beneficial impact on economic growth, employment and inflation and a negative impact on public finances.

At 0.2 percentage points above the baseline forecast, the positive economic impact in 2010 is marginal. As indicated in Table 5.1, the economic growth expected in 2010 is mainly coming from domestic demand, mainly consisting of demand for restaurants and hotels by Maltese consumers. The impact on exports is marginal in 2010. The impact on total employment is also marginal in the first year. Employment tends to respond with a lag such that most of the employment impact will not be observed in the first year of implementation.

[7] Market imperfections are typically characterised by significant profit margins and low price elasticity of demand. Internal estimates suggests that with a profit margin of 30 per cent, the negative price elasticity of demand has to exceed 3.7(in absolute terms) for an operator to be indifferent between reducing the price in line with the VAT reduction or otherwise. A profit margin of 30 per cent is however indicative of a significant degree of market imperfections such that the price elasticity of demand is likely to be less than 3.7 in absolute terms. This suggests that it is very unlikely that full pass through to final goods prices will materialise.

Table 5.1 Economic Impact of Proposed Reduction in VAT on Restaurants: Baseline Scenario
(in Percentage Points over Baseline Growth)

	Full Pass Through Scenario 1	
	2010	**2011**
Gross Domestic Product	0.2	0.6
Private Consumption	0.2	0.5
of which Expenditure by Maltese in Restaurants and Hotels	5.5	:
Investment	:	0.4
Exports	0.1	0.6
of which Tourism Earnings (Real)	0.9	5.6
Imports	:	0.4
Employment	:	200
Real Household Disposable Income	0.6	0.4
Inflation (RPI)	-0.3	-0.1
Public Finances	-29.0	-23.0
of which VAT	-29.3	-26.7
of which Taxes on Income	:	2.0

In 2010, the direct impact of the measure on VAT revenue is estimated at EUR 30 million[8]. However, because of some claw back from the higher domestic consumption, the revenue loss from VAT will be EUR 29.3 million. Further claw back from other revenue sources lead to a total impact on public finances of EUR 29 million[9] in 2010. One should note that data for 2008 from the VAT department suggests that the total fiscal impact of the measure should be EUR 32 million. However, when allowance is made for the recession in 2009 and the marginal recovery expected in 2010, the impact is estimated by EPD to be around EUR 30 million. Thus as a result of the recession, Government revenue from VAT on restaurants is estimated to be EUR 2 million less.

The main positive impact of the measure results in 2011, with GDP growth expected to rise by 0.6 percentage points above the baseline. Most of this increase is coming from exports, as a result of the gradual increase in tourist expenditure, estimated at 5.6

[8] The model indicated a total impact of EUR 31 million. This is close to the EUR 30 million estimated from VAT data obtained from the VAT Department. Because the figure is very close, there was no need to recalibrate the model (which would have reduced the positive economic impact by an insignificant amount). However, for the sake of clarity, the results on public finances reported in Table5.1 is the adjusted impact, calibrated to the VAT database, but inclusive of the economic impact on public finances derived directly from the model.

[9] In meetings held with operators, it was suggested that an element of VAT evasion may be reduced. This could not be tested with the model and is therefore excluded from these results. Due to data constraints, a reliable estimate could not be made. Internal rough estimates (documented in Appendix 3), suggest that under certain conditions this could amount to between EUR 0.2 million to EUR 0.9 million. These estimates are being including only due to the operators' request. In any case, even if they materialize, they are marginal and will not alter the main conclusions of this study.

percentage points above the baseline forecasts. The increase in tourism earnings and the increase in expenditure by Maltese in restaurants lead to higher output in the Maltese economy. Because of the inter-industry linkages, a number of sectors will benefit from this measure. These are illustrated in Table 5.2. As expected, apart from the restaurants and hotel sector, the main beneficiaries will be the agriculture sector, food and beverages sector and the wholesale and retail sector. Other beneficiaries will include financial and other services, a number of other manufacturing concerns, and the transport and communications sector.

Overall, profits in the restaurants and hotel sector are around 1.8 per cent higher than the baseline forecasts by 2011. The policy under consideration will also raise total employment by around 200 over the baseline forecasts[10]. Both the higher profits and the increase in wages and salaries will result in a higher household disposable income, which induces further increases in domestic consumption levels. Higher output will also raise investment expenditure by 0.4 percentage points above the baseline forecast growth.

Because of the positive economic impact in the year following the implementation of the measure, Government is expected to recover further from the lost revenue observed in the first year. The model estimates that, compared to the baseline forecasts, the fiscal balance will be EUR 23 million less. This means that the Government will recover a further EUR 6 million in 2011 as a result of the positive economic impact. More than half of this recovery is coming from the claw back in VAT resulting from higher expenditure. Higher imports will also result in higher tax revenue. In addition, a further EUR 2 million is recovered in 2011 from taxes on income as a result of higher employment and profit levels. At the same time, government expenditure will increase mainly as a result of the higher interest payments on government debt as the deficit increases in 2010 as a result of the measure. This is estimated at around EUR 1 million.

Table 5.2 Industries Significantly Affected by Proposal

	Impact on Real Output (in PP over Baseline Growth)	
	2010	**2011**
Agriculture	**0.8**	**3.1**
Food and Beverages	0.4	**2.6**
Other Manufacturing	0.2	0.5
Wholesale and Retail	0.1	**0.8**
Hotels and Catering	**3.3**	**3.0**
Transport, storage and communications	0.2	0.4
Financial Services	0.2	0.6
Other Services	:	0.4

[10] In line with the Keynesian framework underlying the model, the total employment impact estimated by the model assumes a number of frictions in the labour market including labour adjustment costs. If such frictions were to be hypothetically removed completely, say due to recent reforms which may have increased flexibility in the labour market, back of the envelope calculations suggest that this figure could rise to 400 in the hotels and restaurants sector only.

Table 5.3 Economic Impact of Proposed Reduction in VAT on Restaurants: Partial Pass Through Scenario
(in Percentage Points over Baseline Growth)

	50% Pass Through Scenario 2	
	2010	2011
Gross Domestic Product	0.1	0.3
Private Consumption	0.1	0.3
Investment	:	0.2
Exports	0.1	0.3
Imports	:	0.2
Employment	:	100
Real Household Disposable Income	0.3	0.2
Inflation (RPI)	-0.2	:
Public Finances	-25.0	-22.0

5.4 The Pass Through to Final Goods Prices

The results analysed above are conditional on the rather optimistic assumption of full pass-through to final goods prices. Whilst the exact degree of pass through cannot be determined, empirical studies on similar measures adopted in other countries indicate that the degree of pass through was not full. In Malta, product differentiation in the sector gives some market power to a number of restaurants which will increase the likelihood of no pass-through by these restaurants. However in other types of restaurants or in certain areas, competition may be such that restaurants are forced to reduce their prices. Thus, whilst this report does not attempt to estimate the degree of pass-through one should keep in mind that full pass-through is unlikely. In order to guide policymakers, an alternative scenario with partial pass through is provided. This is illustrated in Table 5.3.

As expected, the positive economic impact from the proposed measure is reduced in proportion to the pass through. With a 50 per cent pass through, prices in restaurants are not reduced by the full amount of the VAT reduction. Initially government loses the same amount of government revenue from VAT. But because the positive economic impact is reduced accordingly, the claw back by government is also reduced. This could however be partly offset by higher corporate tax revenue if the lack of pass-through leads to an increase in accounting profits declared for tax purpose.

Table 5.4 Economic Impact of Proposed Reduction in VAT on Restaurants: Competitiveness Scenarios (in Percentage Points over Baseline Growth)

	No Export Competitive Gain Scenario 3.1		Export Competitiveness Loss Scenario 3.2	
	2010	**2011**	**2010**	**2011**
Gross Domestic Product	0.1	0.1	-0.1	-0.4
Private Consumption	0.2	0.3	:	-0.2
Investment	:	0.2	:	-0.2
Exports	:	:	-0.1	-0.5
of which Tourism Earnings (Real)	:	:	-0.9	-5.4
Imports	:	0.1	:	-0.2
Employment	:	:	-25	-190
Real Household Disposable Income	0.5	0.1	-0.1	-0.3
Inflation (RPI)	-0.3	:	:	:
Public Finances	-30.0	-29.8	-1.0	-8.0

Overall, EPD estimates that the impact on the budget deficit will remain a significant EUR 25 million in 2010[11]. The claw back of EUR 6 million measured in the baseline scenario is also reduced by half, such that by 2011 the impact on public finances is roughly the same as that under the baseline scenario (estimated at EUR 22 million less than the baseline forecast). In effect, the opportunity cost under the partial pass through scenario has increased, with a lower positive economic impact coming out of each additional Euro of revenue foregone by the Government.

5.5 Sensitivity of the Results to Competitors' Strategies

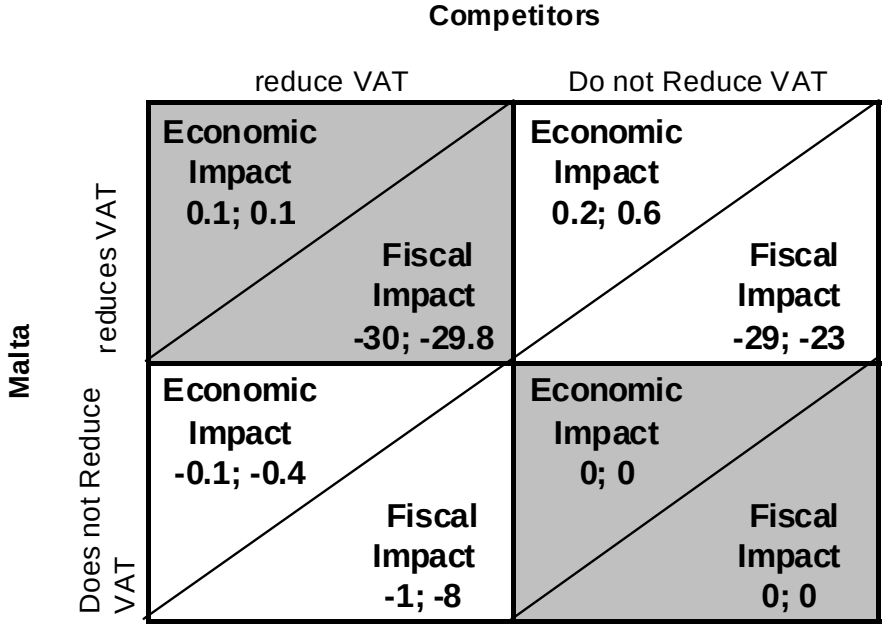
As highlighted in this report, the impact of the reduced VAT measure will not only depend on the pass-through but also on what Malta's main competitors in the tourism sector will do. In order to test the sensitivity of the results to different competitive strategies, two alternative scenarios were tested. The first scenario involves the possibility that both Malta and its Competitors reduce their VAT and restaurant prices proportionately such that Malta does not gain export competitiveness from the measure. This scenario is still expected to give positive results, stemming mainly from

[11] This estimate, assumes that the lack of pass through will be translated into higher profit margins by the restaurants sector. It is assumed that these will be totally declared and taxed under the maximum rate of 35 per cent, such that Government will recover some of the lost revenue. The degree of claw back from higher profits is probably overestimated due to possible under declaration of earnings and/or due to small businesses (self employed) which possibly pay a lower effective tax rate on their income than the maximum rate of 35 per cent.

domestic demand which is assumed to be an imperfect substitute to expenditure in restaurants abroad. The second scenario tests the case whereby Malta's competitors reduce their VAT rate whilst Malta does not. This is the competitive loss scenario. Table 5.4 summarises the results.

As expected, the positive economic impact of the measure is reduced considerably if export competitive gains do not materialise as competitors reduce their VAT as well. The only positive impact stems from the domestic sector. Moreover, because the economic benefits are limited to the domestic demand only, the impact on public finances is even worse when compared to the baseline scenario. Compared with the full pass through baseline scenario, public finances deteriorate by an additional EUR 1 million in 2010 to a total budgetary impact of EUR 30 million. But the major discrepancy is evident in 2011 where the policy is most effective in economic terms under the baseline scenario. Under the no competitiveness gain scenario, the claw back is marginal. Therefore, the budgetary impact remains significantly high even in the year following implementation of the measure.

Clearly this is a worst case scenario where the negative budgetary impact is at its highest whilst the positive economic impact is at its lowest. Does this imply that if Malta suspects that competitors will reduce their VAT rates, it should not do the same because the limited economic benefits would not justify the significant fiscal costs? The answer depends on the results of the second scenario where Malta does not reduce its VAT rate against the strategy of its competitors. This is illustrated in the matrix below where the upper left corner of each quadrant shows the impact on economic growth whilst the lower right corner of each quadrant shows the fiscal impact:



In this case, the economic impact is expected to be negative since Malta would have lost export competitiveness. But because the domestic sector is not fully affected by the loss in external competitiveness, the impact of this scenario is not exactly the opposite of the baseline scenario. But at -0.4 in the second year, the negative impact on the economy of the loss in competitiveness is not to be dismissed.

In this case, the Government would still experience a deterioration in public finances of EUR 1 million in 2010 and EUR 8 million in 2011 even though VAT has not been reduced. Thus, whilst the cost to the Government of not following its competitors is less, the negative impact on the economy is not insignificant. Around 200 jobs are lost as a result of the loss in competitiveness.

Given that there is still a negative budgetary costs if the Government does not reduce the VAT if Malta's competitors reduce theirs (assuming full pass through), it is valid to argue that the real net costs to Government of reducing VAT in line with competitors is really the difference between these two scenarios. To put it differently, when competitors reduce their VAT, the Government looses roughly EUR 8 million by 2011 irrespective of its decision to reduce VAT on restaurants or otherwise. If Government then decides to reduce the VAT in line with competitors, it will incur a further budgetary loss of EUR 21.8 million.

Indeed the real net budgetary costs of reducing VAT when competitors equally reduce theirs, is roughly the same as the baseline scenario. Similarly, the net benefit to the economy is the difference between the two scenarios, which is roughly 0.6 percentage points in terms of GDP growth. This is the same as the baseline scenario. This implies that the Government's decision to implement this measure or otherwise does not need to be conditional on what competitors will do but on whether Government is prepared to forego around EUR 23 million over a two-year period to gain an additional 0.6 percentage points of GDP over the baseline growth rate over the same period.

5.6 Fiscal Sustainability

A central theme common in this analysis is the significant impact of the proposed measure on public finances. Although it is beyond the scope of this report to analyse whether Government can afford the fiscal cost of this measure, from an economic point of view it is deemed appropriate to consider the implied opportunity cost to society of the reduction in VAT on restaurants (i.e. the opportunity cost of the policy measure being contemplated versus the opportunity cost of an alternative policy option). What follows is a scenario which ensures that the reduction in VAT is followed by an opposite fiscal measure which ensures budget neutrality. This hypothetical scenario is only meant for illustration purposes and to understand better the dynamics of the policy under consideration. It is purely illustrative and not a policy recommendation.

The results of this scenario depend on the policy implemented to counter the negative fiscal impact of the proposed reduction in VAT on restaurants. Various options are available from an increase in income tax, national insurance, other taxes or a reduction in government expenditure. It is important to understand that the results depend on the policy chosen and different policies will give different results. For the purpose of this illustration, it was decided to use income tax to counteract the

measure. Moreover, it was decided to limit the increase in income tax to personal income, thus leaving the maximum rate of 35 per cent charged on retained corporate profits unchanged.

It is important to note that income tax is a distortionary tax that will not simply redistribute income but will also have a negative effect on the allocation of resources in the production process, individual preferences for work and leisure, investment decisions and the allocation of income between consumption and savings. Ultimately, it will affect economic growth. One could have contemplated non-distortionary taxes or expenditure as an alternative illustration. Income tax was chosen simply because it is easy to model. Also, given the recent revisions in the income tax bands in the last few years, it would be interesting to note the extent to which these would have to be reversed in order to finance this policy. Also, using income tax is easily understood by economic operators who can easily relate the policy to their personal income.

Two different scenarios are being proposed. In the first scenario income tax is increased so that the reduction in VAT is completely neutralised in 2010. In the second scenario, fiscal neutrality is achieved more gradually over two years. It is important to note that since the main economic benefit of the policy occurs in the second year, trying to achieve budget neutrality immediately in the first year is expected to lead to a net negative impact on the economy during that year. Whilst the negative effect of the income tax increase takes place immediately, the benefits of the VAT reduction occur gradually. Therefore, as expected, scenario 5.1 suggests that achieving fiscal neutrality in 2010 completely offsets the positive impact of the policy under consideration. Also because the fiscal impact of the VAT reduction is at its maximum in the first year (the claw back is marginal), the increase in income tax necessary to offset the VAT reduction needs to be higher.

According to the model estimates, the average income tax rate will have to rise by more than 2 per cent of personal income. Thus, for illustration purposes, on a household income of say EUR 25,000 per annum, an increase in income tax of around EUR 500 would be required in order to offset the VAT reduction.

As shown in scenario 4.1, this would effectively wipe out the positive impact of the VAT reduction and lead to a further negative impact on the economy equivalent to 0.6 percentage points of GDP growth. In the second year, some of this negative effect is recovered as the reduction in VAT on restaurants starts to exert a more positive effect on the economy. But even by the second year following implementation, the economy is still smaller than it would have been under the baseline forecasts. Clearly, such a move would not be beneficial to the economy. However, this hypothetical scenario suggests that if Government can afford to forego EUR 29 million in 2010 and would like the economic benefits to accrue immediately in the first year of policy implementation, it would be better off with an income tax reduction of the same amount than the proposed measure.

This does not mean that the policy is ineffective. The results also show that even under the restrictive assumption of immediate budget neutrality, the impact on tourism sector remains positive. But when considering the general overall economic effect it does not occur fast enough such that the overall economic impact in the first year of implementation is negative under these restrictive assumptions.

Table 5.5 Economic Impact of Proposed Reduction in VAT on Restaurants: Balanced Budget Scenarios (in Percentage Points over Baseline Growth)

	2010 Balanced Budget Scenario 4.1		2011 Balanced Budget Scenario 4.2	
	2010	**2011**	**2010**	**2011**
Gross Domestic Product	-0.6	0.4	:	0.1
Private Consumption	-1.4	0.1	-0.2	-0.5
Investment	-0.4	0.4	-0.1	0.3
Exports	:	0.5	0.1	0.5
of which Tourism Earnings (Real)	0.3	5.1	0.8	5.1
Imports	-0.5	0.1	-0.1	:
Employment	-280	-290	-60	-75
Real Household Disposable Income	-1.3	0.3	0.1	-0.6
Inflation (RPI)	-0.3	:	-0.3	:
Public Finances	:	5.0	-23.0	:
of which VAT	-37.0	-36.0	-32.0	-33.0
of which Taxes on Income	42.0	43.0	10.0	35.0

To test further the effectiveness of the policy under a balanced budget scenario, Scenario 4.2 tackles this problem in a dynamically different manner. Since the effectiveness of this policy does not materialise immediately, it is counterproductive to ensure budget neutrality in the first year. Therefore, scenario 4.2 is designed such that budget neutrality is achieved gradually over a two year period whilst ensuring that the gradual increase in income tax does not affect economic growth negatively in the first year. Under this scenario, the negative economic impact of the increase in income tax is completely offset by the reduced VAT in the first year. In the second year, income tax will rise further to ensure budget neutrality. However, because the economic benefits of the VAT reduction start to strengthen, the overall economic impact remains marginally positive.

In this case, the policy is marginally more effective than a reduction in income tax. Under this scenario, the increase in income tax necessary to balance the budget is of around 1.7 per cent of income. Thus by the second year, a household earning EUR 25,000 would be paying EUR 425 per annum more in income tax in order to finance the VAT reduction under a balanced budget scenario. However, under this scenario, most of the positive effect of the VAT reduction is eroded such that the net economic benefit is estimated at a marginal 0.1 percentage points of GDP growth.

6. Conclusion

Clearly, for the policy to be economically effective, Government would have to be prepared to forego much of the lost VAT revenue over a period longer than one year. The simulations suggest that the positive economic impact could be significant, especially on the tourism sector if Government is prepared to absorb the fiscal cost. However the positive economic impact will take time to materialise and would be significantly undermined if full pass-through is not ensured. Experience from other countries shows that full pass through is unlikely in the case of a tax reduction. This implies that unless a mechanism is contemplated to ensure a significant pass through, the (general) economic benefits will be partially compromised whilst the financial repercussions to the government will remain relatively high.

Under the assumption of full pass through economic growth improves by 0.2 percentage points in the year of implementation and 0.6 percentage points in the second year. The opportunity cost of this policy, as measured by the fiscal impact is estimated at EUR 23 million within two years following the proposed reduction. If we assume half the pass through, the economic impact is roughly halved whilst the opportunity cost after two years remains a significant EUR 22 million.

The simulations also indicate which sectors of the Maltese economy are likely to benefit from this proposal. The tourism sector, particularly restaurants and hotels will be the main beneficiaries of this policy. However because of inter industry linkages with tourism, other sector benefit, namely agriculture, food and beverages, and the wholesale and retail sector. A positive impact is also observed in a number of other manufacturing concerns, transport storage and communications, financial intermediation and other service industries.

The results also show that whilst the action of Malta's main competitors in tourism is also relevant when considering the impact of this measure, the opportunity cost relative to the economic benefits remain irrespective of competitors' strategies.

The simulations suggest that this policy is effective as long as Government is prepared to endure the fiscal cost. Under a strict budget neutral scenario where the revenue loss is recovered fully in the year of implementation, the policy can become ineffective. The scenario suggests that an equivalent income tax reduction can be more effective, less costly to the government and its impact is more immediate. If however, the Government is able to withstand the negative budgetary impact for longer than one year, the policy becomes more effective after the second year than an equivalent income tax reduction. However, the difference is likely to be marginal.

Also, one has to consider the limitations of this analysis with regards to the opportunity cost involved. In this report we have effectively considered one hypothetical alternative – a reduction in income tax. We have not considered other alternatives.

A possible alternative, for instance, would be an increase in investment expenditure, possibly in the tourism sector. Because investment is likely to have a higher multiplier effect than a tax reduction, the opportunity cost of the VAT reduction may be even higher than the opportunity cost evident in the hypothetical example of a reduction in

income tax explored in this report. Moreover, investment in the tourism sector may be an effective means of attaining Malta's goal in the tourism sector of attracting higher spending tourists and thus pushing the tourism sector towards the higher value added chain. These considerations are beyond the scope of this report but should play an important element in the decision-making process.

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Appendix 1: MHRA Proposed Terms of Reference

Government has stated that a reduction in VAT from 18% to 5% will cost the economy circa 32 million euros in loss of earnings. It is not clear how Government has calculated this figure and it is assumed that this figure was derived on the basis of the annual average receipts of VAT on restaurant sales, i.e. that this figure represents the forfeiture of the VAT element amounting to the 13%. These terms of reference are being proposed so that an objective and unbiased analysis of the overall economic impact is conducted in the event that a reduction in VAT from the current 18% to 5% is applied.

The proposed T.O.R. should aim at measuring the real net affect of a 13% reduction on the current applied VAT rate of 18% taking into account compensating factors which would offset the loss of revenue earnings for Government. MHRA believes that in the current scenario, i.e. with 18% VAT, likelihood is that Government revenue derived from food sales will continue to fall, and that a reduction in VAT as proposed can reverse this trend, as it will stimulate increased spending especially in current market conditions which are fiercely price driven, both in terms of domestic and as well as tourist spend. This assessment will also serve the purpose of understanding better the dynamics of the sector and its cost structures and will also acquire other important information which to date remain unavailable.

Terms of Reference to be applied in the Calculation of the Real Reduction in VAT Revenues

1. The exercise is to be limited to MTA licensed catering establishments, which total to approximately 1,500 outlets as well as the various restaurants and catering outlets in hotels. Other retail outlets are to be excluded.

2. VAT revenues must be established for at least the last 20 months in order to be able to analyze the rate of decline in revenues in recent months when compared to the same months last year. Additionally the study needs to establish the loss of VAT for Government as a result of this decline in sales. The study also needs to calculate the ratio of beverage sales in relation to food sales, as this will also have an impact on the collected VAT.

3. It is important to establish correctly the employment levels of this sector. This sector employs a very high percentage of part-time employment and consequently it is imperative that employment levels take into account the full-time equivalent. Without any doubt, this sector has reduced the employment levels over recent months, and will most likely continue to do so in the coming months. The study needs to assess the cost of these job losses to the economy.

4. It is also important to establish the effect falling revenue has on employment levels in order to establish the ratio and relationship between the two.

5. As member states may choose to apply this reduction either on food only, or also on non-alcoholic beverages, or even on all beverages including alcoholic beverages, the study should report the resulting economic impact in all three scenarios.

6. The correct methodology must be employed with all catering establishments so as to identify the real proportion of restaurant services within their VAT contribution, as opposed to other non-restaurant related services which at times are also included within the same VAT returns.

Terms of Reference to be applied in the Calculation of the Advantages Resulting from the Reduction.

1. It is important to measure the positive impact a reduction in VAT will have on Malta's competitiveness with regards to other tourist destinations. Currently Malta is the EU country in the entire Mediterranean region with the highest VAT rate. As restaurants form a vital element of a tourist's stay and overall spend, this reduction would considerably increase Malta's attractiveness as a tourist destination.

2. The price elasticity on demand. The study must establish to what extent a reduction in VAT by 13% can stimulate increased spending on food and beverage sales.

3. The positive economic impact resulting from the increase in local purchasing power should also be established.

4. The considerable strengthening of the restaurant sector's employment, and the uncertainty which this sector is facing due to the current negative situation also needs to be looked into. The retention of employment levels will maintain income tax, social security and other related contributions for Government, as opposed to claims for social benefits.

5. The multiplier effect on other industries such as fishermen and fish farms, agriculture, cleaning industry, importers, beverage producers, hard & soft furnishings providers, etc, as a result of strengthening the restaurant sector, also needs to be taken into account.

6. The ensuing reduction of black/grey economy through a much smaller perceived saving through under-declaration. Also greater fiscal transparency through the separation of food and beverage sales.

7. The decrease in our inflation is another positive factor.

8. The positive social impact and increase and increase in standard of living, inducing a higher average spent in dining out and entertainment.

9. The added stability of restaurant profit margins resulting in additional investment and increased quality service levels.

10. The public ‘feel-good’ factor resulting from such an economic stimulus.

Terms of Reference to be applied Resulting in other Conclusions of a General Nature

The study should also:

1. Serve as a model to help measure the real impact and magnitude of this sector.

2. Aim to establish cost structures, seasonality and class/type issues associated with the restaurant sector.

3. Distinguish domestic spend to tourist spend.

4. Distinguish between VAT collected from restaurants, snack bars and hotel-based restaurants.

5. Establish the extent of vulnerability this sector is subject to as a result of the erosion of profits, and the consequential negative repercussions this will have on the economy, which could be reversed by a reduction the VAT.

Appendix 2: Partial Equilibrium Analysis of Tourism Earnings

The following are the results of the long run tourist expenditure (X_TOUR) function regressed on foreign income (WGDPT) and an aggregate tourist price (XP_TOUR). All variables are in logs such that the coefficients represent elasticity estimates.

Dependent Variable: X_TOUR
Method: Least Squares
Date: 09/14/09 Time: 11:04
Sample: 1996:1 2008:4
Included observations: 52

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.523163	2.606934	2.885828	0.0059
WGDPT	0.635772	0.433123	1.467878	0.1489
DQ2	0.611872	0.037570	16.28635	0.0000
DQ3	1.067995	0.037108	28.78069	0.0000
DQ4	0.413799	0.036795	11.24601	0.0000
XP_TOUR	-1.134518	0.220126	-5.153946	0.0000

R-squared	0.950361	Mean dependent var	11.97257
Adjusted R-squared	0.944965	S.D. dependent var	0.384600
S.E. of regression	0.090225	Akaike info criterion	-1.864850
Sum squared resid	0.374467	Schwarz criterion	-1.639706
Log likelihood	54.48610	F-statistic	176.1377
Durbin-Watson stat	2.407470	Prob(F-statistic)	0.000000

The following are the results of the long run tourist expenditure (X_TOUR) function regressed on foreign income (WGDPT) and a separate tourist price for accommodation (P_ACC) and the cost of eating out in restaurants (P_RES). The model presented below was chosen among a set of other alternative models on the basis of statistical tests. Also, tests for cointegration following the Engle-Granger methodology were carried out in order to test the hypothesis of cointegration which is a prerequisite for use of the error correction model. The tests confirm a long-term relationship between tourism earnings, foreign income, prices of accommodation and price of restaurants.

Dependent Variable: X_TOUR
Method: Least Squares
Date: 09/18/09 Time: 10:36
Sample: 1996:1 2008:4
Included observations: 52

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.61785	2.070137	6.095174	0.0000
WGDPT	0.577299	0.466188	1.238341	0.2220
DQ2	0.578819	0.039460	14.66845	0.0000
DQ3	1.025888	0.040546	25.30190	0.0000
DQ4	0.396912	0.037381	10.61805	0.0000
P_ACC	-0.369403	0.208186	-1.774387	0.0828
P_RES	-0.654097	0.198772	-3.290689	0.0019

R-squared	0.952214	Mean dependent var	11.97257
Adjusted R-squared	0.945843	S.D. dependent var	0.384600
S.E. of regression	0.089503	Akaike info criterion	-1.864439
Sum squared resid	0.360486	Schwarz criterion	-1.601772
Log likelihood	55.47542	F-statistic	149.4505
Durbin-Watson stat	2.382610	Prob(F-statistic)	0.000000

The coefficient on P_RES, estimated at -0.65 was subsequently introduced in SAMM as a measure of the elasticity of tourist demand for restaurant prices.

Below is the error correction specification which includes the long term and short term relationships and the error correction term. The error correction term is estimated at -0.23, suggesting a relatively slow adjustment to long term fundamentals. It is also worth noting how the short-term coefficients on the two prices used were found to be statistically insignificant in the short term and were thus removed from the short term relationship. In the short term, however, the nominal effective exchange rate (NEER) was found to be statistically significant.

Dependent Variable: X_TOUR
Method: Least Squares
Date: 09/18/09 Time: 10:40
Sample(adjusted): 1996:2 2008:4
Included observations: 51 after adjusting endpoints
X_TOUR = C(1) + C(2)*D(WGDPT)+
C(8)*D(NEER)+C(9)*(X_TOUR(-1)-0.577*WGDP(-1)+0.369
*P_ACC(-1)+0.654*P_ RES(-1))

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	15.09716	1.407837	10.72366	0.0000
C(2)	10.69480	1.514365	7.062231	0.0000
C(8)	-5.920258	2.793220	-2.119510	0.0394
C(9)	-0.239193	0.107215	-2.230972	0.0305

R-squared	0.522811	Mean dependent var	11.97893
Adjusted R-squared	0.492352	S.D. dependent var	0.385657
S.E. of regression	0.274779	Akaike info criterion	0.329482
Sum squared resid	3.548652	Schwarz criterion	0.480998
Log likelihood	-4.401794	Durbin-Watson stat	1.996212

Appendix 3: Underdeclaration of VAT

The estimates of underdeclared VAT revenue likely to be declared following the reduction in VAT rate on restaurants, as referred to in footnote 10 of this report are shown below. They are based on the data for Malta observed prior to and following the increase in VAT rate in 2004 from 15 per cent to 18 per cent. Due to the various assumptions used in this calculation, these figures should only be considered as indicative and should therefore be used with caution. The results presented in the model do not incorporate these estimates. There are two sets of estimates. The first one is based on yearly averages over a period of four years before and four years after the increase in VAT in 2004. The second one is based on data for 2003 and 2004.

From the available data on VAT revenue collected and total consumption, it was possible to estimate the effective VAT rate between 2000 and 2007. The estimated effective VAT Rate following the increase in VAT is roughly calculated as the increase in the effective rate prior to the increase in VAT proportionate to the increase in the marginal rate on that part of consumption expenditure taxed at the full VAT rate. The part of the consumption taxed at a reduced rate or zero rated is thus excluded from the VAT rate increase. To arrive at the likely revenue recovered from underdeclaration as a result of the VAT reduction it was necessary to assume a ratio of restaurants evading tax to normal tax evasion in the economy from other types of establishments. It is assumed that the ratio is 1 restaurant to 2 other establishments, thus assuming a lower level of underdeclaration in the restaurant sector than in the rest of the economy.

It is obvious that these estimates are subject to a significant degree of judgement and a number of assumptions which could not be validated. Amongst others it is also assumed that the effect on underdeclaration is symmetric whether it is a rate increase or decline. Therefore, they should be treated with caution, are being included only upon specific request from MHRA and for illustrative purposes only. These estimates are not incorporated in the model results quoted in the entire document.

Rough estimate of VAT under declaration possibly recovered as a result of the reduction in VAT on restaurants

	Average 2000/2003	Average 2004/2007	2003	2004
Average VAT effective tax rate (% of total consumption)	10.3	12.1	9.7	11.1
Actual Tax Rate (Maximum)	15	18	15	18
Estimated Effective VAT Rate	10.3	12.2	9.7	11.4
Estimated VAT underdeclaration resulting from the increase in VAT from 15% to 18% (% of tax base)		**0.20%**		**0.55%**
Assumed Ratio of Restaurants evading VAT to Other Establishments		**50%**		**50%**
Estimated Impact (in € 000s) scaled to reflect the actual decline in VAT on Restaurants		**€240**		**€890**