Setting the Rates of Machine Games Duty

Technical Background

May 2012

1 Introduction

This note explains how the standard and lower rates for Machine Games Duty (MGD) have been set. The note builds on the methodology presented in the Policy Costings Document[1] as well as on the impacts described in the Tax Information and Impact Note (TIIN)[2], both published at Budget 2012.

HM Treasury (HMT) and HM Revenue and Customs (HMRC) would like to thank all companies and individuals who have provided data and information for the MGD analysis. All data underlying the MGD rates calculations have been described in this note to the level of detail that would allow respondents' confidentiality to be maintained.

Section 1 sets out the background to the gaming machines taxation reform, defines revenue neutrality and provides a brief outline of the methodology used.

Section 2 sets out the data used and its sources.

Section 3 sets out how the revenue neutral rates have been calculated, and how the final estimate of the impact of MGD on Exchequer revenues has been derived.

Section 4 provides information on the expected distributional impact of the introduction of MGD. The focus is on the effects across the different sectors that make up the gaming machine market, but the impact within sectors is also briefly considered.

1.1 Policy Background

The taxation of gaming machines will be reformed through the introduction of MGD. MGD will be charged on the net takings (stakes less prizes)[3] from the playing of "dutiable machine games". These are games played on a machine where customers hope to win a cash prize worth more than they stake. Where MGD is payable, it will replace both Amusement Machine Licence Duty (AMLD) and VAT.

AMLD is a banded licence duty on gaming machines. The duty bands are broadly aligned with the social categories of gaming machines set by the Department for Culture, Media and Sport (DCMS). The social category of a machine is determined by the level of maximum stakes and prizes it offers. In addition to AMLD, gaming machines are currently subject to VAT on their net takings. Table 1.1 shows stake and prize limits by machine category, the AMLD fees and where each category of machine can typically be found.

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[1] http://cdn.hm-treasury.gov.uk/budget2012_policy_costings.pdf (pages 29-30)
[2] http://www.hmrc.gov.uk/budget2012/tiin-0738.htm
[3] Net takings are also known as machines' gross profits, gross gaming yield and cash-in-box

Table 1.1: Machine Categories, 2012-13 AMLD Licence Fees and Typical Locations

Category	AMLD p.a.	Maximum Stake/ Prize Limit	Typically found in:
B1	£3,150	£2/£4,000	Casinos
B2	£2,480	£100/£500	Betting Offices
B3	£2,480	£2/£500	Bingo Halls and Adult Gaming Centres
B4	£2,250	£1/£250	Clubs
C	£935	£1/£70	Pubs, Adult Gaming Centres and Bingo Halls

Category D machines do not fall within the AMLD regime, and therefore are not included in the table. Category D machines are typically found in Family Entertainment Centres (FECs) and Adult Gaming Centres (AGCs).

As MGD will encompass games played where the customers hope to win a cash prize worth more than the stake, it will include certain machines not currently subject to AMLD. It will cover AMLD exempt machines (low stake/ prize gaming machines that are regulated as category D machines), as well as certain machines not classified as "gaming machines" for regulatory purposes (for example so called "Skill With Prizes" (SWP) machines).

There will be two rates of MGD. The standard rate will be 20 per cent, and the lower rate will be 5 per cent of machines' net takings. The lower rate of MGD will apply to machines with maximum stakes of 10 pence and maximum cash prizes of £8, while the standard rate will apply to all other dutiable machines. Based on the information provided in the course of the 2010 HMRC SWP Review, it is assumed that all SWPs will be liable to the standard MGD rate[4].

1.2 Defining Revenue Neutrality

The introduction of MGD is intended to be revenue neutral. The goal of revenue neutrality is defined in terms of the overall impact on the Exchequer. Therefore, the two MGD rates have been set with the intention for the Exchequer revenue that will be collected from MGD to be equal to that which would have been collected from AMLD and VAT on machines if the MGD had not been introduced. For this purpose, the net projected VAT receipts have been taken into account, i.e. VAT payable on machines' net takings less input VAT reclaimed.

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[4] The SWP review found that the industry norm, especially for quiz games, is for stakes and prize limits of SWP machines to be above the threshold for the lower rate. However, as with other machines, any SWP with stakes and prize limits below 10 pence/ £8 would also benefit from the lower rate.

The revenue neutral lower rate was estimated at 8 per cent and the revenue neutral standard rate was estimated at 20 per cent (both rounded to the nearest percentage point). However, due to rounding, setting the rates at these levels would have resulted in a small Exchequer gain of £5 million per annum. A decision was taken to set the lower rate at 5 per cent, below the actual revenue neutral level. This did not change the rounded 20 per cent estimate for the overall revenue neutral standard rate. It also meant that the total impact on Exchequer revenues across the two rates is "negligible" [5].

Table 1.2 summarises the revenue neutral position in 2012/13. The first two columns set out what the 2012/13 AMLD forecast and the estimated 2012/13 yield from VAT would have been had MGD not been introduced. This is termed the "pre-MGD" situation. Conversely, the third column sets out what the expected yield from MGD would have been had MGD already been introduced at the start of 2012/13. The table shows that, overall, the yield from AMLD + VAT is expected to equal the MGD yield.

MGD will be introduced on 1st February 2013. The full year is used only for calculation purposes, and the final results are scaled accordingly.

Table 1.2: Estimated Yield from AMLD, VAT and MGD (2012-13)

	AMLD	VAT	MGD
Total	£225m	£325m	£550m

Rounded to the nearest £5m

As outlined in the published TIIN, revenue neutrality is expected to be achieved in every single year over the scorecard period, from 2012/13 to 2016/17[6].

The methodology for producing the central estimate of the costing has been certified by the Office for Budget Responsibility (OBR), led by the Budget Responsibility Committee (BRC), as representing a reasonable and central view given the information currently available. The OBR noted that there were uncertainties around the costing depending on the behavioural responses of gaming companies and consumers[7].

The estimates of revenue neutrality focused on the ongoing "business as usual" situations, although one-off effects from the transition were also considered. The exact point in time in which machine operators become (partially or fully) exempt from VAT is expected to affect some business decisions (e.g. investment in new

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[5] Where a costing is less than £3m in absolute value, the costing is deemed to negligible and presented as 'neg' rather than showing a numerical value.
[6] The scorecard period is defined as the number of years over which Exchequer revenue impacts are published in the Red Book. It is also consistent with the period over which the OBR forecasts are published.
[7] For more information see http://cdn.hm-treasury.gov.uk/budget2012_policy_costings.pdf

machines). However this will only have an effect in year one and does not impact on the level of MGD rates which have been set to achieve revenue neutrality over the scorecard period.

1.3 Summary of the Methodology

The model calculates pre-MGD (AMLD+VAT) revenue, taking into account the ability of machine operators to reclaim input VAT.

Revenue from MGD is calculated by applying MGD rates to the total projected machine net takings, as appropriate for each of the standard and lower rate machine categories.

The overall behavioural effect of the reform – i.e. the change in demand for playing machine games - is expected to be negligible. Demand could be affected were there to be a change in the return from (i.e. the price of) playing machine games (the payout ratio)[8]. However, social legislation limits the number of machines that different sectors can hold, as well as their stakes and prize levels, so it is not expected that machine operators will change payout ratios in any significant way. Moreover, since the reform is designed to be revenue neutral, the overall change in return/price would be negligible, so the behavioural effect would also be minimal.

The assumption of negligible behavioural effects is also consistent with consultation discussions stating that operators have limited scope to pass on any tax increases to their customers, that it is technically difficult for them to change their payout ratios, and that social regulation limits what they can do relating to both machine numbers and stakes and prize limits.

2. Data

This section sets out the sources of data underlying the MGD analysis. Section 3 describes the calculations methodology in greater detail.

The key data for the analysis include machine numbers, net takings and VAT recovery ratios (i.e. the ratio of input VAT recovered to the output VAT liable).

The market for dutiable machine games is complex, with a number of different machine categories and a number of different sectors operating these machines. The market can be broadly split into: casinos, licensed betting offices (LBOs), adult gaming centres (AGCs, generally high street arcades), licensed and unlicensed family

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[8] The price of a game is defined as the stake minus the expected prize. Therefore, any change in payout ratio will change the price of a game. The analysis uses an assumed price elasticity of -0.5, based on a Nottingham University study "Modelling the UK Gambling Market: A report for HM Customs and Excise and the Department for Culture, Media and Sport" (Paton and Vaughan Williams, 2005). The price elasticity measures the responsiveness of demand to a percentage change in price. This means that a 1% increase in the price of a game is expected to reduce demand by 0.5%.

entertainment centres (FECs, for example seaside arcades), bingo halls, clubs and pubs. Social regulation dictates that licensed FECs can operate Category C and D machines, whilst unlicensed FECs can only operate Category D machines. Non-gaming machines such as SWPs can be operated by any sector.

Clubs are further split dependent upon whether they fall within the VAT de minimis limits[9] relating to partial exemption. The split is based on data provided by suppliers of dutiable machines to operators (75% of clubs are assumed to be de minimis). Pubs are split into different categories based on British Beer and Pub Association (BBPA) data depending on whether they are managed (referred to in this note as 'M', i.e. managed directly by a group or company that owns the pub), tenanted ('T', i.e. leased to a landlord) or independent ('I'). These categories are also split further between those expected to be partially exempt from VAT ('PE') and those expected to fall below the VAT de minimis limits ('De M'). For the tenanted pubs, an additional scenario exists for non-managed machines ('NMM'), i.e. machines operated by the tenant rather than the pub company that owns the pub. Table 2.1 shows the proportion of pubs in each category.

Table 2.1: Distribution of Total Pub Numbers by Business Model and VAT Treatment

	Proportion of Pubs
Pubs - M (PE)	19%
Pubs - T (PE)	7%
Pubs - T (De M)	41%
Pubs - T (De M) NMM	12%
Pubs - I (PE)	3%
Pubs - I (De M)	17%

Source: BBPA 2011 Consultation Response.
The numbers do not sum due to rounding

No single source of data covers all sectors of the dutiable machine games market. Information has therefore been obtained from a number of sources, including the Gambling Commission, consultation responses and published company accounts (which have been used as a check). The following subsections describe information sources and statistics in more detail. The data used in the calculations comes from 2010/11 Gambling Commission Regulatory Returns, the 2010 HMRC SWP Review as well as from the summer 2011 HMT/ HMRC consultation on the design characteristics of MGD[10]. The data have been uprated for 2012/13 and forecast over the scorecard period as described in section 2.4.

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[9] The de minimis rules are described in section 2.3

[10] The Government first announced its intention to reform the taxation of gaming machines and introduce MGD in December 2010. That decision followed a consultation on the taxation of gaming machines launched by the previous Government in July 2009.
This Government held a second consultation in the summer of 2011 on the design characteristics of MGD.

As part of the 2011 consultation, all interested parties were encouraged to respond fully, and the Government asked about further data from the industry to ensure it had the most up-to-date information and enabling the widest possible data set to be considered. Ministers and officials met with nine trade associations and 28 individual companies of varying sizes from across the gambling industry as part of the consultation, and all 32 substantive written responses were considered.

2.1 Machine Numbers

The numbers of machines by category and sector are estimated, where applicable, using the latest Gambling Commission Regulatory Returns combined with HMRC data on AMLD licences. These data have been checked for consistency with industry information provided in the consultation responses. Where Gambling Commission/HMRC data was not available, consultation responses have been used as described below.

Gambling Commission Category D numbers in licensed FECs have been halved to take into account the exclusion of non-cash prize category Ds from the MGD regime. This assumption is based on consultation information.

Gambling Commission Regulatory Returns do not cover the whole gaming machine market, particularly pubs, clubs and SWP machines. Consultation information from machine suppliers, BACTA, BBPA and the 2010 SWP review have been used to derive assumptions on machine numbers in these cases.

Total machine numbers have been calibrated for consistency with the OBR AMLD forecast.

Table 2.2, below, shows the breakdown of the information sources for machine numbers. Table 2.3 shows estimated machine numbers for 2012/13.

Table 2.2: Sources of Data on Machine Numbers, by Sector

Casinos LBOs Bingo Halls AGCs FECs	Gambling Commission Industry Statistics / HMRC Taxpayer Data/BACTA (SWPs)
Clubs	Suppliers
Pubs	BBPA/Suppliers

Table 2.3: Estimated Machine Numbers (2012/13)

	B1	B2	B3	B4	C	D	SWP	Total
Casinos	2,600							2,600
LBOs		33,200	200		200			33,600
Bingo Halls			3,300	300	13,000	2,200	900	19,600
AGCs			8,500	200	31,100	17,900	2,100	59,800
Lic FECs					2,900	12,200	1,400	16,500
Un-lic FECs						25,000	1,600	26,600
Clubs (PE)				1,100	100		300	1,600
Clubs (De M)				3,200	400	100	1,000	4,700
Pubs - M (PE)					12,000	300	5,500	17,900
Pubs - T (PE)					4,200	100	1,900	6,300
Pubs - T (De M)					22,000	600	10,000	32,700
Pubs - T (De M) NMM					5,000	100	2,300	7,400
Pubs - I (PE)					1,300		600	1,900
Pubs - I (De M)					7,200	200	3,300	10,600
Total	2,600	33,200	12,900	4,700	99,500	58,800	30,900	242,600
FECs (Total)					2,900	37,200	3,000	43,100
Clubs (Total)				4,200	600	100	1,300	6,200
Pubs (Total)					51,700	1,500	23,600	76,700

Rounded to the nearest 100. Where there are fewer than 50 machines in a given category in a given sector, machine numbers are not reported in this table. Totals may not sum due to rounding.
B3A machine numbers are not presented in the table, as they are not included in the scope of MGD. However, they are used when calibrating to the AMLD forecast.

2.2 Machine Net Takings

Dutiable machines' net takings form the tax base for MGD, and allow projected VAT receipts to be calculated under the pre-MGD regime. For most business types, average machine net takings by category are available from Gambling Commission Regulatory Returns[11]. These net takings have been corroborated by consultation responses. The Gambling Commission does not provide data on pubs or clubs for which data have been provided by BBPA and machine suppliers. Table 2.4, below, summarises the available data sources for machines' net takings.

Machine net takings for SWPs in clubs have been derived from suppliers' consultation responses. Net takings for SWPs in pubs were based on data provided by the BBPA in the 2010 SWP review and scaled in line with relative category C profitability. The net takings of SWPs in FECs, AGCs and bingo halls were assumed to be at the top end of pub net takings, as it is not expected that these sectors would have net takings lower than those in pubs as machines make up a greater proportion of their total revenue.

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[11] A small adjustment is made to net machine takings for licensed FECs. This adjustment was made on the expectation that Category D machines would not make significantly more that Category C machines once AMLD payments were taken into account. Some support for the adjustment came from consultation responses. Category C profits were increased, and Category D profits were reduced.

Table 2.4: Machine Net Takings: Data Sources and Estimated Market Coverage

	Profits per Machine		
	Main Source	**Supporting Information**	
Casinos	GC	Consultation Responses - 70% market coverage	
LBOs		Consultation Responses - 85% market coverage	
Bingo Halls		Consultation Responses - 75% market coverage	
AGCs		BACTA - 15% market coverage of AGCs and FECs	Consultation Responses - 25%+ Market coverage of AGCs
FECs			
Clubs	Suppliers	50%+ Market Coverage	
Pubs	BBPA	Pub Co.s - 15% market coverage	

For each machine operating sector (i.e. for each row in the tables above) the Gambling Commission[12] reports total net takings by machine category as well as a further "aggregated categories" figure. These aggregate figures represent total unallocated net takings, i.e. net takings reported to the Gambling Commission that were not allocated to a particular machine type. The aggregated categories net takings figures have been allocated to machine categories assuming they are distributed in the same way as allocated net takings.

Consider the example in table 2.5 below. Initially, we have the situation in row 1, a mix of allocated and unallocated net takings. To allocate the latter to machine categories, we look at the percentage of allocated net takings each machine type makes up (row 2). We then multiply the unallocated profit by this percentage, and add to the allocated profit to give the final result (row 3). Table 2.6 shows the proportion of net takings allocated. For example, the table shows that for casinos, all net takings reported to the Gambling Commission are allocated to a particular machine type; whereas for bingo halls, only 56% of net takings reported to the Gambling Commission were allocated to a particular machine type.

Table 2.5: Allocating Aggregated Net Takings Example

	Category 1	Category 2	Category 3	Unallocated
Row 1: Initial Profits	£40	£20	£20	£20
Row 2: % of allocated profits accounted for by machine type	50% (=40/(40+20+20))%	25%	25%	-
Row 3: Final Profits	£50 (=£40+50%x£20)	£25	£25	0

Table 2.6: Proportion of Net Takings Allocated by Business Type

	% profits allocated
Casinos	100%
LBOs	100%
Bingo Halls	56%
AGCs	69%
Lic FECs	87%

Gambling Commission Regulatory
Returns 2010/11

Table 2.7 shows estimated annual machine net takings for 2012/13.   Table 2.8 shows estimated average weekly net takings per machine.

Table 2.7: Estimated Annual Net Takings by Machine Category and Sector (2012-13, £m)

	B1	B2	B3	B4	C	D	SWP	Total
Casinos	130							135
LBOs		1,455	5					1,455
Bingo Halls			95	5	115	5	5	225
AGCs			165		145	45	5	360
Lic FECs					10	30	5	50
Un-lic FECs						65	5	70
Clubs (PE)				10				10
Clubs (De M)				25				25
Pubs - M (PE)					175		20	195
Pubs - T (PE)					45		5	50
Pubs - T (De M)					185		20	205
Pubs - T (De M) NMM					30		5	30
Pubs - I (PE)					15			15
Pubs - I (De M)					40		5	45
Total	130	1,455	265	35	760	145	75	2,865

Rounded to the nearest £5m. Where the net takings for a machine category in a sector are less than £2.5m, machine net takings are not reported in this table. Totals may not sum due to rounding.
Excludes B3A machines

Table 2.8: Estimated Weekly Net Takings per Machine by Machine Category and Sector (2012/13, £)

	B1	B2	B3	B4	C	D	SWP
Casinos	980						
LBOs		840	275		100		
Bingo Halls			560	295	170	55	65
AGCs			370	85	90	45	65
Lic FECs					80	50	65
Un-lic FECs						50	65
Clubs (PE)				135	85		35
Clubs (De M)				135	85	35	35
Pubs - M (PE)					280	65	65
Pubs - T (PE)					210	50	50
Pubs - T (De M)					160	40	40
Pubs - T (De M) NMM					110	25	25
Pubs - I (PE)					210		50
Pubs - I (De M)					110	25	25

Rounded to the nearest £5. Where there are fewer than 50 machines in a given category in a given sector, machine net takings are not reported in this table. Totals may not sum due to rounding.
Excludes B3A machines

2.3 VAT recovery ratios

Data on machine numbers and net takings have been used to estimate the expected MGD revenue. As takings from dutiable machine games become VAT exempt, some machine operators' ability to reclaim VAT paid on their inputs will be diminished as businesses become partially or wholly exempt from the VAT regime[13]. To correctly estimate the tax base for the baseline regime we therefore also require VAT recovery ratios in order to estimate machines' pre-MGD "net" VAT liability.

The VAT recovery ratio in the MGD model is defined as the proportion of input VAT that can be reclaimed as a proportion of the total output VAT liability. Input VAT is incurred on purchases of goods and services that are made for the purposes of producing VATable supplies. Output VAT is added to the sale price of VATable goods and services sold by the business. A business that makes VATable supplies can normally recover the VAT it incurs on its respective costs, and the "net VAT" paid by the machine operator is defined as output VAT paid minus input VAT reclaimed.

The prices of goods and services are often quoted as being VAT inclusive. The amount of VAT due is not equal to 20% of the final price, but 20% of the "pre-VAT" (or VAT exclusive) price. So, if the pre-VAT price is £10, the VAT due is £2 and the VAT inclusive selling price is £12. It follows that the VAT due on the final selling price (or machine net takings) equals: VAT rate / (100% + VAT rate) = 16.7% for the 20%

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[13] Partly exempt businesses must undertake calculations to work out how much input tax they may recover (they cannot recover VAT on supplies related to exempt supplies, and can only reclaim a proportion of residual input tax), as this may be limited. However, some businesses may be able to take advantage of de minimis limits, allowing a full input tax claim. The current de minimis test requires a business to calculate how much input tax it has incurred on costs relating to exempt supplies in accordance with its partial exemption method. Provided this input tax is no more than £625 per month on average and no more than half of its total input tax, the business is said to be 'de minimis' and can recover input tax relating to exempt supplies.

standard VAT rate. We refer to this as the "VAT fraction". Applying this to the £12 example, 16.7% times £12 is equal to £2, i.e. the correct amount of VAT due.

The net takings of machines are inclusive of VAT. It is therefore possible to estimate the output VAT paid by machine operators using the VAT fraction.

Consider a further example of a machine operator who buys £100 of goods and services (inclusive of VAT), and generates £150 in machine net takings. The operator pays 16.7% * £150 = £25 output VAT in respect of the net takings. The operator can then also (if all purchases are subject to VAT) reclaim 16.7% * 100 = £16.7 paid in respect of the goods and services used to operate the machines. The "net VAT" paid by the operator is then £25-£16.70 = £8.30, and their "VAT recovery ratio" is £16.70/£25 = 67%.

The operator's "effective VAT fraction" is defined as: (VAT Fraction * (1-VAT recovery ratio)). Based on the example above, the effective VAT fraction is 16.7% * (1-67%) = 5.5%. The effective VAT fraction measures the net VAT paid by the operator as a proportion of machine net takings. So in this case £8.3 over £150 equals 5.5%.

VAT recovery ratios (and therefore the effective VAT fractions) are expected to vary within and between sectors. Levels of input VAT will vary depending on business models (e.g. firms that invest more will be buying greater numbers of VATable inputs, and so will be able to claim more against output VAT) and the arrangements individual firms have with suppliers (e.g. whether machines are purchased or rented). The VAT recovery rate is inversely proportional to net takings (other things being equal). This means that the total VAT paid in respect of machines' net takings will vary depending on machines' profitability, and that, on average, the higher the machine takings, the lower the VAT recovery rate and vice versa.

Data on VAT recovery ratios are only available directly from the industry. A mix of individual companies and trade associations in each sector provided relevant information in their consultation responses. Average VAT recovery ratios by sector type have been estimated based on these responses. No data was available for clubs, for which an assumption has therefore been made based on the average VAT recovery ratio in independent pubs (the business model that is deemed closest to that of clubs). Table 2.9 shows the estimated VAT recovery ratios and data sources by sector.

Table 2.9: VAT Recovery Ratios Assumptions, Data Sources and Estimated Market coverage, by Sector (2012-13)

	VAT Recovery	Source	Notes
Casinos	40%	Consultation Responses	70% market coverage
LBOs	25%	ABB	85% market coverage
Bingo Halls	40%	Bingo Association	Majority of market
AGCs	40%	Consultation Responses	25% plus market coverage
Lic FECs	60%	BALPPA/BACTA	Upto 15%
Un-lic FECs	60%	BALPPA/BACTA	Upto 15%
Clubs (PE)	45%	BBPA	No information received during consultation, estimate based on from pubs with similar business models
Clubs (De M)	0%	BBPA	See section 2.3
Pubs - M (PE)	37.5%	BBPA	Based on typical examples provided by BBPA
Pubs - T (PE)	45%	BBPA	Based on typical examples provided by BBPA
Pubs - T (De M)	40%	BBPA	Based on typical examples provided by BBPA
Pubs - T (De M) NMM	0%	BBPA	See section 2.3
Pubs - I (PE)	45%	BBPA	Based on typical examples provided by BBPA
Pubs - I (De M)	0%	BBPA	See section 2.3

Some VAT recovery ratios have been set to *0* to simplify the modelling process for de minimis businesses[14]. These businesses will still be able to reclaim VAT once MGD is introduced. Including VAT recovery in their effective tax rate (ETR) calculation would not be revenue neutral unless their ability to continue to reclaim VAT following the reform was also included in the post MGD calculations.   In other words, VAT recovery cancels out in the pre- and post-MGD situations, as illustrated in equation 2.1 below.

Equation 2.1: *AMLD + VAT Paid - VAT Recovered = MGD - VAT Recovered*

2.4 Forecast

The public finances assume that AMLD rates are revalorised annually in line with RPI[15].

The net takings of each machine have also been assumed to increase in line with the OBR's forecast of RPI. Although some consultation responses did include forecasts and projected growth rates, this information was not representative of the market as a whole. The analysis undertaken to set the MGD rates is based on averages and is designed to look at the industry as a whole. Industry forecasts were therefore not used in the central case estimations, although possible changes to VAT recovery ratios have been incorporated in the distributional analysis. Machine numbers are calibrated to match the OBR's AMLD forecast in each scorecard year. Table 2.10 presents the forecast of total machine net takings from all machines over the scorecard period.

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[14] Where machines are managed by the Pub Company in a tenanted pub, VAT recovery is not set to 0 as the Pub Company itself will not be de minimis and therefore will no longer be able to recover VAT, so in this case equation 2.1 would no longer hold.

[15] http://cdn.hm-treasury.gov.uk/budget2012_policy_costings.pdf. See Annex A: Indexation in the public finance forecast baseline. The OBR's RPI forecast is available at http://cdn.hm-treasury.gov.uk/budget2012_annexd.pdf

Table 2.10: Estimated Annual Total Machine Net Takings

2012/13	2013/14	2014/15	2015/16	2016/17
£2,850m	£2,850m	£2,900m	£2,950m	£3,000m

Rounded to nearest £50m

VAT recovery ratios are assumed to be constant over time. A number of consultation responses stated that VAT recovery ratios were expected to rise in the coming years. However there was limited data across all sectors to create market trends in VAT recovery ratios. It was also unclear whether the forecasts for the next few years would be more representative over the long term than the outturn VAT recovery ratios. The forecasts submitted were therefore not incorporated in the analysis. However, potential changes in VAT recovery ratios did feed into the distributional analysis presented in section 4.

3 The Costing

This section sets out how the revenue neutral rate has been calculated in 2012/13. As explained above, the costing has been carried out by comparing the pre- and post- MGD reform situation. The data required are annual net machine takings by sector and MGD (standard or lower) rate liability (table 3.2, rounded to the nearest £1m), machine numbers by category (table 2.3), AMLD licence fees in 2012/13 (table 1.1) and VAT recovery ratios by sector (table 2.9).

The following section illustrates each of the steps included in the calculation methodology. In order to present how the final effective tax rates estimates have been arrived at, the data in this section has been presented in more detail than the rounded figures given elsewhere in the note.

The analysis starts by estimating the tax revenue that would have been collected in 2012/13 if MGD had not been introduced. As in section 1, this is referred to as the 'pre-MGD' tax revenue. This is comprised of two components: AMLD and VAT. AMLD yield is calculated by multiplying the total number of machines in each category (table 2.3) by the relevant AMLD rate (table 1.1). Table 3.1 presents the estimated AMLD yield by sector. All machines subject to AMLD fall into the standard rate of MGD[16].

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[16] AMLD forecast figures presented in table 1.2 have been rounded to the nearest £5m. Figures in table 3.1 have been rounded to the nearest £1m.

Table 3.1: Estimated AMLD Yield by Sector (2012-13, £m)

	AMLD Yield for Standard Rate Machines
Casinos	8
LBOs	83
Bingo Halls	21
AGCs	51
Lic FECs	3
Un-lic FECs	n/a
Clubs (PE)	3
Clubs (De M)	8
Pubs - M (PE)	11
Pubs - T (PE)	4
Pubs - T (De M)	21
Pubs - T (De M) NMM	5
Pubs - I (PE)	1
Pubs - I (De M)	7
Total	224

Rounded to nearest £1m. Does not sum due to rounding.

VAT revenue is calculated using sector specific effective VAT fractions, applied to machine net takings, as explained in section 2.3. Table 3.2 sets out total net takings of machines by sector and MGD (standard or lower) rate liability. Table 3.3 sets out estimated VAT yield by sector and MGD rate. For example, for standard MGD rate machines in casinos, total annual net takings are £133m. Taking into account the VAT recovery ratio of 40% in casinos, the respective estimate of VAT revenue from this sector equals to £133m times 20%/(100%+20%)*(1-40%) = £13m. Table 3.3 shows that the total VAT yield across all machines is estimated to be £326 million in 2012-13. Summing AMLD and VAT yield gives the estimated total pre-MGD yield in 2012-13, presented in Table 3.4.

Table 3.2: Estimated Total Profits by MGD Band and Sector (2012-13, £m)

	Estimated Net Takings	
	Standard Rate Machines	Lower Rate Machines
Casinos	133	-
LBOs	1,457	-
Bingo Halls	218	6
AGCs	315	43
Lic FECs	17	31
Un-lic FECs	5	63
Clubs (PE)	9	-
Clubs (De M)	26	0.1
Pubs - M (PE)	193	1.0
Pubs - T (PE)	51	0.3
Pubs - T (De M)	205	1.0
Pubs - T (De M) NMM	31	0.2
Pubs - I (PE)	15	-
Pubs - I (De M)	44	0.3
Total	2,720	147

Rounded to nearest £1m where net takings > £4.5m, and to nearest £0.1m where net takings are <£4.5m. Where there are fewer than 50 machines across an entire sector, no profits are presented in the table.

Table 3.3: Estimated VAT Yield by Sector and MGD Band (2012-13, £m)

	Estimated VAT Yield	
	Standard Rate Machines	Lower Rate Machines
Casinos	13	-
LBOs	182	-
Bingo Halls	22	1
AGCs	32	4
Lic FECs	1	2
Un-lic FECs	0	4
Clubs (PE)	0.8	-
Clubs (De M)	4	0.02
Pubs - M (PE)	20	0.10
Pubs - T (PE)	5	0.03
Pubs - T (De M)	21	0.10
Pubs - T (De M) NMM	5	0.03
Pubs - I (PE)	1	-
Pubs - I (De M)	7	0.05
Total	315	11

Rounded to nearest £1m where VAT yield>£0.5m, and to nearest £0.01m where VAT yield <£0.5m.

Table 3.4: Estimated Pre-MGD Total Tax Yield by Sector and MGD Band (2012-13, £m)

	Estimated Pre-MGD Total Tax Yield	
	Standard Rate Machines	Lower Rate Machines
Casinos	21	-
LBOs	265	-
Bingo Halls	43	1
AGCs	82	4
Lic FECs	4	2
Un-lic FECs	0	4
Clubs (PE)	3	-
Clubs (De M)	12	0.02
Pubs - M (PE)	31	0.10
Pubs - T (PE)	9	0.03
Pubs - T (De M)	41	0.10
Pubs - T (De M) NMM	10	0.03
Pubs - I (PE)	3	0.01
Pubs - I (De M)	14	0.05
Total	539	12

Rounded to nearest £1m where VAT yield>£0.5m, and to nearest £0.01m where VAT yield <£0.5m.

The total tax yield is calculated from unrounded AMLD and VAT yield, which can be calculated using the data in the note

The pre-MGD ETRs are calculated based on the pre-MGD total tax yield and net machine takings. For each sector and machine category, the respective ETR is calculated as total tax yield divided by total net takings. For example, the ETR for standard rate machines in casinos is £21m/£133m = 16%. Table 3.5 presents the estimated pre-MGD effective tax rates by sector and MGD rate liability.

It can be seen from table 3.5 that the overall revenue neutral rate for lower rate machines (assumed to be category D machines only) is 8%, and that the overall revenue neutral rate for standard rate machines is 20%. In both cases, the revenue neutral rate has been calculated by dividing total tax paid by total net takings for all machines in the respective MGD band.

The final costing has then been derived by multiplying the standard and lower MGD rates by the respective total annual net takings and subtracting the total estimated pre-MGD tax yield. Due to the part year effect (MGD will be introduced on 1st February 2013), the 2012/13 costing has been scaled accordingly. The 2012-13 calculation is illustrated in equations 3.1 and 3.2 below.

Table 3.5: Estimated Pre-MGD ETRs[17][18] by Sector and MGD Band (2012-13)

	Estimated Effective Tax Rates	
	Standard Rate Machines	Lower Rate Machines
Casinos	16%	-
LBOs	18%	-
Bingo Halls	20%	10%
AGCs	26%	10%
Lic FECs	23%	7%
Un-lic FECs	7%	7%
Clubs (PE)	38%	-
Clubs (De M)	46%	17%
Pubs - M (PE)	16%	10%
Pubs - T (PE)	17%	9%
Pubs - T (De M)	20%	10%
Pubs - T (De M) NMM	32%	17%
Pubs - I (PE)	17%	9%
Pubs - I (De M)	32%	17%
Total	20%	8%

Rounded to nearest percentage point

Where there are less than 50 machines, ETRs are not presented in this table

ETRs are caclulated using unrounded total tax yield

Equation 3.1:

Costing with the lower MGD rate at 8% and the standard rate at 20%.

$$8\% \times £147m + 20\% \times £2,720m - £550m = £5m^{[19]}$$

Equation 3.2:

As in equation 3.1, but with the lower rate at 5% and the standard rate at 20%.

$$5\% \times £147m + 20\% \times £2,720m - £550m = neg$$

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[17] The 46% ETR estimate for de minimis clubs in table 3.4 is higher than the 45% estimate presented in table 4.1. This is due to rounding applied to figures in table 3.2 where the unrounded figure for net takings from standard MGD rate machines in de minimis clubs is £26.4m. Substituting this unrounded figure for £26m in table 3.2 allows the 45% ETR estimate to be calculated.

[18] As presented in section 2.3, VAT recovery ratios have been set to zero in some cases to simplify the modelling process. It should be noted that in these cases the rates in table 3.5 are not technically ETRs. However they do reflect the revenue neutral rates for each of the relevant sectors and therefore represent the cash effect on them correctly.

[19] Equation does not sum due to rounding

4 Distributional Analysis

In addition to estimating the overall revenue neutral rates, the distributional impact of MGD across sectors has also been analysed.

Table 4.1, below, presents the estimated pre-MGD ETRs[20] and estimated changes in tax liability by sector. For each sector, the ETRs are reported separately for machines that will be subject to the standard and lower rates of MGD. The final column presents the estimated total change in tax liability for each sector following the introduction of MGD.

Table 4.1: Estimated ETRs and Change in Total Tax Liability by Sector and MGD Band

	Effective Tax Rate (Standard Rate Machines)	Effective Tax Rate (Lower Rate Machines)	Change in Total Liability by Sector (£m)
Casinos	16%	-	£5m
LBOs	18%	13%	£25m
Bingo Halls	20%	10%	+neg
AGCs	26%	10%	-£20m
Lic FECs	23%	7%	-neg
Un-lic FECs	7%	7%	-neg
Clubs (PE)	38%	9%	-neg
Clubs (De M)	45%	17%	-£5m
Pubs - M (PE)	16%	10%	£5m
Pubs - T (PE)	17%	9%	+neg
Pubs - T (De M)	20%	10%	-neg
Pubs - T (De M) NMM	32%	17%	-£5m
Pubs - I (PE)	17%	9%	+neg
Pubs - I (De M)	32%	17%	-£5m

ETRs for lower rate machines in LBOs, Clubs (PE) and Pubs - I (PE) are reported for completeness. ETRs for these sectors are not reported in table 3.5 because it is estimated that there are less than 50 lower rate machines in each of these sector and so machine profits and numbers have not been reported in sections 2 and 3.

The revenue neutral tax rates for casinos, LBOs, bingo halls, unlicensed FECs and pubs are broadly in line with estimates provided by these sectors during the consultation.

Estimated revenue neutral rates for AGCs and licensed FECs are higher than those given in the consultation responses. The main difference for AGCs stems from machine profitability, where Gambling Commission data is used in preference to consultation responses due to it having significantly higher market coverage. Most AGC consultation responses containing data were from large groups, which we

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[20] As presented in section 2.3, VAT recovery ratios have been set to zero in some cases to simplify the modelling process. It should be noted that in these cases the rates in table 4.1 are not technically ETRs. However they do reflect the revenue neutral rates for each of the relevant sectors and therefore represent the cash effect on them correctly.

would expect to have higher net takings and hence lower revenue neutral tax rates than the smaller chains and individual machine operators. Estimates of machine profitability also help to explain the difference for licensed FECs, where Gambling Commission data was again used in preference to consultation responses due to it having significantly higher market coverage.

In the table above, changes in total tax liability have been rounded to the nearest £5 million with positive numbers indicating an increase in tax liability and negative numbers representing a reduction in the tax liability by sector. These figures show that on average, tax liability for AGCs, FECs, clubs and majority of pubs (see table 2.1) will decrease, whilst that of casinos and LBOs will increase. The average tax liability of bingo halls is expected to increase marginally.

4.1: The Impacts within Sectors

This section explores how the effects of the reform are expected to be distributed within sectors.

In general, operators with lower than average net takings and/or lower than average VAT recovery ratios are expected to face a lower increase/ higher reduction in their tax liability than the average of their sector. For example an AGC with machine net takings below the average will have faced a higher ETR before the reform and will therefore see a greater than average reduction in tax liability.

The evidence base has been insufficient to make a thorough assessment of how likely individual businesses are to deviate from the average of their sector. However, some detailed information has been provided on the profitability of individual machines in LBOs. HMRC analysts have combined this information with Gambling Commission data to simulate the likely distribution of the profitability of B2 machines in LBOs, i.e. to estimate what proportion of machines falls within different ranges of net takings. This distribution of net takings has been combined with information on VAT recovery ratios to simulate a distribution for the change in tax liability per machine as net takings and VAT recovery ratios are allowed to deviate from the average.

Figure 4.1, below, illustrates these results. The graph shows simulated probabilities of a range of estimated changes in tax burden per machine. The change in tax liability per machine is given on the horizontal axis, with the proportion of all machines falling within each range of simulated change in net tax liability marked on the vertical axis. It can be seen from the graph that in general LBOs' machines are likely to be relatively close to the central (mean) scenario, as marked by the vertical line. The graph can also be interpreted in percentage terms. If a given range in net takings has a relative frequency of 0.16, 16% of all machines are expected to lie within that range. Although it is expected that a small proportion of all machines may face substantially higher (than average) increases in tax liability (the long tail on the right hand side of the distribution), significant majority is likely be closer to the

central case (peak around the mean) with many likely to see lower (than average) tax increases, or even tax decreases (relatively high proportions of machines to the left from the mean).

Figure 4.2 illustrates the cumulative probability distribution of simulated changes in tax liability for B2 machines in LBOs. It shows that 60% of such machines are expected to see a smaller than average increase, or a reduction, in their tax liability, i.e. that these machines are generally more likely to be better off than indicated by the central case scenario.

Figure 4.1: Distribution of Simulated Change in Tax Liability for a B2 machine in an LBO.
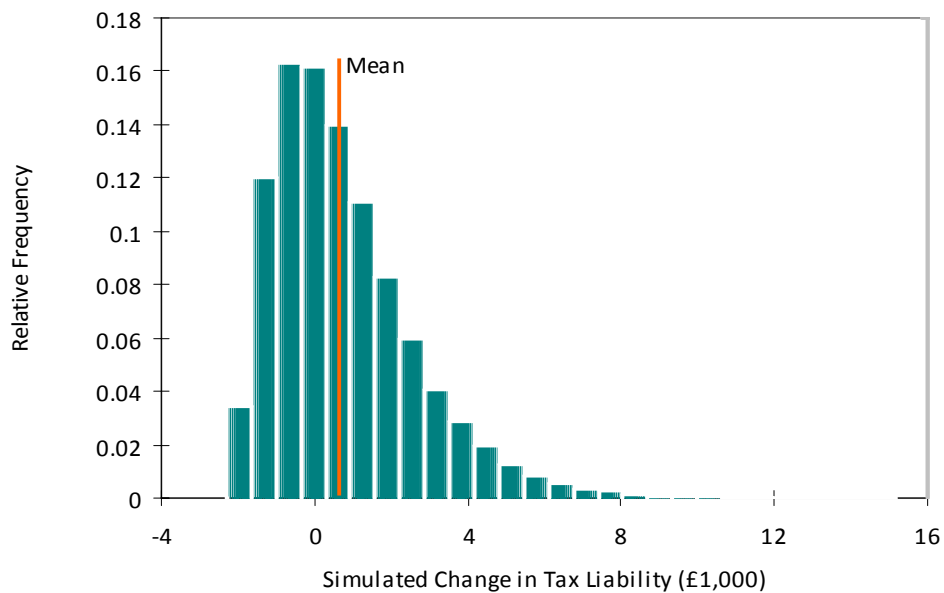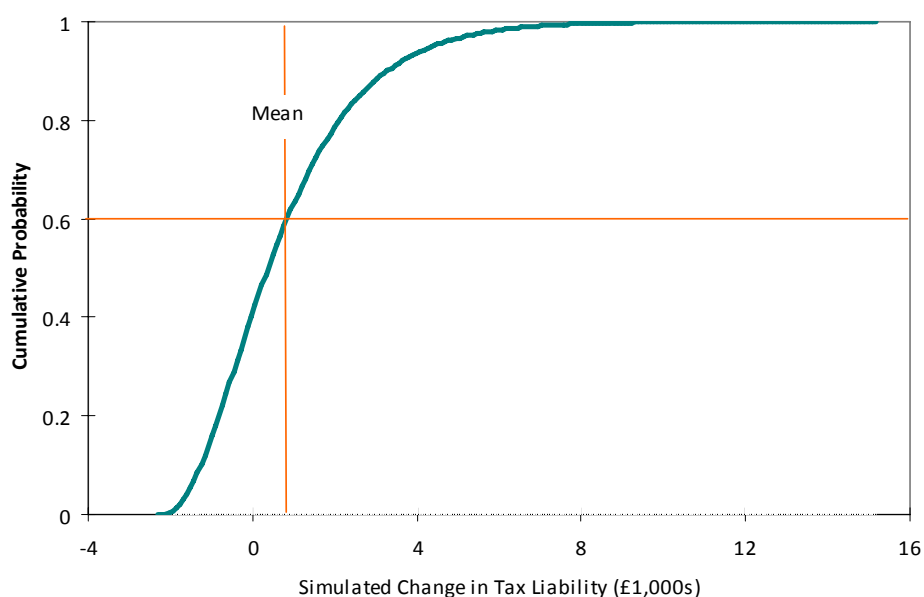
Figure 4.2: Cumulative Probability Distribution of Simulated Change in Tax Liability for a B2 machine in an LBO.

It is expected that machines' profitability in other sectors will have similarly shaped profit distributions across all machines (and similar distributions of VAT recovery ratios), and so the distribution of simulated changes to tax liability would be expected to be similar to the LBO case illustrated above.

Conclusion

This note has been published in order to address various questions raised by the industry following the announcement of the MGD rates at Budget 2012. The detailed analysis outlined in this note goes beyond that which the Government would normally publish.

This note has explained in detail the calculations underpinning the standard and lower rates of MGD. As outlined in section 2, the calculations are based on a wide range of data sources, and all representations put forward by industry have been considered.

The note has shown how, based on a thorough analysis of all the available evidence, the rates are set in a way which is intended to achieve revenue neutrality for the exchequer.

It is not the Government's intention to launch a formal review of the rates following the publication of this note.

Enquiries regarding the contents of this publication can be sent either by email to
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