CHAPTER 7

THE IMPACTS OF INTERNET GAMBLING AND OTHER FORMS OF REMOTE GAMBLING ON THE EU GAMBLING MARKET

7. THE IMPACTS OF INTERNET GAMBLING AND OTHER FORMS OF REMOTE GAMBLING ON THE EU GAMBLING MARKET

1. Overview

Since the emergence of the internet in the 1990s, an increasing number of gambling services have come available on-line or through other new remote communications technologies. The rapid technological advancements, commercial initiatives, and market penetration of such commerce have made this sector of the gambling services industries extremely dynamic and potentially transformative in the years ahead.

It seems highly likely that before consensus is reached among the Member States of the EU (or through the European Court) about how best to deal with traditional (land based) commercial gambling opportunities, and how they can best be managed with respect to restrictions, regulations and tax policies in manners consistent with protecting and promoting the public interest, the gambling services market in Europe and globally will have been transformed by the ongoing expansion and evolution of remote gambling via the technologies of internet, mobile phones and interactive television.

The internet and other media are making it possible for Europeans to gamble in their homes, offices, or other venues of choice at any time on virtually any the forms of gambling available in land-based venues, as well as on some new forms, such as betting exchanges, tournaments, spread betting and poker, which are not so readily available in conventional venues.

In light of legal and political developments in other regions around the globe—especially in North America—it is quite possible that much of the world's e-gambling business will in fact be based in European jurisdictions. Malta and the UK already have laws permitting and regulating e-gambling on their statute books, and Gibraltar—which is, for the purposes of gambling regulation, an EU jurisdiction—hosts a number of e-gambling companies which account for a large share of the world's e-gambling market, much of it consisting of e-gambling services delivered to customers resident outside the EU.

It is essential therefore, in considering the likely economic impacts of removing barriers to an internal market in gambling, to consider the likely effects of remote gambling on the overall EU gambling market. This is a difficult forecast to make, partly because much depends on how the EU collectively responds to the issue of whether and how to regulate remote gambling, partly because other jurisdictions such as the USA are likely to take decisions which will affect European markets, and partly because the future market for this form of e-commerce will be dependent on both technological and legal developments which are quite difficult to anticipate.

It is therefore useful to try to identify key determinants and to discern trends when trying to construct a plausible scenario about how remote gambling might affect the traditional markets for gambling services in the EU. An additional challenge that must be addressed in this endeavor is that because remote gaming is such a new phenomenon, the availability of published peer-reviewed research covering the topic is still quite limited.[1]

[1] See, for example, Watson, Stevie, Pearson Liddell Jr., Robert S. Moore, and William D. Eshee Jr., "The Legalization of Internet Gambling: A Consumer Protection Perspective," Journal of Public Policy & Marketing, Vol. 23, No. 2, Fall 2004; and Eadington, William R., "The Future of Online Gambling in the United States and Elsewhere," Journal of Public Policy & Marketing, Vol. 23, No. 2, Fall 2004.

2. Factors Favoring Growth in the Remote Gambling Market

At present, remote gambling in the EU, as elsewhere, accounts for a comparatively small percentage of all gambling, perhaps worth €3 billion in annual gross gambling revenues.[2] However, a number of factors make substantial growth seem inevitable:

- An increasing proportion of the population have access to the relevant technologies;
- The technologies are becoming increasingly user-friendly;
- The technologies are becoming increasingly integrated. For example, a single compact, portable piece of hardware functioning as personal computer, mobile phone and interactive television combined will soon be widely available;
- These systems have automated and convenient electronic billing systems which make financial transactions increasingly easy;
- Adult populations in the years to come will increasingly consist of people who have grown up familiar with playing electronic games and utilizing computers in their every-day lives;
- The ingenuity of existing and emerging technology companies and remote operators is ensuring that more and more games and other vehicles for gambling are available through the new technologies
- Spending on leisure is increasing
- Spending on home-based entertainment is increasing.

3. Remote Gambling and Government Alternatives

Governments often think about internet and other forms of remote gambling by asking: “Should we permit this activity and, if so, how much should we permit and how should we regulate it?” However, in light of the reality of remote gaming already in existence, the appropriate questions that governments should ask are: “How can this activity be properly regulated? What will the consequences be of trying to do so?” From the point of view of government, the issue is much like wondering what to do given that there is a large and growing illegal gambling industry in a situation where there is little popular support for enforcing prohibition.

One alternative is to declare that all forms of remote gambling are illegal and that consumers found gambling on the internet will be prosecuted. This, however, poses serious problems with enforcement. With remote gambling, there is no consensus that such policing measures would be acceptable.

Governments are often encouraged to explore the option of prohibition because they are lobbied either by existing gaming industries or their benefactors that wish to avoid competition, or by those who are opposed in principle to any (additional) form of legal gambling. However, the underlying problem for any jurisdiction contemplating prohibition of remote gambling is whether there is sufficient political will to enforce prohibition, which is a function of the level of popular support for the policy.

The next alternative is regulation. The primary reason for wanting stricter regulation on remote gambling than applies to other forms of entertainment is to minimize problem gambling that might occur because of the potential for high-stakes gambling continuously available via remote gambling channels. This is also a reason for Member States to consider legislation that regulates remote gambling in a manner that encourages citizens to gamble on sites regulated by their home governments. Governments are also motivated to improve their current account balances and to stimulate their domestic economies; they can accomplish

[2] Deutsche Bank, op. cit.

this by regulating remote gambling in a manner that encourages increased spending by foreign customers and/or discourages spending by their own citizens on remote gaming sites based in foreign countries. In general, to fulfill these objectives, they should establish legal and institutional structures which inspire customer confidence in the probity of the remote games, the companies which offer them, and the comparative advantages of gambling with home-based companies rather than others.

In order to achieve the aim of encouraging both consumers and suppliers to buy and sell gambling services primarily via the internet sites which they authorize and regulate, governments need to make it more attractive to consumers and suppliers to operate (and pay fees and taxes) within their jurisdictions, rather than going abroad. For consumers, this means that gambling products must be as attractive, as easily accessible and as inexpensive as the products offered from overseas jurisdictions. For suppliers, it means that the costs of doing business onshore (including most notably taxes) must not exceed the costs of doing business offshore by more than the increased benefits which the company would derive by operating and being regulated onshore. For both consumers and suppliers, it means that the burden of regulation must not be onerous and unnecessarily bureaucratic, in comparison with that imposed upon offshore sites.

One means of encouraging remote gambling companies to operate in European jurisdictions which offer strong protections against problem gambling and other negative social impacts (and thereby impose some additional regulatory burdens) would be to prevent anyone who is not so regulated from advertising their products through land-based media within the jurisdiction or, in the case of the EU, via any website with a suffix referring to a Member State (.fr, .uk, etc). This would give operators of e-gambling businesses duly licensed in the EU an advantage in relation to the task of attracting and retaining customers. Advertising could also be used by governments to make the public aware of the dangers and disadvantages of gambling with sites not regulated according to EU standards and not subject to EU compliance procedures, including the dangers of fraud and uncertified technology.

It would also be possible to attempt to control internet gambling (or unlicensed, uncertified remote gambling) via the banking industry by, for example, declaring that debts owed to credit card companies as a result of internet gambling may not be enforceable at law, and electronic funds transfers for gambling purposes are illegal. (Indeed, this is the essence of a strategy put forward in 2006 with proposed legislation in the U.S. Congress.) This is not as easy as it sounds, because it is at present quite easy to disguise, through various mechanisms, payments made to e-gambling companies. Another difficulty is that, just as anti-usury legislation creates an environment conducive for illegal loan-sharking, making debts unenforceable at law might lead to the emergence of e-banking businesses which enforce their debts by extra-legal means.

Nevertheless, if both gambling operators and their customers were aware that the likelihood of their being able to collect their respective winnings depends on the jurisdiction regulating their gambling activity, this would provide a major incentive for both to do their business subject to local regulation.

It seems likely that as more and more gambling takes place via remote technologies regardless of the status of national laws, with perceived dangers to citizens of individual countries, and with loss of tax and other revenues, pressure will mount to establish and enforce international agreements among nations which permit and regulate remote gaming. The ultimate result may eventually be the establishment of common international standards and regulatory requirements that will minimize differences among jurisdictions. This may be an important way of encouraging EU citizens to gamble within EU regulated companies because of the legal protections afforded.

4. Remote Gambling and the Land-Based Gambling Market

In terms of trying to appreciate what the effect of continuing evolution of remote gambling companies and technologies will have on traditional gambling services sectors, it is necessary to speculate on how their presence will affect aggregate demand for gambling within the EU. One possible effect of introducing new forms of remote gambling may be to expand demand for land-based gambling services, as people learn to enjoy commercial gambling via the internet and are thereby encouraged to sample land-based opportunities. As gambling is made more accessible and convenient, consumers may choose to allocate a greater portion of their discretionary income to this form of entertainment. Indeed, this is one explanation for the variations in the ratios of GGRs to Gross Domestic Product between EU Member States and other countries such as Canada, Australia, and New Zealand.

Thus, as remote gambling opportunities become increasingly available and attractive, the empirical questions of note will be whether consumers increase their aggregate spending on gambling services enough so that the substitution of remote gambling for more traditional forms of gambling (i.e. lottery, casino, gaming machines, bingo) will not be reduced in absolute terms. For comparisons, we could examine the effect of new delivery technologies in the movie business, where cable and satellite television, DVDs, home theatres, and pay-per-view options have led to a stagnation or decline in the cinema business. On the other hand, in spite of the ease with which sporting events can be watched on television, this has not reduced the demand for attendance at live sporting events because it has stimulated interest in sport, and broadened the consumer market.

It seems plausible to suggest, therefore, that however easily various forms of entertainment can be delivered into the home, there will still be a market for people who want to “go out.” It seems likely therefore, that a segment of the population who like to gamble are still likely to want to go out to gamble even if they also gamble at home. This will be especially true of casinos, bingo clubs, betting shops and dog and horse racing tracks.

It should also be noted that, as remote gambling evolves, an important area where growth can be expected to occur is the application of remote gambling services into traditional gambling services. It is already possible in various EU member states to purchase lottery products via the internet or to place wagers with bookmakers using mobile phones. It is also the case that the future of gambling in casinos is increasingly going to be server-based as gaming machines move increasingly to downloadable game software. It is, consequently, not unreasonable - regulators permitting - to expect the emergence of new hybrid gaming venues, such as internet sports cafes where people can eat, drink, watch racing and other sports, bet on them, and play bingo and server-based casino games, ranging from poker and blackjack to all manner of slot-machine-type games, on interactive television.

5. Estimating the Economic Impact of Remote Gambling in Europe

We provide below various detailed estimates of likely growth in the remote gambling market and of its economic impacts. The general questions that need to be asked and answered are:

– How much remote gambling will be supplied out of Europe by 2011?
– How much of this will be supplied to EU consumers and how much to non-EU consumers?
– How much, as a proportion of GDP, will EU consumers spend on all forms of gambling?
– How much of this will be spent on internet gambling and how much on the various forms of land-based gambling?

– How much of the internet gambling supplied to EU citizens will be supplied by EU-based companies and how much from outside?

The following pages contain a distillation of the substantial volume of evidence and speculation we have received on the size of the remote gambling market in the EU, as it is now and as it is likely to develop, according to the broad consensus of those who have responded to us.

The contribution that gambling of all types already makes to the UK economy was assessed in section 1.3 of *The Gambling Bill: regulatory impact assessment.* Expenditure (i.e. stakes less winnings) in the year ending 31 March 2004 was estimated at €12,870 million, 0.8% of UK GDP. €1,900 million was provided in gambling-related duties (approximately 0.3% of total Government revenues), and around €1,900 million in good causes contributions (almost wholly from the National lottery). Employment in the gambling industry was about 100,000 full time equivalent persons.

According to River City Group[3] estimates, the global market for remote gambling generated revenue of €4,700 million in 2003, and was forecast to reach €6,100 million in revenue in 2004. This represents just over 2% of land-based gaming revenue.

Global remote GGR in 2003 was estimated at €4,620 million, implying about €1,300 million for the EU. The forecast for 2012 was for a global GGR for all gambling of €230,000 million, implying about €65,070 million for the EU. The remote gambling forecasts for 2012 were for a global GGR of €9,310 million implying about €2,630 million for the EU.

Other estimates of the scale of the global remote gambling industry have been quoted by ARGO [The Association of Remote Gambling Operators]. They suggest that the world interactive gambling market is worth somewhere between €5,700 million and €9,900 million in annual revenues in 2005 and growing. [4] The lower part of that range would accord with the GBGC and River City Group estimates for 2003 plus some growth. Slightly higher estimates for internet based Global Gambling Revenues by Christiansen Capital Advisers[5] are about €10,000 million in 2005 and €20,220 million in 2010.

We can have some confidence in estimating that the global interactive gambling market provided a GGR of about €5,700 million per annum as of 2003, with the EU share being about €1,630 million. The above forecasts assume only clearly predictable changes in the policy context.

One problem in using these estimates of GGR for remote gambling is that they measure the activities of firms with reference to the jurisdictions from which they operate, rather than the jurisdictions from which the customers gamble. This is not a problem in measuring land-based gambling, where the two are the same, but it is an important feature in remote gambling. The case of Malta illustrates this point most clearly. Gambling GGR as a percentage of GDP in 2003 was 7.3% compared to the EU average of 0.7%, and this with Maltese licensed remote gambling companies not being allowed to sell their services to Maltese residents.

We know that EU-based online gambling generates income from the Far East. UK book-makers William Hill and Ladbrokes have clients in over 150 and 160 countries respectively, the latter offering their remote gambling services in eleven languages. The smaller

3 http://www.rivercitygroup.com/

4 In *Fair, Honest and Safe: cross border remote gambling within the European Union* (March 2005), sec. 9.6.

5 http://www.cca-i.com/

Expekt.com, moving from London to Malta in 2000, boasts internet customers from 227 countries using 19 languages, although it is mainly focused on the Scandinavian market. The leading pan-European sportsbook is run by BetandWin, an Austrian-based bookmaker operating out of Gibraltar. The leading global remote gambling companies are the remote specialists Sportingbet, UK-based but operating from Antigua, and PartyGaming, based in Gibraltar. All these firms have a broadening global reach, and are in fierce competition. Licensing jurisdictions similarly compete for client companies.

The sensitivity of operators to tax levels was brought home to the UK government when UK bookmakers moved their telephone betting services off-shore in response to a turnover tax on bets. Bettors in the UK had to pay a tax of €13.05 for every €145 they bet to cover a 6.75% tax plus a racing levy. If they chose not to pay the 9% tax, but then won, they had to pay 9% on their winnings. Thus, if they paid €1.30 tax on a €14.50 accumulator and won, they kept all their winnings, say €43,540. Bettors not paying the €1.30 tax would have to pay €3,915 tax on their winnings. Offshore betting sites would either charge the customer nothing or add on tax at only 3%. For the high-rolling bettor, the offshore advantage was great. After the betting tax was abolished in October 2001 and replaced by a profits tax [yielding lower overall tax revenues], almost all British-owned off-shore betting businesses returned to the UK. It is clear that operator location depends on tax rates [and/or licence fees] as well as on legal permission.

This is a substantial and expanding business. Even without EU companies being involved, the market will continue to evolve. There are already jurisdictions within and outside the EU offering licences to operators and the business shows little respect for national boundaries. For the moment, EU-based companies are to the fore, especially those with a British base. Concentration of business in the industry was highlighted by Kaszubowski in 2005, when measuring the market capitalisation of the publicly quoted firms within his i-Gaming Business Global Top 30 Index. He estimated that the top five remote operators, adjusted for remote exposure - William Hill, Ladbrokes[6], Sportingbet [all British], BetandWin [Austria] and Cryptologic [Canada] - account for 63.3% of the market capitalisation index value of the 'top 30' operators. In 2003, the *Economist* estimated that British companies held around three-quarters of the cross border betting market.

It would seem that the quoted data for firms' operations will exaggerate the amount of remote gambling by residents within the EU, particularly for countries like the UK, which licence e-gaming companies, and most particularly for small countries such as Malta. However, statisticians may take some comfort from evidence that firms seem to do most of their business in 'their own' countries. Thus Ed Andrewes, Managing Director of UK firm Victor Chandler, licensed in Gibraltar, is quoted[7] as saying that his firm's remote gaming revenues are derived "more than half" and probably "not too far from" three-quarters from the UK. BetandWin is determinedly crossing borders in Europe, but does not challenge the UK market. The *Economist* estimated, in May of 2003, that "up to one third" by value of the bets that are taken by UK bookmakers on major events come in from abroad and that Britain already holds around three-quarters of the cross border market.

Survey evidence from The Netherlands in 2004 indicated that the percentage of economic units in the Netherlands that have in the past 12 months participated in one or more foreign games of chance is 4.7%, or 391,000 economic units. Shares of foreign games of chance are mainly German Lotteries [84%], Sports betting [2%], British National Lottery [1%] and other foreign games of chance [13%]. The total amount spent on foreign games of chance in 2004 was €67 million, which is 4% of the amount spent on domestic games of chance. This shows that, in a nation with a well serviced, land based, national industry and high internet

6 Officially the Hilton Group

7 In the *eGaming Review* of July/August 2005

access, but without domestic interactive gaming, foreign interactive operators will enter the market. This is only a small proportion of the total market, but a government may feel that it represents a loss of revenue which is not acceptable.

The most important sectors involved in remote gambling are betting (e.g. on racing and sporting events), followed by gaming (e.g. on gaming machines, casino style table games, and poker), as shown in the table below, which presents handle estimates (total amount of money wagered) and demonstrates the recent global growth of the interactive channel, especially in gaming. Furthermore, recent growth in internet poker since 2004 has probably accelerated interactive gaming handle.

	1999	2000	2001	2002	2003
Betting					
Event Location	€ 20.75	€ 19.02	€ 15.43	€ 14.37	€ 14.38
Licensed Premises	€ 79.61	€ 78.06	€ 76.98	€ 76.57	€ 77.64
Telephone	€ 13.28	€ 13.38	€ 12.73	€ 13.47	€ 13.60
Interactive	€ 8.74	€ 16.33	€ 20.19	€ 25.47	€ 27.43
Total Betting	€ 122.47	€ 126.82	€ 126.17	€ 129.86	€ 133.04
Gaming					
Licensed Premises	€ 615.00	€ 641.23	€ 688.03	€ 702.61	€ 762.53
Interactive	€ 4.88	€ 16.88	€ 24.54	€ 27.20	€ 29.44
Total Gaming	€ 619.88	€ 658.12	€ 712.57	€ 729.81	€ 791.98
Lotteries					
Retailers	€ 102.95	€ 101.63	€ 104.93	€ 104.63	€ 114.17
Interactive	€ 0.14	€ 0.18	€ 0.69	€ 0.83	€ 0.97
Total Lotteries	€ 103.09	€ 101.84	€ 105.63	€ 105.45	€ 115.13
Global Total	€ 845.44	€ 886.77	€ 944.37	€ 965.12	€ 1,040.14

Source: Adopted from GBGC Report

Based on these estimates, in Europe, betting at event locations had fallen to only 10.8% of the total betting market in 2003.

6. Sectors of the Remote Gambling Industry in the EU

a. Betting

Betting firms have offered 'remote' services via the telephone for decades, subject to clients having accounts with the bookmaker. More recent innovations in information technology extend the possibility of interactivity to screens in mobile phones, as well as to the internet and interactive television. Data for interactive or remote gambling do not include placing bets by voice over the telephone.

The GBGC estimate that the GGR for interactive betting was globally €2,850 million in 2003, implying about €810 million or 28% of the global total for the EU. Telephone betting's share of overall betting GGR has been declining slowly in the face of interactive media.

b. Lotteries

Lotteries are taking increasing advantage of the possibilities of remote participation. Camelot, the operator of the UK's national lottery and largest lottery operator in the EU, reported that, in the year to March 2005, there had been a 600% increase in interactive sales through internet, iTV and mobile phone text messaging, from €17.8 million in 2003-04, to €126.7

million in 2004-05. Boss Media, the Swedish based operator, predicted that many members of the World Lotteries Association will go digital in 2005, and that they are looking to make deals with Swedish and Czech national lotteries. *Alexander Resources* estimated[8] that mobile phone revenues from global lottery sales were approximately €4,130 million.

National lotteries have huge marketing and jackpot advantages over private lotteries. Nevertheless some private lotteries operate and use online services, e.g. Littlewoods' product Bet247. GBGC estimate that the GGR for interactive lotteries was globally €490 million in 2003, implying about €140 million for the EU.

Sales by national Lotteries are usually intended to be limited to nationals[9]. The limitation is not wholly political, with player poaching seen as a major threat to all but the largest lotteries. Amongst its members, the World Lottery Association has been actively promoting a code of conduct prohibiting cross border sales.

c. Casino gaming

Casino gaming has used the internet as a distribution channel for several years. GBGC estimate that the GGR for interactive gaming was globally €1,530 million in 2003, implying about €430 million for the EU. However, since EU households have access to the internet at rates superior to the global average, we can reasonably expect that actual GGR was somewhat greater. For example, if it were 10% greater, then 2003 GGR for internet casino gaming would have been €470 million.

Most recently, casino games are being offered on some WAP and Java enabled mobile phones and other hand held devices.

ARGO, in its 2005 report entitled, "Fair, Honest and Safe,"[10] estimated that over one million UK adults visit an online gambling site every month, despite the fact that there is no online gaming operation based in the UK. It also quotes the Belgian Gambling Commission to the effect that, in 2003, 25 thousand Belgians per month played in online casinos and spent €27 million doing so.

The most rapid recent expansion has been in the online Poker business, reckoned by GBGC to be worth €24,790 million in handle in 2004. Matthew Goodman, writing in *The Times*, identifies the top online poker site as Party Poker [owned by PartyGaming] with a 50% market share. Paradise Poker, purchased for €247.5 million by Sportingbet in October 2004 accounted for a 10% share and showed a profit of €16.5 million. The *eGaming Review* claims that US online poker players dominate the global market, with Europe having only a 15% share. Within Europe, UK players are estimated to have an 80% share. Ladbrokes operates Europe's biggest poker site. There are important economies of scale in this business, since a larger pool of players allows for a greater number and variety of competitions / tournaments, and a stronger advertising profile.

8 In the *E-gaming Review* of August/September 2004

9 Refer for example to the terms and conditions of La Francaise de Jeux [France] and the Österreichische Lotterien [Austria].

10 *op. cit.*

d. Bingo

Bingo.com is, according to the *eGaming Review,* one of the world's largest bingo sites, with more than 30,000 daily visitors and one million registered players. Its website currently offers both “pay-to-play” gambling and “play-for-fun” games.

Bingo is widely forecast to expand in the near future. Players spend more offline on bingo than they do on poker. According to the website 'Think Bingo', the UK market will by 2007 have 250,000 regular players spending €1.44 million daily on internet bingo. Andrew Branscombe of the Canadian software company Parlay points to the high numbers of bingo halls around the world. Bingo is the biggest single leisure activity for women in the UK aged over 28 years. Mecca [owned by Rank] and Gala are two UK operators who are launching online bingo to complement their land-based operations.

7. Remote Gambling Market Channels

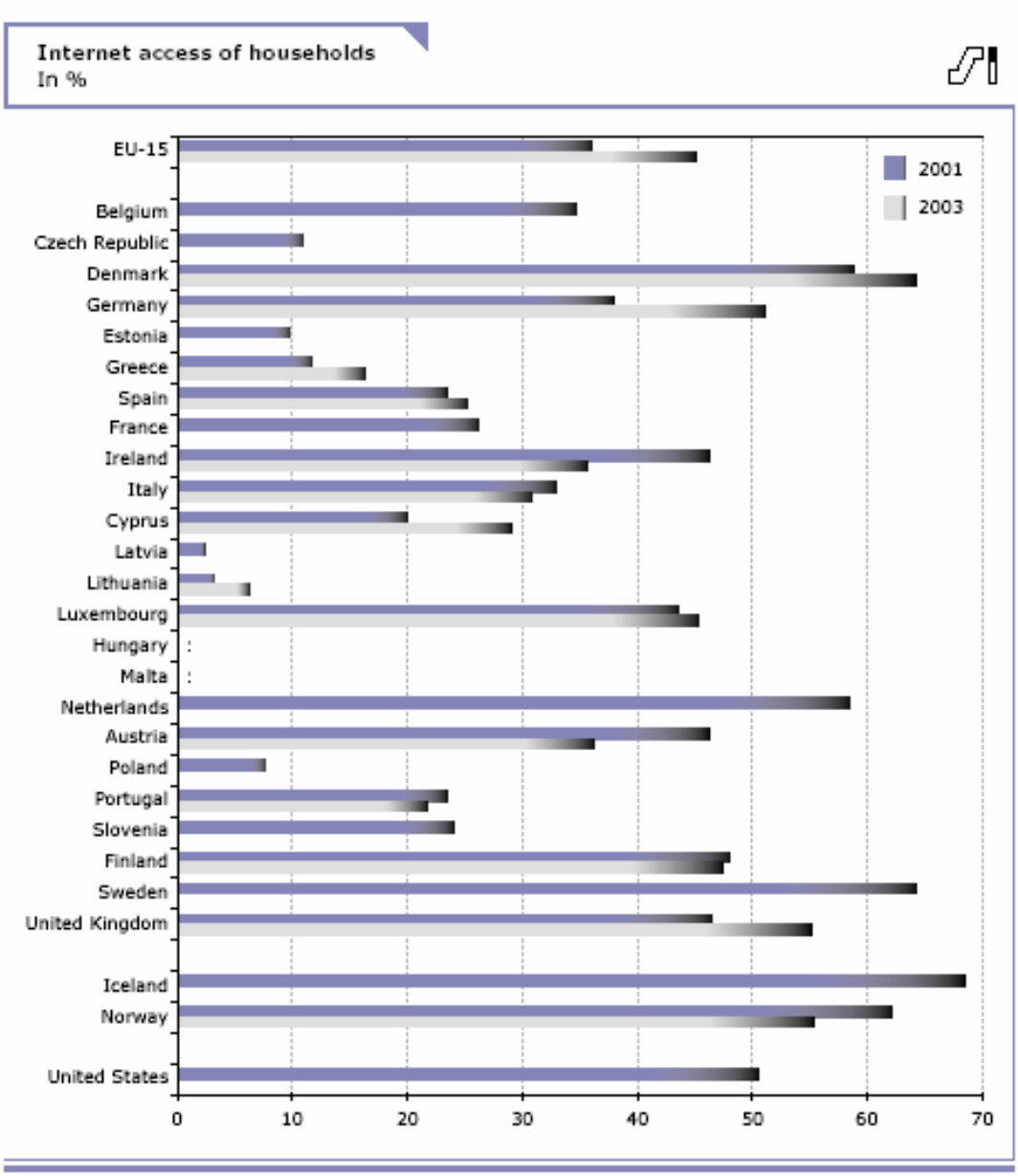
Remote gambling channels at a global level are estimated by GBGC to have GGR of €4.8 billion in 2003, broken down as follows:

	2003	**2012**	**Projected increase**
Internet	€4.8	€7.32	152.5%
Mobile phones/other	€0.78	€3.51	450.0%
iTV	€0.32	€1.33	415.6%

According to GBGC projections, greatest growth is expected in the fields of interactive television and “mobile phones/other”, “other” being a reference to PDAs and other hand held devices. These predictions must be regarded with considerable caution. Certainly, the internet is the most developed interactive medium, and mobile phones are most advanced in terms of ownership penetration in Asia. The quality of services offered by operators, in terms of entertainment, security and branding, will have an important bearing on the take-up of interactive gambling opportunities.

a. Internet

Access to the internet varies across the EU, as is shown in the table reproduced below from the Eurostat Yearbook 2004. The lead taken by the northern and western Member States is striking, some of which exceed the comparable figures for the US. Since online casino gaming relies heavily on the internet rather than iTV or mobile phones [although some games are now available on Java based mobiles] the level of internet access will be a major determinant of the potential for online casino gaming in particular Member States.



Percentage of households who have Internet access at home. All forms of Internet use are included. The population considered is equal to or over 15 years.

The general growth of internet access in the EU allows a reasonable prediction to be made in the growth of online gaming in the future. Given the low current internet access in the southern and eastern regions of the EU, we would expect future growth to be strongest in those regions, as they gradually catch up with the rest of the EU. Since these regions generally have less developed land-based gambling services, especially in the sports betting sector, than the northern and western regions, we should expect the take-up to be faster than that predicted just by enhanced access to the internet.

State surveys in The Netherlands interviewed 7,670 internet users between the ages of 18 and 55 years. Of this sample, 5.3% stated that they participated in paid interactive internet gaming. Applying this to the country's population, this suggests around 487,000 Dutch citizens between the ages 18 and 55 years participated in paid interactive internet gaming. The growth of e-gaming was most apparent among young men with low incomes. On average, participants spend €35 per month on this type of gaming. Yearly expenditures in the Dutch internet gaming market are estimated at €144 million. Interactive internet games are played infrequently on a weekly or monthly basis, and playing time does not usually exceed

half an hour. A quarter of participants were seen to be at risk of problematic behaviour. However, actual problematic behaviour was identified in only 4% of the participants.[11]

b. Interactive Television

GBGC state that "iTV is perhaps the ideal remote betting and gaming interface as it permits the punter/player to watch a live event with all the quality of digital TV whilst being able to sit back and relax". According to Mark Balestra, writing on IGamingNews.com in March of 2004, European countries are leading in this technology. He quotes Forrester Research findings that iTV revenue in Europe grew from €1,600 million in 2002 to €3,480 million in 2003 and was projected to reach €6,600 million in 2004. Most of those revenues came from betting. England and Ireland are closely followed by France with over €117 million annually in race betting.

The market leader in iTV is BSkyB, which has launched a gambling channel called “Sky Vegas Live”. Viewers can play interactive Super Keno and computerized horseracing and greyhound racing. During 2003, approximately €238 million of BSkyB's total iTV turnover of €399 million was generated from gambling.

France's Pari Mutuel Urbain horseracing monopoly has tied up with the country's two leading iTV services, CanalSatellite and Télévision Par Satellite to launch the Equidia channel. Spain is expected to be a strong iTV gambling market particularly as sports betting is just becoming legal in municipalities around that country.

c. Mobile phones

A table has been produced by *Eurostat* to show the penetration of mobile phone subscriptions and land line ownership across the EU and is reproduced below. The number of mobile subscriptions rose by 8.6% in the among the Member States in 2003 compared to 2002. All Member States registered increases, ranging from around 5% in Malta, Finland, Austria and Italy to more than 30% in Latvia, Cyprus and Lithuania. The growth can be expected to slow down in those Member States having the highest subscription density.

[11] Extracted from http://www.toezichtkansspelen.nl/information.html

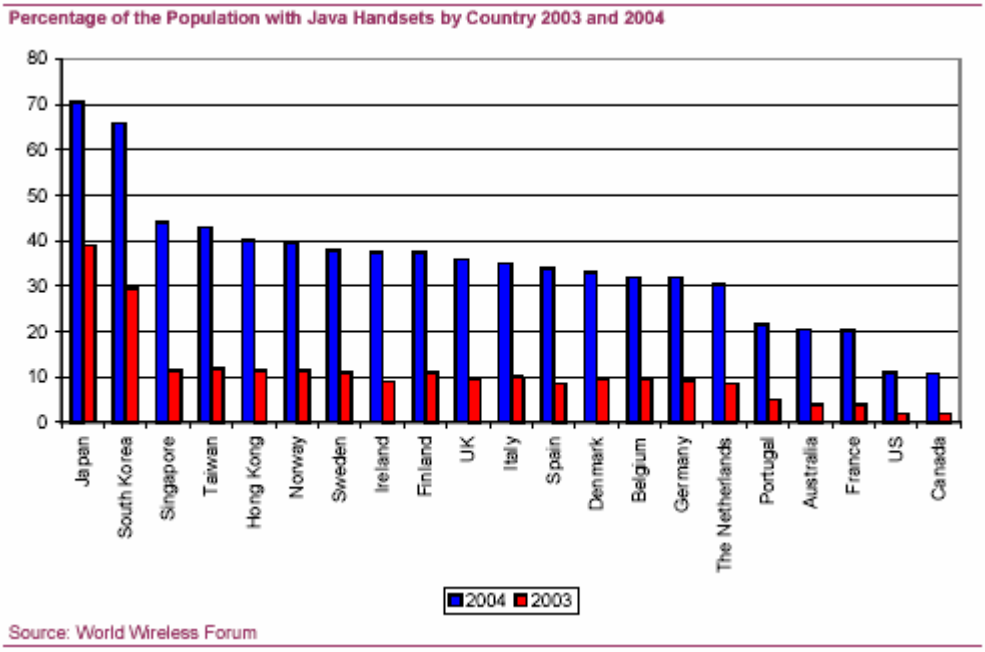
Mobile phone subscriptions and main telephone lines

	Mobile phone subscriptions per 100 inhabitants		Mobile phone subscriptions: % change	Main telephone lines per 100 inhabitants		Main telephone lines: % change
	1995	2003	2003/2002	1995	2003	2003/2002
EU25	4.9	79.9	8.6	44.2	50.3	-0.3
Belgium	2.3	84.1	7.1	45.7	49.0	-0.9
Czech Republic	0.4	95.2	12.8	23.2	35.5	-1.3
Denmark	15.8	88.6	6.5	61.4	67.1	-2.4
Germany	4.6	78.5	9.6	51.5	65.8	1.1
Estonia	2.1	77.4	19.0	28.4	34.2	-2.7
Greece	2.6	84.9*	17.0**	48.7	47.2	-3.9
Spain	2.4	89.6	11.0	38.4	42.7	0.7
France	2.3	69.9	8.0	56.1	56.9	-0.6
Ireland	4.4	85.8	13.3	36.4	49.3	-1.0
Italy	6.9	96.4	5.5	43.4	45.9	-2.0
Cyprus	6.9	77.2	32.0	53.8	62.4	4.5
Latvia	0.6	52.3	33.0	28.9	28.0	-6.8
Lithuania	0.4	62.2	31.9	25.8	23.9	-11.0
Luxembourg	6.6	120.2	14.0	57.7	54.7	-1.0
Hungary	2.6	78.3	15.4	20.9	35.6	-1.6
Malta	2.9	73.0	4.7	46.2	53.4	1.2
Netherlands	3.5	77.2	24.3	52.7	61.8	0.0
Austria	4.8	87.9	5.3	47.8	39.2	-0.9
Poland	0.2	45.5	25.2	14.8	32.2	3.6
Portugal	3.4	89.9	9.7	35.8	40.3	-3.7
Slovenia	1.4	94.4	22.4	30.9	40.8	2.9
Slovakia	0.2	68.4	25.8	21.0	24.1	-7.7
Finland	20.4	91.2	5.1	55.1	49.3	-5.8
Sweden	23.0	98.4	10.7	68.2	60.9	-2.2
United Kingdom	9.8	84.4*	11.1**	50.3	52.0*	-2.3**

*2002
**2002/2001

1. **Mobile telephone subscriptions** refer to subscriptions to an automatic public mobile telephone service.
2. A **main telephone line** is a telephone line connecting the subscriber's terminal to the Public Switched Telephone Network. ISDN (Integrated Services Digital Network) lines are counted as main telephone lines.
3. **Eurostat**, *Statistics in Focus*, Theme 4, *Industry, trade and services*, 8/2005, '**Telecommunications in Europe**'.

The above table does not tell the whole story since it ignores the quality of mobile phones. Java, WAP and internet enabled devices can be expected to replace more basic mobile phones in those Member States with highest mobile penetration, as mobile phone suppliers raise the quality offered in order to maintain sales. The table below focuses on Java enabled handsets, and reveals the high penetration of these products in the Far East. The growth rate of ownership was obviously high from 2003 to 2004 showing a market in the growth stage of its product life cycle and leading us to expect further growth though by lesser rates in future.



State surveys in The Netherlands found that 37% of the respondents have participated in SMS or telephone gaming in the past year (about 3.4 million people). These games are mostly played by women with a low income and little education. Most participants (53%) stated they had been playing in the past two months, and 30% of participants had been playing these games for two years or longer. They spent about €36 million on telephone gaming per year. The survey found that 76% of the participants knew beforehand what these games would cost them. Only 6% were unaware of the costs. The study estimated that 17% could be at risk of problematic behaviour, but only 3% of the participants could be characterized as currently engaged in problematic behaviour. These characterizations should be viewed in the light that a problematic player on average would not spend more than €50 a year on such games. These levels of expenditure cannot really be evidence of excessive gambling.

The future is of course uncertain. In July 2004, Juniper Research estimated that the mobile gambling market could be worth in excess of €14. 5 billion by 2008, of which over €5.7 billion would be derived from lotteries, which exceeds GBGC's estimate for GGR of €2 billion. Uncertainty, as ever, allows excitement to be generated. Many sections of the trade press see mobile gambling, or “m-gaming” as it is often described, as 'the next big thing'. Currently there are technical issues about screen size, the cost of transferring data, age verification and payment systems. Victor Chandler is developing a mobile sports betting application that permits existing customers to simply press a few buttons in order to pay for bets from their accounts fed by registered credit or debit cards. They avoided reverse billing because of technical difficulties and the likely high percentage payments to mobile phone operators.

Mobile phones can be seen as delivery systems for existing products, especially betting and lotteries, and (with some difficulty) also casino games. Paddy Power, the Irish sportsbook operator, launched a Java based sports betting application followed by virtual horseracing and bingo games. Alternatively they can be used for new gambling products and skill games. Million-2-1, a UK m-gaming operator, has developed 'how-lo' reverse auctions where punters pay to bid for a lot, with the lot sold to the lowest unique bidder. In 2004 BetandWin launched a range of soft games for mobiles. Blue Square, a UK based sportsbook owned by Rank, has launched a fixed odds mobile game, Aces High. Svenska Spel, the Swedish lottery operator, has scratch cards and three soft games for mobiles.

8. Growth of Remote Gambling

One reason why governments focus on the growth of interactive gambling is that they want to predict the possible tax and licence revenues that could flow into government coffers by offering jurisdictional services to operators. Certainly, the UK government, in framing its 2005 Gambling Act, intended to create a high quality, world wide jurisdiction that would attract major firms.

There is one problem in any attempt by one jurisdiction to make substantial revenues by cornering the world's, or even Europe's, market. The problem is encapsulated in the old adage that, "if anyone can do it, you can't make any money at it," i.e. competitive forces will reduce economic rents and push price downwards toward the average cost of production of the service. In the same context, competing jurisdictions may have to compete with lower tax rates to attract remote gaming companies.

It is clearly the case that any country can offer jurisdictional services to companies, and have them serve the world with the internet or other remote technologies. Thus we would expect that, as more jurisdictions offer services, firms will be able to switch locations to take advantage of cheaper/better deals. Firms can be expected to make their decisions about location on the basis of three factors:

– financial costs [licence cost and tax rates, and other costs of doing business];
– quality of information technology services available; and
– the reputation that customers will perceive the jurisdiction to have, including being part of a regional grouping such as the EU.

The experience of the UK government with respect to bookmakers in 2001 is a clear example of the power of firms to force tax reductions in a particular jurisdiction.

Malta is the first EU Member State to provide jurisdictional services to interactive gambling firms. Prior to 2004, only online betting was licensed, but in April 2004 gaming licences were offered. The island's entry into the EU has given the added advantage of being the only EU location with online gaming licences allowing casinos, lottery, bingo, poker and back-gammon. Betfair’s decision to obtain a Maltese gaming licence, initially only for the supply of online poker services (which cannot yet be offered under licence in the UK) effectively gives it the option of relocating its whole operation to Malta, if UK tax decisions turn out to be unattractive. That step can be interpreted as a means of pressuring the UK government with respect to their tax policy.

It would seem that customers may switch between online sites very flexibly, and respond rapidly and accurately to odds offered in sports books or perceived payouts in casinos. One limitation is the advantage that any site has in a country where its operator has an existing land-based business. This offers the potential to pay out online winnings at a land based outlet, as well as adding to the online service the land-based reputation of a known national brand. Firms that have not been able to link a land-based business to their interactive service have suffered. In Australia, PBL and Tattersall's have high profile land-based gambling outlets, but since they could not offer interactive services to Australian residents, their brands were of limited use in the global market and they closed their interactive operations. The American company MGM, with its online casino licensed on the Isle of Man, had similar experiences due to not being able to accept US residents as customers. There is some evidence that online operators may attempt to strengthen their brands by opening land-based outlets. Thus Blue Square, an online sports book now owned by Rank, has opened a licensed betting shop in London. Victor Chandler, operating out of Gibraltar, intends to open licensed betting shops in the UK.

It may be that residents of some countries will gamble online with overseas firms if their 'own' firms either do not have online sites, or have poor or non-existent reputations or brands.

Given the low tax and licence revenues that governments in active jurisdictions can expect to derive from remote gambling operations in the long term, they still have strong reasons for offering jurisdictional services: controlling the probity of gambling, enforcing social policies regarding problem gambling, and providing other consumer protections. Governments can still offer incentives to operators that agree to use their jurisdictional services, or accept their standards of conduct. One such incentive would be the right to advertise and otherwise market their websites in the country.

9. Country Reports for Remote Gambling

The table below summarises the positions taken by Member State governments in response to the rising importance of remote gambling. Generally, policies of increasing liberality are featured in the columns further to the right. Countries are mentioned in more than one column when they display multiple characteristics, but few cross more than 5 ranges of *liberality.* The following brief descriptions point out some of the policy positions toward remote gambling that have emerged among the Member States.

Restrict gambling activity	**Internet gambling prohibited**	**Protect State/Private Monopolies and revenues**	**Foreign operators not allowed**	**Domestic Internet based gambling allowed**	**Accepts cross border internet gambling**	**Liberal approach with licenses offered**
Austria Belgium Luxembourg Spain	Greece Hungary Lithuania Luxem-bourg	Austria Belgium Denmark Finland France Greece Hungary Netherlands Norway Portugal Sweden	Belgium Denmark France Hungary Netherlands Italy Spain	Austria Belgium France Germany Ireland Italy Portugal Slovakia Slovenia Spain Sweden	Cyprus Ireland Latvia Malta UK	Finland, - Aland Islands Latvia Malta UK

a. Austria

Österreichische Lotterien offers an online lottery and gaming operation to Austrian residents. This grew from €205.27 million [15.9% of sales] in 2002, to €281.4 million [20.9% of sales] in 2003. In addition to the Internet, the Österreichische Lotterien has also been utilising WAP (Wide Area Protocol) phones for the lotto 6/45 and Joker games since January 2001. Casinos Austria set up a website in 2000 and by 2003 had weekly revenues of €3.9 million. iTV gaming is also allowed, with a platform consisting of four games: slots, video poker, blackjack and baccarat.

b. Belgium

The national lottery has an exclusive monopoly right to offer remote games, including lotteries, games of chance and sports bets on line. Overseas and domestic competitors are not permitted to offer such services at present. Belgians spent €27 million on internet gambling in 2003 [GBGC analysis].

c. Cyprus

High tax rates on legal betting have fostered a growing illegal market for sports betting. On the Turkish side of the island, Turkbet has commissioned Chartwell Technology to create an online betting/casino site for them. Currently the government is looking at regulating and licensing remote gambling operators.

d. Czech Republic

SAZKA, the national lottery operator, has an internet site that offers only news and data on sports, including bookmakers' odds.

e. Denmark

Danish law bans foreign operators from offering either land-based or remote gambling services in Denmark and shows concern about foreign remote operators undermining Danish tax revenues.

The Ministry of Taxation, Trade and Justice released a substantial review and recommendations entitled the 'National Internet Gaming Strategy' during May 2001. This report dealt with issues on the legality of internet betting sites both within and from outside Denmark and was intended as a basis for further discussions and deliberations of the Future of Gaming in Denmark. A proposal to take measures to block payment of transactions to foreign providers has never been realized. In February 2000, the Klasselotteriet was the first state gaming company to launch its lottery on the Internet. Dansk Tipstjeneste, another lottery company running Denmark's largest lottery and the 'Nordic' lottery, has opened a website and plans to offer WAP services. The Danish government sees the main purpose of its restrictive legislation to be the "need to uphold legitimate interests with regard to public policy and order as well as to limit damaging social consequences such as problem gambling and fraud. A second ground, which is not without relevance, is that betting and lotteries may make a significant contribution to the financing of benevolent or public interest activities such as social and charitable undertakings, sport or culture."[12]

f. Estonia

Eesti Loto launched its online services in December of 2001. Sports betting and a few games are available online via the Olympic Committee site.

g. Finland

Oy Veikkaus, a state owned lottery operator, has an online site offering betting and gaming. WAP phones are also catered for. The online service provided 6% of turnover in 2002 at €56.6 million. In 2003, an iTV gaming channel was offered. In 2003, Fintoto, a company offering horse racing totalisator services, began to offer access via mobile phones and the internet. In a fairly recent development, the Aland Islands, an autonomous part of Finland, now licence remote betting and gaming operations.

h. France

France is not against Internet betting *per se* and in 2003, its monopoly pool betting provider, Pari-Mutuel-Urbain, launched its own online site and has a well developed iTV facility. The national lottery operator [and 70% state-owned] Français de Jeux offers lottery and sports betting services on the internet to French residents only. Otherwise, online gambling is illegal

[12] Written evidence given jointly by Denmark, Finland, Sweden, Norway & Iceland to the Pre-legislative Scrutiny Committee for the Draft Gambling Bill in Britain.

and the government will seek to prosecute or otherwise prevent overseas remote gambling operators from selling their services in France.

i. Germany

In Germany, each *Land* is responsible for its own gambling policies, usually through state monopolies. Financial bets are now traded through online betting exchanges, which include Betfair. Few of the state lotteries use the internet, but the casino of Wiesbaden has become the first officially licensed online casino. German online products can be sold to the rest of the world. The Federal government is looking critically at the state monopoly system in the light of the *Gambelli* decision.

j. Greece

All internet gambling in Greece is banned. The government takes the view that games of chance and betting should remain under state control via a monopoly. It is supposed[13] that private operations in Greece would lead to disturbance of the social order, incitement to commit criminal offences and exploitation of consumers.

k. Hungary

Hungarian law provides for a state gambling monopoly. Betting or gaming with foreign operators via telecommunication is banned, as is any intermediary activity. Action has been initiated against Sportingbet, a British licensed company, because it has a Hungarian language website offering betting services.

l. Ireland

The national lottery operator has an online site offering lottery products, games, bingo and keno. Bookmakers in Ireland can offer an internet service. Cross-border telephone and internet betting is permitted.

m. Italy

Policy is mainly concerned with protecting the state monopolies and concessionaires that provide land-based gambling services. The existence of the internet has not really been incorporated into Italian gambling policy. Lottomatica has a state concession to offer online information and lottery games. Some court cases have been pursued concerning overseas firms trying to carve themselves a piece of the highly taxed Italian betting market, most notably the *Gambelli* case. Strictly speaking, internet gambling is illegal for Italian residents, but the means and the will to enforce this do not exist. Accordingly, off-shore firms offer internet gambling opportunities to Italians and even advertising their services freely.

n. Latvia

The new regulatory regime introduced in 2003 includes licences for remote gambling.

o. Lithuania

There are no internet operations in Lithuania, but lotto is available over the telephone, branded as Telelotto.

[13] According to ARGO's submission re *Gambelli* case.

p. Luxembourg

The national lottery offers games on the internet, but it is to be played for fun only.

q. Malta

In 2004, Malta joined the EU and offered licences to remote gambling firms for a full range of services in addition to its 200 previously issued licences for internet betting. It is the first EU Member State to offer such all-encompassing regulated licensing facilities. Malta's licensed firms include Bet 24, Beton Markets, Expekt, Sportwetten-Online, and Unibet. Betfair is currently taking out a licence for an online poker site. Maltese licensed firms are not allowed to sell their services to Maltese residents.

r. The Netherlands

The current legal position is that Holland Casino's and De Lotto hold exclusive licences to offer internet gambling. Dutch operators have sued foreign online operators for accepting Dutch players - on the grounds that they do not have a Dutch licence. For example, the case De Lotto v. Ladbrokes sought to prevent Ladbrokes accepting Dutch players; the Court at Arnhem found in favour of De Lotto on 31 August 2005. Betfair v. De Lotto is similarly proceeding through legal channels. The Dutch monopolies cannot accept internet bets and Holland Casino's is taking legal action against other Dutch online companies.

s. Poland

Researchers for this report were not able to find information on remote gambling in Poland.

t. Portugal

According to ARGO, protection is given to state monopolies and national revenues. There is a threat to "social order if money goes to states where the amount of winnings is more attractive."[14] It has since been announced that Portugal is considering the possibility of licensing online gaming, but remote services are intended to be provided only by holders of licences to operate land-based gambling in Portugal and only to residents of Portugal. Exceptions could be introduced by Ministerial order on the basis of international reciprocity.

u. Slovakia

TIPOS, a joint stock company and leading lottery provider, has a licence to offer lottery, bingo, keno and betting services. E-Keno and E-Tipos are available online to Slovak residents only, using Slovak banks for payments. In 2003, the internet generated only 0.02% of sales.

v. Slovenia

Sportna Loterija was the first lottery operator to introduce games for mobile phones. HIT has worked with Boss Media create an online casino, HIT Stardust.

w. Spain

Is an active and profitable remote gambling market, subject to strict state monopoly regulation, mainly by regional governments. Public lotteries make up 18% of the Spanish gambling market. They can sell their approved lottery products through the internet. Internet sites must be registered with the Mercantile Registry, and can offer lotteries, gaming and

[14] According to ARGO's submission re *Gambelli* case.

betting on soccer. The Spanish government is still working out its policy towards internet gambling, is generally against it in principle, yet unsure of what can be done to prevent it. It has not yet developed a clear and reliable position.

x. Sweden

Sweden seeks to prevent private, for-profit gambling, preferring state-organized betting and lotteries. Two enterprises dominate the market: state owned AB Svenska Spel [lotteries, sports betting and gaming machines], and horse racing associations owned by AB Trav och Galopp [horse race betting]. Svenska Spel offers lottery games, bingo and casino gaming on the internet. Furthermore, Svenska Spel was the first national lottery to offer sports betting services online. In 2003, online revenues were €52.6 million (SEK495 million), 4.2% of the total sales. In 2003, a private organisation was licensed to provide internet lottery, keno and scratchcards. In 2004, it was announced that Trisslotten, Sweden's most popular gambling product, is to be available both on Svenska Spel's internet site and via mobile telephone. The European Commission is investigating Sweden's gambling laws, on the issue of whether they are protectionist regarding state revenues. It is not illegal for Swedish gamblers to place bets on operators' websites, or even for the operators to accept them.

y. United Kingdom

Remote betting by telephone (and more recently over the internet) is the oldest form of legalised remote betting and there are no restrictions on the jurisdictions from which bets can be taken, so that bets can be accepted over the internet by both UK licensed and other suppliers. Consumers can access any remote gambling site. The Gambling Act 2005 allows remote gaming to be fully based in the country for the first time, without restrictions on where the players may be located. Non-British operators will be able to apply for licences. EU-based operators will be able to advertise their services in Britain on the same terms as those holding British licences. Bookmakers [especially William Hill and Ladbrokes] are the biggest internet revenue earners, with betting dominating, but also offering off-shore licensed casino and gaming services. Sportingbet is a specialist internet operator. Betfair dominate the betting exchange market and are expanding overseas. Governmental restrictions on operators' activities have been imposed by the Competition Commission, which prevented an exclusive deal between BSkyB and Ladbrokes in 2002. The interactive television gambling system operating in the United Kingdom is the most advanced in the world. In 2004, Littlewoods, Sportingbet and William Hill launched their own iTV channels. Poker played on a person-to-person basis will be designated as "equal chance gaming", but if played against a bank, it becomes a casino game. The UK government position was made clear by Mr Peter Dean, Chairman of the Gaming Board for Great Britain, in 2003. He stated that:

> "…The starting-point for the British Government's policy is that the regulated activity in remote gambling takes place where the operator is located; the reason being that the player, wherever situated, must 'go to' the operator's site to take part in the gambling event, and a bet is not struck until accepted by the operator. This contrasts with the view taken in the USA, for example, which is that the activity takes place where the player is located. Lawyers could argue about this for ever. From a practical point of view it seems more sensible to exercise control over the operator, i.e. the entity accepting the bet, than over the punter, and the British position caters for this.
>
> "Our Government roundly opposes the notion that prohibition of remote gambling is either desirable or practical. As regards practicality, the DCMS position paper comments on the situation in the USA, where despite the apparent illegality of cross-border gambling more of its citizens gamble on-line than those of any other country. As regards desirability, the Government's approach is unashamedly, even aggressively free-market. So it rejects not only the US prohibitionist approach but also the Gambling

Regulators European Forum (GREF) position that gambling offered 'should be restricted to residents of the jurisdiction concerned and residents of such other jurisdictions with whom there are co-operative or reciprocal arrangements'.

"The British Government's view is that if other jurisdictions wish to prevent their citizens from gambling with British-based operators then that is of course up to them. There are many mechanisms they might use, including making it an illegal act for players and taking measures to block the use of credit cards for gambling transactions, as the US is doing. But for the gambling operators there will, under British law, be no 'black list' of countries from which they are unable to accept customers.

"Despite this uncompromising stance, the British Government remains supportive of international co-operation, acknowledging that there are many issues of common interest to jurisdictions across the world. Furthermore it will retain power to impose geographical restrictions, as it envisages that it might, for example, wish to stop operators accepting bets from countries where all gambling, or perhaps just all remote gambling, is forbidden. It distinguishes this situation from one where another country is seeking to prevent access by its citizens to British operators, but nevertheless permits remote gambling with its own licensed operators. But I should add that the Government has no plans at present to impose such geographical restrictions."[15]

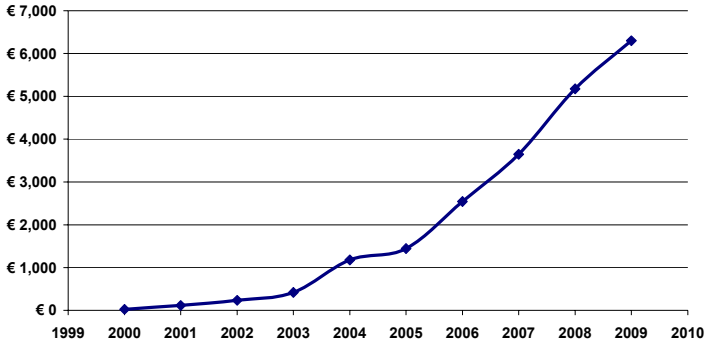
10. Survey Data for Remote Gaming Companies in the EU

As part of the preparation for this report, a survey instrument was developed and disseminated to all known remote gaming operators in the EU, as well as the regulatory authorities in Gibraltar and in Malta. As of mid-February 2006, a total of 19 companies from Malta, Gibraltar, and Finland had responded. Because we did not have any information on the size (as measured in GGRs) of the respondents relative to the size of non-respondents, we were unable to use the survey results to estimate the aggregate size of the remote gaming sector in the EU. However, we could draw other conclusions from the survey data based upon the assumption that the companies that did respond are representative of the sector as a whole.

Due to the sensitive nature of the data collected, respondents were informed that the data would not be presented in raw form but rather only in the aggregate to display the overall significance of the sector. The survey instruments sent to remote gambling operators is presented in the Appendix. Not all survey respondents answered all questions requested.

15 Dean, P. H., Lockwood, R. C., Penrose, R., Steen, M., Stevens, M., and Kavanagh, T. J. (2003), *Report of the Gaming Board for Great Britain 2002-03*, Report by Department for Culture, Media and Sport, 9 July.

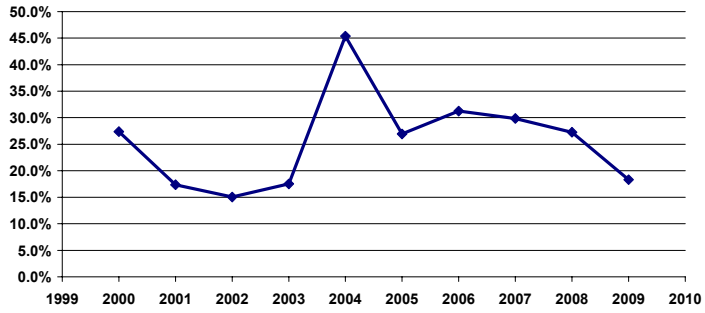
ACTUAL AND PROJECTED GGRs, RESPONDING REMOTE GAMING COMPANIES 2000-2009 (Millions of Euros)



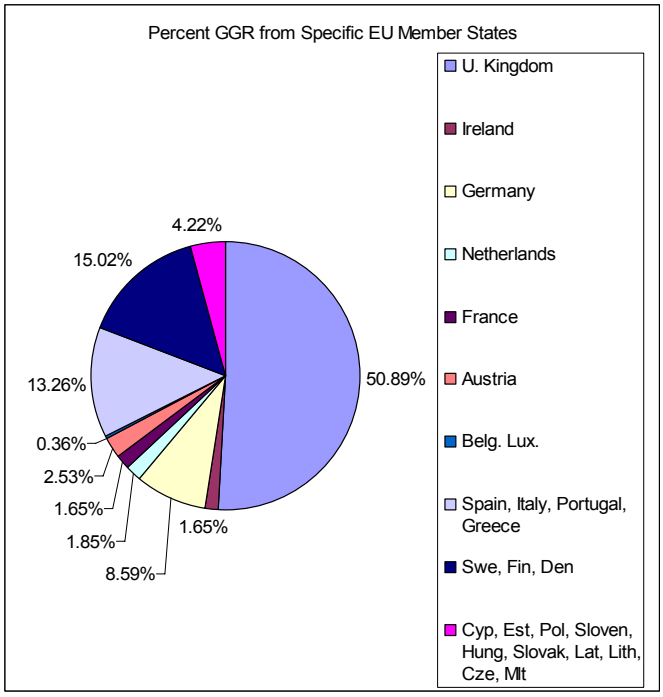
In the estimation of the 19 respondents, they were generating GGRs in 2004 of approximately €1.2 billion, having expanded from only about €115 million in 2001. They forecast that their GGRs would grow to in excess of €6 billion by 2009. This would suggest an average annual rate of compound growth from 2004 to 2009 of about 40%, considerably greater than the GBGC global forecast (discussed below.)

Based on overall GGR estimates for the remote gaming sector, the 19 companies that responded to this survey reflect about half of the remote gaming services industry for the year 2004. Though we cannot assign much accuracy to this, we can use it as a rule of thumb to roughly estimate certain parameters for the entire industry, such as levels of employment.

PERCENTAGE OF GGRs FOR REMOTE GAMING COMPANIES FROM OTHER EU COUNTRIES, 2000-2009

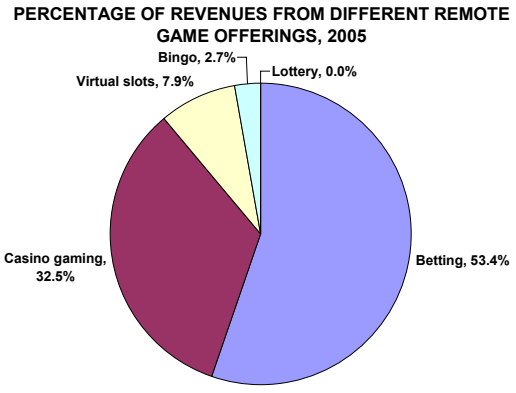


Respondents were also asked to differentiate between the percentage of their EU gaming revenues that were generated within the Member State where they were primarily based versus cross-border GGRs within the EU. (For purposes of this analysis, responses from Gibraltar were treated as if they were primarily based in the United Kingdom.) The respondents indicated that between 15% and 30% of their revenues came from other Member States between 2000 and 2003, increasing to about 45% in 2004 (probably due to the expansion of licenses in Malta.) The forecast through 2009 had the percentage of EU cross-border spending in the 20% to 30% range.



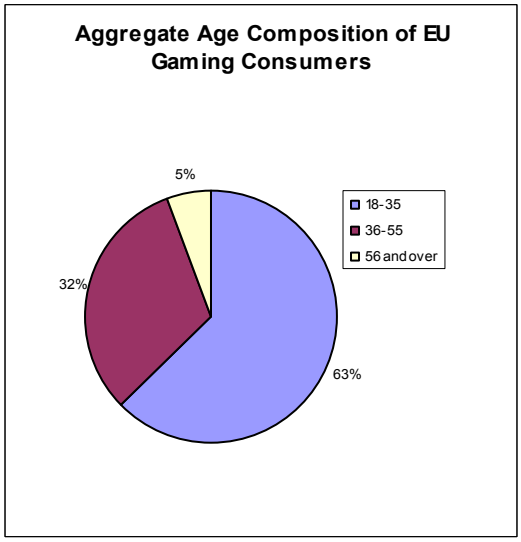
Respondents were asked to identify the proportions of their business coming from consumers in the various EU Member States. Based on their responses, roughly half of the custom is from the United Kingdom, followed by about 15% from The Netherlands and Belgium/Luxembourg, around 10% from Germany, and smaller amounts from other countries.

The survey also examined what remote gambling activities their customers purchased.
The conducted survey attempted to segregate the gaming market into five sectors: betting, casino gaming, virtual slots, bingo and lottery, respectively. The categories of poker, lottery-style games, and virtual games were added by respondents. The information on each gaming sector was derived from the survey based upon personal characteristics of players as reported by respondents.



Based on an unweighted average of the 19 respondents on this question, betting services generate over half of the GGRs for remote gaming service companies, casino games about another third, and virtual slot machines much of the balance, with the remainder picked up by bingo, internet poker, and lottery products.

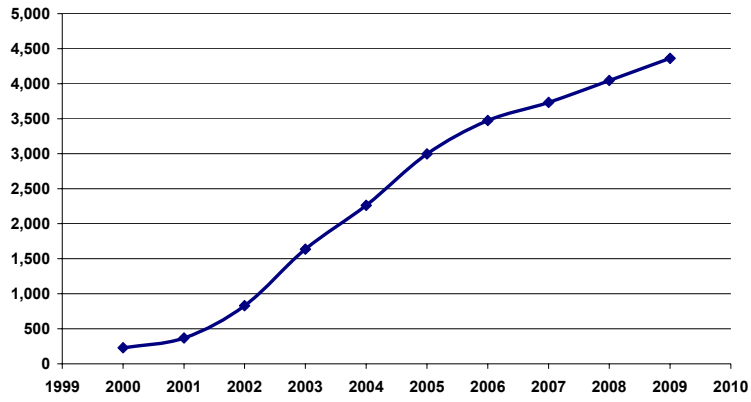
Age	Percent of total registered gamers
18-35	63%
36-55	32%
55 and over	5%



The remote gaming companies were also asked to provide information on the demographics of their registered players, All respondents reported a growing number of registered players within both their primary EU country of operations and other EU member states. They reported an aggregate of 63% of all registered players to be within the 18-35 age group, 32% to be within the 36-55 age group, and 5% to be of age 56 and over.

Remote gaming companies were also queried with respect to their employment levels, in their primary EU country, elsewhere in the EU, and outside the EU. If indeed this cohort of respondents reflects about half the remote gaming industry in the EU, then the employment growth for the sector went from less than 500 in 2000 to around 5,000 in 2004. Forecasts for future employment growth would push total employment (within and outside the EU) to about 10,000, of whom about 6,000 would be employed within the EU. Thus, even though the remote gaming sector may become an increasingly important part of the gambling services sector in the EU, it is likely to remain a relatively small employer.

EU REMOTE GAMING EMPLOYMENT
ALL LOCATIONS 2000-2009



Based on the survey results, the proportion of employees with remote gaming companies located within the company's primary EU country of operation declined from about 75% in 2000 to around 50% in 2004. Forecasts through 2009 suggest this ratio will fall further, to about 40%. The proportion of employees working elsewhere in the EU ranged between 10% and 15% between 2000 and 2004, and was expected to be around 15% in 2009. Finally, the proportion of employment outside the EU grew from 10% to 40% between 2000 and 2004, and was forecast to stay about 40% through 2009. , with negligible amounts of employees

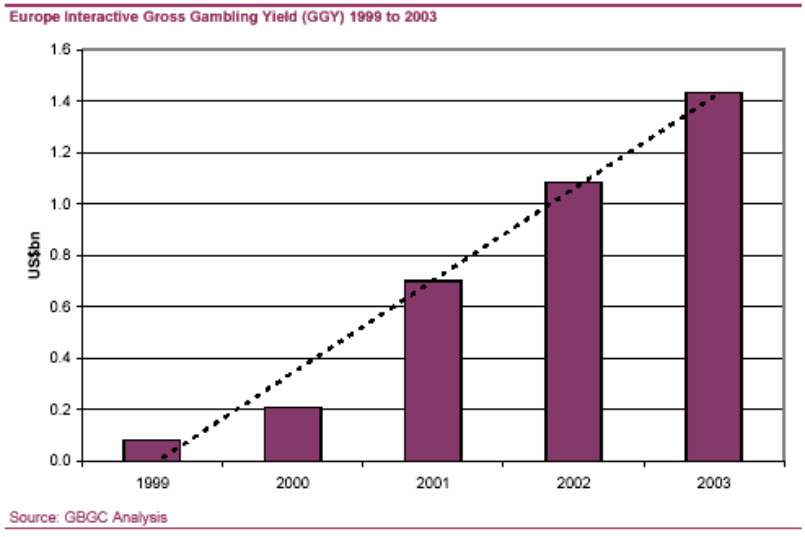
based in other EU countries and outside of the EU. Looking forward to 2009, employment within the EU is projected by respondents to grow at an aggregate of five percent each year for the next four years, while employment outside of the EU is estimated to remain somewhat constant, or grow only in proportion to over-all business growth.

It must be noted that within the past ten years the growth rate of technology—as applies to the remote gambling sector—has far surpassed that of legislation. In the United States, the law currently being applied to internet gambling cases dates back to 1961 when Congress enacted the Wire Wagering Act, which was aimed at curbing illegal betting over the telephone. It remains to be seen whether this law and similar pre-internet perspectives will survive the age of wireless technology as recent legal cases (i.e. United States v. Jay Cohen, Antigua vs. United States) sort themselves out through the courts or the World Trade Organization. The Wire Act is generally put forward in the United States as banning all forms of internet gaming within the United States, though thee is considerable difference of opinion on this matter.[16] Thus, even though a case can be made that internet gambling remains technically illegal within the United States, demand for remote gambling has clearly grown significantly as increasing numbers of U.S. citizens continue to participate in this activity. While it is theoretically possible to keep an entire nation from accessing online gaming through static IP control or internet service provider limitations, there would be nothing to stop consumers from going around these preventative measures as the collective public learning curve overcomes attempts by government to suppress the activity.

In the EU, by comparison, there are not the legal sanctions against the gambling activities *per se*, and as internet and remote technology access expands, we can expect that remote gambling sectors will also continue to expand at rapid rates. The questions of market access that are before policy makers and the courts in the wake of *Gambelli* and other legal decisions may very well determine the extent to which remote gambling sector growth will be allowed to take place.

11. The Future of Remote Gambling in the EU

A GBGC analysis has recorded the growth in interactive GGR in recent years as shown by the graph reproduced below.



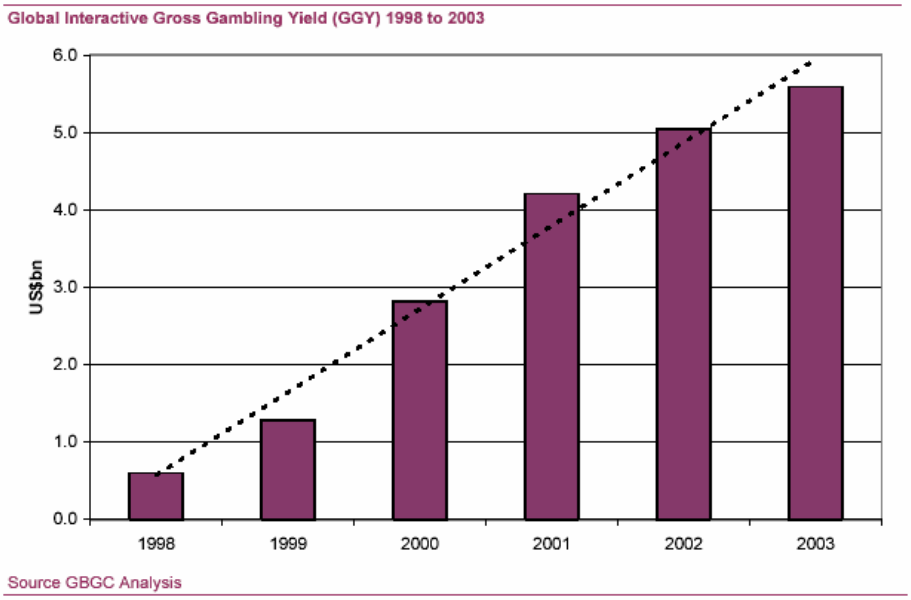
16 See Adrian Goss, "Jay Cohen's Brave New World: The Liability of Offshore Operators of Licensed Internet Casinos for Breach of United States Anti-Gambling Laws," Richmond Journal of Law & Technology, vol. 7, p. 32ff (Spring 2001).

This shows a rise from an initial low level in 1999, that took off sharply in 2001 and carried on increasing substantially through 2002 and 2003, but at a decreasing rate. It would appear that the market is still in an early phase of growth, but perhaps showing signs of heading towards maturity. The rates of increase per year are as follows; 2000 162.5%, 2001 233.3%, 2002 55.7% and 2003 31.1%. If the future annual percentage rates of increase remain at two-thirds of the previous year [i.e. in 2004 the increase is 20.5%, in 2005 13.5% and so on] then by 2012 remote gambling GGRs in Europe would be roughly €2.7 billion. Since the EU accounts for 90.5% of Europe's total gambling spend, we may estimate that the EU would generate an interactive GGR of about €2.4 billion in 2012. This would be about 85% greater than it was in 2003. This estimate of €2.4 billion in 2012 can be contrasted with the earlier figure estimated from GBGC's forecast for global interactive GGR that gave us €2.9 billion in 2012.

It should be borne in mind that these estimates assume that the EU companies' share of Europe's total interactive gambling spend (by company income, not consumer expenditure), is the same as its share of global gambling generally. It may be that the EU's interactive operators going to be better positioned than the rest of the world because of favourable legislation, in which case their GGR for 2012 would be higher.

We cannot accurately estimate the share of the European interactive market that is currently held by EU-based operators. Certainly, a number of firms are licensed and operating with EU boundaries. British remote betting licenses earn substantial sums for UK operators, just as Maltese remote betting and gaming licences do for operators based there. Currently however, there are also significant jurisdictions in Europe that operate outside the EU, in particular Alderney and the Isle of Man.

Our forecast can be contrasted with global experience up to 2003, as illustrated by the graph reproduced below.



Globally, the percentage growth rates for the years 1999 to 2003 are lower than those for Europe and reflect the view that Europe is catching up with the global situation, as has been suggested above. GBGC forecast a global increase in interactive GGR of 102% between 2003 and 2012, with the greatest rates of increase being through mobile phones and iTV. GBGC also predict that betting will continue to dominate interactive gambling, despite rising levels of expenditure on gaming and lotteries. The rise of newer channels and products will

serve to boost growth rates, but will not likely lead to a renewed sharp increase in the overall rate of growth of expenditure on remote gambling services.

Producing estimates concerning the future growth of remote gambling services in the EU generally may be easier than hypothesizing about growth rates in individual Member States. The EU based firms listed in the eGaming Review's[17] "top 10" are Sportingbet, William Hill, BetandWin, Ladbrokes and Betfair [all British, except for BetandWin]. They—and the governments that tax their profits—would be the main beneficiaries of future growth if past patterns of development are followed. However, they have recently been challenged in court by the various national lottery operators, with little certainty how such endeavours will come out. If all national lotteries become effectively "remote-friendly" and are successful in their protected market claims, then each Member State could ensure that a large slice of local interactive gambling revenues will stay 'at home'. If each Member State further allowed domestic gambling firms to offer remote services and encouraged them to do so in a competitive manner, perhaps by reducing their protection against overseas firms, then a greater proportion of revenues would probably stay 'at home,' at least partly because gamblers seem to have a preference for 'home country' operators, who will have an established brand and outlets where customers can seek advice and assistance. Governments that prevent their national operators from offering quality remote services and thus effectively competing in this global market will thereby force those operators to cede ground in the market or to emigrate in order to compete in it.

Another major factor in the development of the remote gambling industry is the economic dynamics of firm and industry growth. Currently, the interactive gambling industry is facing a process of rationalization, where some e-gaming specialist operators will be forced out of business, whilst others that have expanded will move towards public listing. We refer here to the 'new' specialist operators and not the large, established operators such as Ladbrokes and William Hill. Sportingbet is already listed on the London stock exchange, with profits of €29.12 million (£20 million) in the third quarter of 2004. PartyGaming was listed on the London exchange in June 2005 and its valuation rose to £5.2 billion (€7.5 billion) as of February 2006, making it the largest listed e-gaming company in the world.

Smaller companies have obtained listings on the Alternative Investment Market [AIM] in London. These include Empire Online, which raised €178.4 million, and Leisure and Gaming, which recently bought VIP Management for €35.6 million. Betfair seems to be preparing for a stock exchange listing. There is some evidence that online gambling operators are moving from their early days of dynamic entrepreneurial behaviour towards more bureaucratic business systems. For example, BetonSports was listed in July of 2004 and in 2005, issued a profits warning that wiped €145.5 million off its value. It has recently appointed a new Commercial Director and another new director responsible for Operations and Marketing.

Firms that succeed in stock market listings can use their capital to grow by acquisition and can develop their brands to obtain economies of scale and scope by offering a range of products in many markets. Economies of scale and network effects are important in interactive gambling games such as poker where the greater is the number of players registered with a single operator, the greater is the range of tournaments that that operator can run. Shares in remote gambling operations are seen by investment analysts as growth stocks, because they get cash 'up-front' and have no logistics or real estate. Merrill Lynch now offers an 'Internet Gaming SWAP index' to its clients. It is probable that the listed firms will expand and that the smaller firms will either be targeted as acquisitions of niche markets or be forced out of business. Recent history indicates that we can expect to see new niches developing and attracting revenues as new firms seek them out. There has also been a tendency for large firms to take over small firms in profitable niches and perhaps some of

[17] *eGaming Review* of July/August 2005

these large firms will eventually merge in order to gain market power. For these reasons, estimates of the size of remote gaming in the EU may €3.0 billion or more in 2012.

12. Effects on Land Based Gambling

If the above estimates hold, then remote gambling is not predicted to rise beyond 5% of the total EU gambling market by 2012. In those Member States which have poorly developed land-based gaming sectors, it could rise beyond that. It should be noted that DeSIA, the German casino association, claimed that in the German casino market, remote gambling is already 20% and expected to increase to 25-30% by 2012. Even if remote gambling with overseas firms was prohibited within a Member State, consumers would likely still find a way to indulge their passion – as the USA has found.

Firms that offer land-based as well as remote gambling services will pursue the remote business to extend their sales in total, even though some of it will undoubtedly substitute for their land-based sales. Relative taxation levels will be an important factor in determining the relative extent of remote versus land-based gambling. If remote gambling, due to its situational mobility, were able to induce governments to offer it lower tax rates on income than is paid by land-based businesses, that might be particularly conducive to growth. Low tax rates on remote gambling could, however, be counterweighted by the lower profit margins that may emerge if indeed it turns out to be more competitive than land-based gambling, due to easier entry into the market and depending on the ultimate resolution of legal challenges with respect to the right to offer remote gambling services in various Member States.

Although the above discussion and estimates probably reflect a set of reasonable speculations that would be forthcoming from remote gambling industry professionals and analysts, we conclude this discussion with some words of caution.

First, although we agree that remote gambling is unlikely to replace land-based gambling, we think that the two forms of gambling are increasingly likely to merge, for example in branding and marketing, and it retail outlets such as internet sports cafes where it is possible to gamble on remote sites.

Secondly, new forms of gambling are likely to emerge which particularly suit delivery by remote means and which secure a very large share of the market very quickly. This has already occurred with poker – a game of skill where consumers endeavour to play with others of approximately the same skill levels and similar tolerance for losses; the internet makes organizing such games easier than in traditional physical settings. Lottery and bingo games may prove to be especially suitable for provision by remote means, for different reasons such as the easy access of the billing system. It also seems plausible that people will find ways of betting on the games they currently play on play stations and this might further extend the remote market. In general then, much of what will happen with remote gambling over the next decade may not be able to be anticipated today.

CHAPTER 8

REVIEW OF SCIENTIFIC LITERATURE ON GAMBLING

8. REVIEW OF SCIENTIFIC LITERATURE ON GAMBLING

In order to provide a firm foundation for developing reasonable scenario models that look into the future for the gambling services sectors of the Member States of the European Union, we examined a substantial amount of peer-reviewed economic research that deals with gambling industries and their economic characteristics. We also looked at economic literature that examined the relationships between gambling and crime, cost-benefits studies and gambling, and problem gambling. The objective of this review was to allow us to generate reasonable sets of assumptions in development of scenarios that project, in both qualitative and quantitative terms, economic and distribution implications of possible alternative "states of nature" that might prevail with regard to EU gaming industries in the next decade. The following section summarizes our main findings.

For reasonable scenario analysis, empirical measures of some of the economic and income distribution effects are critical. In order to gauge such relationships, it is necessary to borrow from the findings of prior research that may have explored such estimates among gambling services sectors and with respect to consumer responses to changes in important economic variables.

The main criterion for inclusion of a study in this literature review is that it must have been published in a refereed academic journal. The authors recognize that there are many studies on various aspects of gambling that are available which have not been published in academic journals—such as national studies, many of which have been subcontracted to consulting entities, and private studies undertaken by gaming organizations, research analysts, or government bodies. Indeed, elsewhere in this report, we have relied upon information provided from such sources, which are noted in the bibliography and in specific references. However, for this section, we decided to concentrate only on articles published in academic journals, on the basis that the peer-review process ensures a higher likelihood of reliable scientific results than is the case with material taken from unrefereed sources. In addition to the restriction of this review to published academic articles, the articles selected are limited to those employing quantitative methods to estimate the effect of various factors on the variable of interest (e.g. horse race wagering, lottery wagering, or casino wagering.) In the review of the peer-reviewed literature, due to the difficulties in locating and translating articles in journals not written in English, it was determined that the most efficient allocation of our available resources was to review articles written in English or already translated into English.

After a comprehensive review of the published academic literature, quantitative economic studies concerning gambling demand (handle or sales) and revenue were identified in the following four major gambling areas: pari-mutuel wagering, bookmaker wagering, lottery wagering and casino wagering. We were unable to locate any published articles with quantitative analysis in the following areas of interest: internet betting, bingo, charity gaming, media games or sales promotions.

In this section of the report, the results of our review of the economic research literature focuses on the effect of a change in the price of wagering on the demand for wagering, the effect of competing products on the demand for wagering, the effect of government regulations on the demand for wagering, and the effect of wagering on sales of other goods.

1. The Economics of Gambling

Results of the literature review on the economics of gambling for the major categories pari-mutuel wagering and bookmaker betting, lottery wagering and casino wagering using quantitative analysis now follow.

The Demand for Pari-mutuel Wagering and Bookmaker Betting

Seventeen articles which employed quantitative methods to analyze the demand for pari-mutuel and bookmaker wagering were identified and included in the literature review (Ali and Thalheimer, 1997, 2002; Church and Bohara, 1992; Coate and Ross, 1974: Gruen, 1976; Gulley and Scott, 1989; Morgan and Vasche, 1979, 1982; Paton and Siegel, 2004; Simmons and Sharp, 1987; Suits, 1979, Thalheimer, 1998; Thalheimer and Ali, 1992, 1995a, 1995b, 1995c; Vasche, 1990). Following is a summary of the results of these studies.

Own-Price Effects

Pari-mutuel Wagering. The response of wagering quantity demanded (handle, turnover) for a gaming product to a change in that product's price is measured by the price elasticity of demand. The price elasticity is computed as the ratio of the percentage change in wagering handle to a percentage change in the product's price, *ceteris paribus*. In the case of gambling demand, the conceptual measure for quantity is handle, and the conceptual measure for price is the percentage of each unit of currency wagered retained by the game's operator. This can be called "house advantage," "take-out," or "percentage retained." The total amount of money wagered (handle) less the amount returned to the bettors in the form of prizes (winnings) is the Gross Gaming Revenue or GGR. For pari-mutuel wagering, the price is referred to as the takeout rate. Economic theory predicts that a change in the price of a product will result in a change in the demand for that product in the opposite direction. Thus, an increase in the price of wagering should result in a decrease in total handle and, conversely, a decrease in the price of wagering is expected to result in an increase in total handle. If a change in takeout rate results in a more than proportionate change in wagering, demand is said to be elastic (i.e. price-sensitive). If a change in takeout rate results in a less than proportionate change in wagering, demand is said to be inelastic (i.e. price-insensitive).

The following table shows the estimated price elasticities from the studies reviewed.

Pari-mutuel Wagering - Own-Price (Takeout Rate) Elasticity

Article	Subjects	Country	Years	Elasticity*
Ali and Thalheimer (1997)	Horse Racing	U.S.	1960-1988	-1.63, -1.65
Ali and Thalheimer (2002)	Horse Racing	U.S.	1985	-2.10
Gruen (1976)	Horse Racing	U.S.	1940-1969	-1.57
Gulley and Scott (1989)	Horse Racing	U.S.	1976-1980	-0.38
Morgan and Vasche (1979)	Horse Racing	U.S.	1958-1978	-1.48
Morgan and Vasche (1982)	Horse Racing	U.S.	1958-1980	-1.30
Simmons and Sharp (1987)	Horse Racing	U.S.	1982	-2.81, -3.90
Suits (1979)	Horse Racing	U.S.	1949-1971	-1.59
Thalheimer and Ali (1992)	Horse Racing	U.S.	1970-1987	-1.68
Thalheimer and Ali (1995a)	Horse Racing	U.S.	1960-1990	-1.76, -1.77
Thalheimer and Ali (1995a)	Horse Racing	U.S.	1971-1987	-1.85
Thalheimer and Ali (1995c)	Horse Racing	U.S.	1960-1987	-2.85, -3.06, -3.09

*Own-price elasticity is the resulting percent change in total wagering resulting from a percent change in takeout rate. The negative sign for the elasticities indicates that a change in takeout rate will result in a change in wagering in the opposite direction.

The general conclusion from this group of studies is that demand for pari-mutuel horse race wagering is highly price sensitive. Therefore, an increase in the price or take-out rate of wagering will lead to a more than proportionate decrease in wagering. When this indeed is the case (for pari-mutuel wagering markets or, for that matter, other wagering markets such as fixed-odds bookmaking), attempts to increase the takeout rate will lead to a more than proportional decrease in wagering and, therefore, to a loss in total revenues (GGR) accruing to operators. The median takeout rate elasticity from the studies cited above is –1.76. Typical pari-mutuel wagering takeout rates in the United States average about 21%, with slightly lower prices for standard wagers (win, place, show) and slightly higher prices for exotic wagers (daily doubles, trifectas, etc.) One would expect that similar results would apply in EU markets with similar pricing structures.

Bookmaker Betting: Bookmaker betting on horses and sporting events in the United States is restricted to casinos in the states of Nevada and New Jersey while it is the predominant form of wagering on horses and sporting events in countries such as the United Kingdom, Australia, and New Zealand. The following table shows bookmaker betting price elasticities from the two studies identified in the literature search dealing with bookmaker betting.

Bookmaker Betting - Own-Price (Takeout Rate) Elasticity

Article	Subjects	Country	Years	Elasticity*
Suits (1979)	Bookmakers-race book	U.S.	1949-1971	-1.64
Suits (1979)	Bookmakers-sports book	U.S.	1949-1971	-2.17
Paton, Simmons and Williams (2004)	Bookmakers(1)	U.K.	1987-2001	-1.59 to -1.62

(1) Off-course bookmakers
*Own-price elasticity is the resulting percent change in total wagering resulting from a percent change in takeout rate. The negative sign for the elasticities indicates that a change in takeout rate will result in a change in wagering in the opposite direction.

These studies found that—as was the case for pari-mutuel horse race wagering—bookmaker wagering demand is highly price sensitive. Moreover, the takeout rate elasticity for bookmaker wagering is found to be of the same order of magnitude as that for pari-mutuel wagering, falling between –1.6 and –2.2.

Competing Product Effects

A number of the wagering demand studies reviewed examined the effect of the following competing products on the demand for horse race wagering: competing pari-mutuel racetracks, casinos and casino-style gaming, lottery, professional sports wagering, and telephone account wagering. The following table summarizes the results of the studies reviewed.

Competing Product Effect-Pari-mutuel

Article	Country	Years	Competing Product Effect
Pari-mutuel Wagering Site (Live and Simulcast) Competition			
Ali and Thalheimer (1997)	U.S.	1960-1988	• decrease in handle*: impact decreases with increase in distance of market area population to competing racetracks.
Ali and Thalheimer (2002)	U.S.	1985	• decrease in handle with decrease in competing wagering site price*: cross price-elasticity = 1.5
Coate and Ross (1974)	U.S.	1970-1972	• decrease in handle*
Morgan and Vasche (1979)	U.S.	1958-1978	• decrease in handle*
Morgan and Vasche (1982)	U.S.	1958-1980	• decrease in handle*
Thalheimer and Ali (1992)	U.S.	1970-1987	• decrease in handle*: -16%
Thalheimer and Ali (1995a)	U.S.	1960-1990	• decrease in handle*: -5% to –29%
Thalheimer and Ali (1995b)	U.S.	1971-1987	• decrease in handle*: -8% to -23%
Account (Telephone) Wager Competition			
Thalheimer and Ali (1992)	U.S.	1970-1987	• decrease in handle*: -22% (racetrack's own telephone system)
Casino Competition			
Ali and Thalheimer (1997)	U.S.	1960-1988	• decrease in handle*: -32% from Atlantic City casinos
Thalheimer (1998)	U.S.	1990-1991	• decrease in handle*: -24% from slot machines at track
Thalheimer and Ali (1995a)	U.S.	1960-1990	• decrease in handle*: -31% from Atlantic City casinos
Lottery Competition			
Gulley and Scott (1989)	U.S.	1976-1980	• decrease in handle: insignificant in total lottery equation
Simmons and Sharp (1987)	U.S.	1982	• decrease in handle* -36%
Thalheimer and Ali (1995b)	U.S.	1986-1990	• decrease in handle* -10% to –33%
Thalheimer and Ali (1995c)	U.S.	1960-1987	• decrease in handle*: -27%
Professional Sports Competition			
Thalheimer and Ali (1992)	U.S.	1970-1987	• decrease in handle*: -5% (minor league sports)
Thalheimer and Ali (1995b)	U.S.	1986-1990	• decrease in handle*: -10% (major league football)
Thalheimer and Ali (1995c)	U.S.	1960-1987	• decrease in handle*: -4% for 10 more days of major league sports
*statistically significant			

One can conclude from these results that pari-mutuel wagering faces statistically significant and strong competition from the following: other pari-mutuel wagering venues, account (telephone) wagering, casinos, lotteries and professional sports. These estimated impacts were quite large with negative impacts on handle of up to 29% for competing wagering site venues, 32% for competing casinos, 36% for state lotteries and 10% (for extension of event competition by ten more days) for major league sports).

The literature search identified only one study that examined the effect of competition on bookmaker betting (Paton, Simmons, and Williams, 2004). The results of this study are shown in the table below.

Competing Product Effect-Bookmaker Betting

Article	Country	Years	Competing Product Effect
Casino Competition			
Paton, Simmons and Williams (2004)	U.K.	1960-1988	• insignificant effect of amusement machines or casinos on wagering
Lottery Competition			
Paton, Simmons and Williams (2004)	U.K.	1960-1988	• decrease in betting with decrease in lottery price*: cross-price elasticity = 0.355 and 0.396
Bingo Competition			
Paton, Simmons and Williams (2004)	U.K.	1960-1988	• positive effect on betting*: complement
*statistically significant			

It is interesting to note that, contrary to studies of the effects of casino competition on pari-mutuel horse race wagering in the U.S., the study of Paton, Simmons, and Williams (2004) found no significant relationship between the two forms of gambling in the UK. One possible explanation for this could be the differences in the degree of competition between pari-

mutuel race wagering and large-scale and widespread casinos permitted in the United States, in comparison to the more restricted competition from the much smaller scale and more heavily regulated casinos permitted in the U.K.

Also in this study, the U.K. national lottery was found to be a substitute for bookmaker betting. This is similar to findings that state lotteries are substitutes for pari-mutuel wagering in the United States. The study also found that the presence of bingo gaming would increase bookmaker betting, i.e. it is a complementary good.

Government Regulation Effects

Only one study was found that addressed the effects of government regulations on the demand for pari-mutuel horse race wagering (Church and Bohara, 1992).

Government Regulation Effects – Pari-mutuel

Article	Country	Years	Government Regulation Effect
Church and Bohara (1992)	U.S.	1964-1988	• race days (fixtures) allocations to individual racetracks by regulatory authority may result in suboptimal revenue and profit
*based on statistically significant coefficients of racetrack race days on handle.			

Government regulations were found to have had a negative effect on pari-mutuel wagering revenue, in the sense that if government objectives were to maximize race track GGRs for the state, then more careful analysis of performance at competing tracks would have resulted in a better allocation of race days among racetracks in a state.

Casino Wagering (Demand) and Casino Revenue

In a typical demand model for any product, sales are determined by the price of the product, as well as by other product and market characteristics. It is a characteristic of casino gambling that revenue is reported for both slot machines and table games but that wagering is only reported for slot machines. For this reason, studies on the demand for casino wagering (handle) have addressed only slot machine wagering since the important quantity demanded variable, handle, cannot be determined for table games. Studies addressing casino revenue have used the total of slot machine and table game revenue as the variable of interest since revenue from both is known. However, there is a major distinction between demand models and revenue models. In a wagering demand model, total quantity of the product sold (i.e. total amount of money wagered, or “handle”) is the variable of interest. In a revenue model, the variable of interest is GGR, itself the product of two variables: the price of wagering (“house advantage” or “win percent”) and the quantity of wagering sold, or handle. Because price is a component of the dependent variable in revenue studies, none of the studies analyzing revenue included price as a revenue determinant.

Eight articles on the economics of casino gaming were identified and included in this review (Anders, Siegel and Yacoub, 1998; Hunsaker, 2001; Nichols, 1998a, 1998b; Popp and Stehwien, 2002; Shonkwiler, 1993; Thalheimer and Ali, 2003). Following is a summary of the results of these studies.

Own-Price Effects – Demand for Slot Machine Wagering

Only one of the two studies of the demand for casino wagering (i.e. handle) included the price of wagering (win percent) as a determinant (Thalheimer and Ali, 2003). The other study of the demand for wagering did not include the price of wagering as a determinant since price did not vary over the study period (Thalheimer, 1998). The following table gives the only identified estimate of the price elasticity of the demand for casino wagering.

Slot Machines at Casinos - Own-Price (Win Percent) Elasticity

Article	Subjects	Country	Years	Elasticity*
Thalheimer and Ali (2003)	riverboats and racetracks-with-slot machines	U.S.	1991-1998	-1.5 @ 10.4% win percent -0.9 @ 6.1% win percent
*Own-price elasticity is the resulting percent change in total wagering resulting from a percent change in win percent. The negative sign for the elasticities indicates that a change in win percent will result in a change in wagering in the opposite direction.				

An important finding is that the price elasticity of demand for slot machines varies with win percentage. Demand was elastic at higher win percent rates decreasing to approximately unit elasticity at the lower end-of-study period win percent. Extrapolating this finding to market structures in the United States, it suggests that slot machine markets that have limited competition set prices higher than in more competitive casino markets such as Las Vegas where competition pushes prices lower. Furthermore, it suggests that European casino markets—which tend toward the monopoly end of the market structure scale, likely are priced at higher levels than those in more competitive markets. This has clear implications with respect to possible market expansion as a function of increasing competition.

While win percent is the price of casino wagering, accessibility by the customer to the facility and to its gaming machines has also been shown to be related to slot machine handle. Slot machine handle has been shown to increase as the distance which market-area customers must travel to the casino decreases (Thalheimer, 2003). Within the casino, slot machine handle has been shown to be directly related to the number of slot machines (Thalheimer, 1998 and Thalheimer and Ali, 2003).

Competing Product Effects

A number of the wagering demand and revenue studies reviewed in the economic literature examined the effect of the following gaming products on casino handle and revenue: competing casino and casino-style gaming (i.e. gaming machines), lottery, and horse race wagering. The following table summarizes the results of the studies reviewed. The first two studies under casino competition address the specific issue of the effect of gambling in geographically distant locations on resort destination gambling.

Competing Products Effect

Article	Country	Years	Competing Product Effect
Casino Competition			
Hunsaker, J. (2001)	U.S.	1978-1998	• increase in resort destination (Las Vegas Strip) casino revenues with introduction of riverboat casinos in distant locations* • statistically insignificant effect in weekend-destination (Atlantic City, New Jersey) casino revenues from introduction of riverboat casinos in distant locations.
Shonkwiler, J.S. (1993)	U.S.	1969-1991	• decrease in Nevada taxable casino gaming revenue from introduction of casino gambling in Atlantic City, New Jersey*: -10% to –12%
Thalheimer and Ali (2003)	U.S.	1991-1998	• decrease in riverboat or racetrack-slot machine facility slot machine handle with decrease in distance to competing riverboat and racetrack-slot machine casinos both within and across state borders*: -27% at sample mean of 10.5 competing riverboats and racetrack-slot machine facilities. • decrease in riverboat or racetrack-slot machine facility slot machine handle with decrease in distance to competing Indian casinos both within and across state borders*: -11% at sample mean of 3.2 competing Indian casinos. • cross-border effect -increase in slot machine handle in one state with decrease in distance to competing riverboats in another state which had government-restricted slot machine bet limits*: 16% (cross-border substitution)
Lottery Competition			
Shonkwiler, J.S. (1993)	U.S.	1969-1991	decrease in Nevada taxable casino gaming revenue from California lottery*: -3%
Pari-Mutuel Wagering Site Competition			
Thalheimer and Ali (2003)	U.S.	1991-1998	statistically insignificant decrease in riverboat or racetrack-slot machine facility slot machine handle from pari-mutuel wagering facilities.
*statistically significant			

General implications of these studies are that the introduction of non-destination resort riverboat casinos in locations distant from the Las Vegas Strip resort destination had a statistically significant and positive effect on Las Vegas Strip casino revenue. This suggests that non-destination resort casinos were effectively creating a “feeder market” or a “training market” for the more substantially developed destination resort casino market of the Las Vegas Strip.

Conversely, the introduction of non-resort riverboat casinos in locations distant from the weekend-destination casino gaming location in Atlantic City did not have a statistically significant effect on casino revenues there (Hunsaker, 2001). Another article examining the effects of distant gaming locations on destination resort gaming (Shonkwiler, 1993) found that Nevada taxable gaming revenue decreased 10% to 12% after introduction of casinos in Atlantic City.

There is considerable evidence regarding the substitutability of different gambling products for one another. Other studies mentioned above indicate that there is a statistically significant and negative impact on (riverboat) casino wagering resulting from competition with other (riverboat) casinos and Indian casinos. These impacts were found to be quite large. For example, the negative impact of competing casinos on a particular casino’s handle was estimated to average 27%. These impacts were found to decrease with distance from the subject site.

On the other hand, competition from pari-mutuel wagering was found to have a negative but statistically insignificant impact on casino handle. (Thalheimer 1998, Thalheimer and Ali, 2003). Competition from when a neighboring state (California) introduced a lottery had a statistically significant and negative impact on casino revenues in Nevada, estimated to be 3%. (Shonkwiler, 1993).

Government Regulation Effects

Results of the peer reviewed economics articles on the effects of government regulations on casino wagering and revenue are given in the following table.

Government Regulation Effects

Article	Country	Years	Government Regulation Effect
Nichols (1998a)**	U.S.	1964-1988	• increase in riverboat revenue after deregulation of bet/loss limits and limited boarding (i.e. access) times.* • cross-border effect - increase in riverboat revenue after deregulation of limited boarding (i.e. access) times from border state riverboats which had limited boarding times (cross-border substitution).*
Nichols (1998b)**	U.S.	1978-1996	• increase in Atlantic City casino revenues from deregulation resulting in more casino floor space allocated to slot machines.* • statistically insignificant positive effect on Atlantic City casino revenues from deregulation resulting in increased gaming hours.
Thalheimer and Ali (2003)	U.S.	1991-1998	• decrease in riverboat slot machine handle from government restrictions on bet/loss limits: -36% • decrease in riverboat slot machine handle from government restrictions on boarding (i.e. access) times: -35% • decrease in riverboat slot machine handle from combined impact of bet/loss limits and restrictions on boarding times: -59%.
*statistically significant **methodology does not allow computation of magnitude of the effect.			

Government regulations on casino handle or revenue were found to have a statistically significant and substantial negative impact on one or more of the following: bet/loss limits, access (boarding) times for riverboat casinos, and percentage of casino floor space allocated to slot machines. Restrictions on bet/loss limits and on boarding (access) times were estimated to decrease riverboat casino handle by 36% and 35% respectively. The combined impact of these two government restrictions was found to decrease riverboat casino handle by 59%.

Effects of Casino Gaming on Non-Gaming Products

In addition to articles dealing with the effect of casino gambling on other gambling products, three studies were identified which examined the effect of casino gambling on non-gambling goods and services.

Non-Gaming Product Effects from Casino Gaming

Article	Country	Years	Non-Gaming Product Effect
Business Transactions Tax Receipts			
Anders, Siegel, and Yacoub	U.S.	1990-1996	• decrease in total county tax receipts due to introduction of Indian casinos*: -0.44% • decrease in county tax receipts of major sectors of retail sales, restaurants and bars, hotels/motels and amusements due to introduction of Indian casinos.*
State Taxable Gross Receipts			
Popp and Steihwen	U.S.	1990-1997	• decrease in total taxable gross receipts due to introduction of first Indian casino in a county.* -0.1% • decrease in total taxable gross receipts due to introduction of second Indian casino in a county.* -6.2% • decrease in total taxable gross receipts with opening of the first Indian casino in a neighboring county*: -1.3% • increase in total taxable gross receipts with opening of the second Indian casino in a neighboring county*: 3.5%
Sales Tax Revenues			
Siegel and Anders (1999)	U.S.	1994-1996	• statistically insignificant change in apparel and accessory stores, miscellaneous retail, or personal services sales tax revenues due to either riverboat sales tax revenues or riverboat gaming revenues. • decrease in general merchandise sales tax revenues due to riverboat sales tax revenues* • statistically insignificant change in general merchandise sales tax revenues due to riverboat gaming revenues. • decrease in amusement and recreation sales tax revenues due to either riverboat sales tax revenues or riverboat gaming revenues.*
*statistically significant			

The implications of these studies are that the presence or introduction of casinos can decrease sales of selected non-gaming products. In one study, the impact of casinos on county tax receipts was negative and statistically significant but the magnitude of the impact was quite small, at -0.44%. When examined by sector, the largest decreases in tax receipts due to the introduction of (Indian) casinos were for restaurants and bars, hotels/motels and amusements, i.e. the entertainment sector. This result was corroborated in another study (Siegel and Anders, 1999) which found statistically significant decreases in recreational (entertainment sector) sales tax revenues and in general merchandise sales but statistically insignificant changes in sales taxes of other sectors. In a third study (Popp and Steihwen (2002), the introduction of (Indian) casinos was found to have reduced total taxable gross receipts with impacts –0.1% for the first (Indian) casino and –0.62% for the second (Indian) casino. This study also examined the effects of opening an (Indian) casino in a neighboring county and estimated a –1.3% decrease in taxable receipts for the first neighboring county Indian casino to open but a 3.5% (positive) increase for the second neighboring county Indian casino to open, a seemingly inconsistent result.

Lottery Wagering

Eighteen articles on the demand for lottery wagering (lottery sales, or handle) or revenue were identified and included in the literature review (Cook and Clotfelter, 1993; DeBoer, 1985; Elliott and Navin, 2002; Farrell, 2000; Farrell, Morgenroth and Walker, 1999; Farrell and Walker, 1998; Forrest, Gulley and Simmons, 2000; Forrest, Gulley, and Simmons, 2004; Forrest, Simmons and Chester, 2002; Garrett and Marsh, 2002; Gulley and Scott, 1993; Mason, Steagall and Fabritus, 1997; Mikesell, 1987, Mikesell and Zorn, 1987; Siegel and Anders, 2001; Stover, 1990; Tosun and Skidmore, 2004; Vrooman, 1976). Following is a summary of the results of these studies.

Own-Price Effects

A summary of the findings from the literature review measuring the responsiveness of lottery wagering to a change in its own price (i.e. price elasticity) is given in the following table.

Lottery Wagering - Own-Price Elasticity

Article	Subjects	Country	Years	Elasticity*
Cook and Clotfelter (1993)	State Lotteries	U.S.	1986	**
DeBoer (1985)	State Lotteries	U.S.	1974-1983	-1
Farrell, Hartley, Lanot, and Walker (2000)	National Lottery	UK	1994 -1996	-0.80 to –1.06 (Lotto)
Farrell, Morgenroth, and Walker (1999)	National Lottery	UK	1994-1997	-1.05 to –1.55
Farrell and Walker (1998)	National Lottery	UK	1994-1996	-1.46 to –2.63
Forrest, Gulley and Simmons (2000)	National Lottery	UK	1994-1997	-1.03
Forrest, Gulley and Simmons (2004)	National Lottery	UK	1997-2000	-0.90 (Sat. Lotto) -3.21 (Wed. Lotto)
Forrest, Simmons and Chesters (2002)	National Lottery	UK	1997-1999	-0.88 (Sat. Lotto) -1.04 (Wed. Lotto)
Gulley and Scott (1993)	State Lotteries	U.S.	1990-1991 1984-1990 1989-1990	-1.15 (Kentucky Lotto) -1.20 (Ohio Lotto) -1.92 (Mass. Lotto)
Mason, Steagall, and Fabritus (1997)	State Lottery	U.S.	1988-1993	-1.08

*Own-price elasticity is the resulting percent change in total wagering resulting from a percent change in takeout rate. The negative sign for the elasticities indicates that a change in takeout rate will result in a change in wagering in the opposite direction.
**Payout rate positive and significant for Lotto, elasticity not reported.
Payout rate positive but statistically insignificant for numbers games, elasticity not reported.
.

The implications of the above studies suggest that the price elasticity of demand for the lottery and lottery products (such as Lotto) varies from a low of approximately –0.9 to a high of –3.2. The typical price elasticity is about –1.2, in the elastic region of demand. As long as elasticity is greater than -1.0 (in absolute terms), a lowering of the price (the percent of sales (handle) retained by lottery operators) of lottery products will increase both lottery sales (handle) and lottery GGRs.

Competing Product Effects

A number of the studies reviewed from the economics literature examined the effect of a number of competing wagering products on lottery demand (wagering). The following table summarizes the results of the studies reviewed.

Competing Products Effect

Article	Country	Years	Competing Product Effect
In-State Casino Competition			
Elliott and Navin (2002)	U.S.	1989-1995	• decrease in lottery revenue due to riverboat casino gambling*: additional dollar in riverboat casino GGRs reduces gross state lottery sales by $1.38.** • statistically insignificant change in lottery revenue from number of Indian casinos
Garrett and Marsh (2002)	U.S.	1998	• statistically insignificant change in lottery sales from land-based, riverboat or Indian casinos.
Siegel and Anders (2001)	U.S.	1993-1998	• decrease in lottery revenue with increase in number of Indian casino slot machines*: -0.375 cross-elasticity with respect to casinos.**
Tosun and Skidmore (2004)	U.S.	1987-2000	• decrease in lottery sales from VLT (slot) machines*: -13% to –20%*
In-State Pari-Mutuel Wagering Site Competition			
Elliott and Navin (2002)	U.S.	1989-1995	• decrease in lottery revenue from pari-mutuel wagering*: additional dollar in pari-mutuel GGR reduces gross state lottery sales by $2.55.**
Garrett and Marsh (2002)			• statistically insignificant decrease in lottery sales from pari-mutuel wagering sites.
Siegel and Anders (2001)	U.S.	1993-1998	• statistically insignificant increase in lottery revenue with increase in pari-mutuel horse or dog handle.**
Cross-Border Casino Competition			
Elliott and Navin (2002)	U.S.	1989-1995	• statistically insignificant decrease in lottery revenue due to competition from border state riverboat casinos.**
Cross-Border Lottery Competition			
Elliott and Navin (2002)	U.S.	1989-1995	• small decrease in lottery revenue from cross-border lottery.**
Garrett and Marsh (2002)	U.S.	1998	• decrease in lottery sales in counties bordering each of four lottery states, statistically significant decrease in two of the four cases.*
Mikesell (1987)	U.S.	1984	• increase in lottery sales from cross-border non-lottery states.*
Mikesell and Zorn (1987)	U.S.	1983-1985	• increase in lottery sales from cross-border non-lottery states.*
Stover (1990)	U.S.	1984-1985	• increase in instant and number game sales if border state does not have a lottery* • statistically insignificant decrease in lotto sales if border state does not have a lottery. • decrease in lotto and instant game sales if border state has a lottery.* • statistically insignificant decrease in numbers game sales if border state has a lottery.
Tosun and Skidmore (2004)	U.S.	1987-2000	• increase in border county traditional lottery sales with introduction of video lottery (slot machine) gaming in neighboring state*: 41% to 68% • decrease in border county lottery sales in fifth year of introduction of new lottery in neighboring state*: -22%
Vrooman (1976)	U.S.	1967-1975	• Increase in lottery sales if border lottery state (statistically insignificant for two of three bordering states)
*based on statistically significant coefficients **coefficient estimates may be biased			

In the four studies noted above that estimated the effect of in-state casino-type gambling on lotteries, only one found no effect on lottery sales. The remaining studies all found evidence of a negative effect of casino-type gambling on state lottery sales. In one of these studies (Tosun and Skidmore, 2004) it was found that introduction of large-scale slot machine gambling at pari-mutuel racetracks in a state resulted in a 13% to 20% reduction in traditional lottery sales.

The effect of competition from in-state pari-mutuel wagering sites was found to have no significant effect on lottery sales in two of the three articles reviewed and a statistically significant and negative effect on lottery sales in the remaining study (Elliott and Navin, 2002). This was also the only study which included an estimate of the effect of border state casino gaming on a state's lottery sales and it found the impact not to be significant.

In states (communities) with a lottery which border non-lottery states, the general finding was that lottery sales were increased, possibly due to the attraction of customers from the non-

lottery border state. Conversely, if a lottery state (community) borders a state that had a lottery, the general finding was that lottery sales were decreased.

2. Gambling: Bankruptcies and Crime

Overview

A review of the literature on the areas of gambling and its relationship to personal bankruptcies, crime, and problem gambling is included below. The main criterion for inclusion of an article in this section of the literature review, as in the prior section on the economics of gambling, is that it must have been published in a refereed academic journal. We also limited the articles selected to those employing quantitative methods to estimate the effect of various factors on the variables of interest (e.g. horse race wagering, lottery wagering, or casino wagering.)

Gambling and Personal Bankruptcies

Four articles on the relationship of casino gambling to personal bankruptcies were identified and included in the literature review (Barron, Staten and Wilshusen; De la Viña and Bernstein, 2002; Nichols, Stitt and Giacopassi, 2000; Thalheimer and Ali, 2004). Our search efforts did not identify any articles on the relationship of other forms of gambling to personal bankruptcies. Following is a summary of the results of these studies.

Casino Effect on Bankruptcy

Article	Country	Years	Casino Effect
Barron, Staten and Wilshusen (2002)	U.S.	1993-1999	• increase in personal bankruptcies*: 1.0%
De la Viña and Bernstein (2002)	U.S.	1989-1994	• statistically insignificant increase in personal bankruptcies from casinos • statistically insignificant increase in personal bankruptcies from combination of casinos and pari-mutuel racing
Nichols, Stitt and Giacopassi (2000)	U.S.	1989-1998	• positive effect on bankruptcies in seven of eight counties, (significant effect of five of the seven counties)* • decrease in bankruptcies in one county*
Thalheimer and Ali (2004)	U.S.	1990-1997	• statistically insignificant increase in personal bankruptcies
*statistically significant			

The results of the four studies on the effect of casinos on personal bankruptcies are mixed. Two studies, (De la Viña and Bernstein, 2002; Thalheimer and Ali, 2004) were unable to find statistically significant effect of casinos on bankruptcies. In another study (Barron, Staten and Wilshusen, 2002), personal bankruptcies were found to be positively related to the presence of casinos, but the magnitude of the estimated increase in personal bankruptcies was relatively small at 1.0%. The results of an analysis of personal bankruptcies before and after the introduction of riverboats (Nichols, Stitt and Giacopassi, 2000) reported mixed results, with a statistically significant increase in personal bankruptcies in five of eight counties, a statistically insignificant increase in personal bankruptcies in two of the eight counties, and a statistically significant decrease in personal bankruptcies in one county. The method used in this study does not permit computation of the order of magnitude of the change in personal bankruptcies with crime, but rather only the direction of change.

Review of the Literature on Crime

In defining crime, many of the studies reviewed use the FBI (Federal Bureau of Investigation) crime categories as voluntarily reported under the Uniform Crime Reporting (UCR) Program classifies offenses in two groups, Part I and Part II. UCR Part I crimes are comprised of serious offenses and can be separated into two major categories: violent crimes and property crimes. Violent crimes include the offenses of murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault. Property crimes include the offenses of burglary, larceny-theft, motor vehicle theft, and arson. Part I crimes are also referred to as Index crimes because seven of these crimes (excluding arson) are included in the FBI Crime Index. There are 21 categories of non-serious, Part II offenses. Part II offenses include: other" assaults, forgery and counterfeiting, fraud, embezzlement, stolen property, vandalism, weapons, prostitution, drug abuse violations, and disorderly conduct, as well as others.

Ten articles on the relationship of casino gambling to crime were identified and included in our literature review (Albanese, 1985; Chang, 1996; Curran and Scarpitti, 1991; Friedman, Hakim and Weinblatt, 1989; Gazel, Rickman and Thompson, 2001; Giacopassi and Stitt, 1990; Giacopassi, Stitt and Nichols, 2000; Hakim and Buck, 1989; Ochrym, 1990; Stitt, Giacopassi and Nichols, 2000; Stitt, Nichols and Giacopassi, 2003). In addition to the ten articles on casino gambling and crime, the literature search identified one article on the relationship of lottery wagering to crime (Mikesell and Pirog-Good, 1990). Following is a summary of the results of these studies.

Casino Gambling and Crime

Article	Country	Years	Effect On Crime
Casino Effect			
Albanese (1985)	U.S.	1960-1988	• negative correlation of index crimes with Atlantic City casinos
Chang (1996)	U.S.	1986-1994	• statistically insignificant effect of riverboat casinos on 9 of 11 crime categories, significant but opposite effects for other two categories.* • negative effect on mischief.* • positive effect on robbery.*
Curran and Scarpitti (1991)	U.S.	1968-1989	• statistically insignificant change in the pre-casino trends in murder and non-negligent manslaughter, rape, aggravated assault and motor vehicle theft after introduction of casinos. • positive change in robbery, burglary and larceny after introduction of casinos.*
Friedman, Hakim, and Weinblatt (1989)	U.S.	1974-1981	• crime increased in localities more accessible to Atlantic City after the introduction of casinos in Atlantic City.*
Gazel, Rickman and Thompson (2001)	U.S.	1981-1994	• increase in total index crimes due to Indian casinos.* • statistically insignificant increase in the two major components of total index crimes, property and violent crimes due to Indian casinos. • increase in total non-index crimes due to Indian casinos.* • increase in index and non-index crimes in non-casino counties nearest casino counties.*
Giacopassi and Stitt (1993)	U.S.	1990	• statistically insignificant increase in total UCR violent crimes due to riverboat casinos.* • increase in total UCR property crimes (riverboat casinos affected two of the four crime categories).* • statistically insignificant increase in economic crimes due to riverboat casinos (riverboat casinos affected only two of 19 categories).
Giacopassi, Stitt and Nichols (2000)	U.S.	1990's (various)	• statistically insignificant or statistically significant and negative change in 73% of Part I crime cases after introduction of casinos.** • positive change in 27% of the Part I crime cases after introduction of casinos.* • statistically insignificant or statistically significant and negative change in 54% of Part II crime cases after introduction of casinos.** • positive change in 46% of the Part II crime cases after introduction of casinos.*
Hakim and Buck (1989)	U.S.	1972-1984	• statistically insignificant positive effect on total crime in Atlantic City

			and the 63 counties surrounding Atlantic City after introduction of casinos in Atlantic City. • positive effect on the individual categories of violent crimes, larceny, auto theft and robbery, but not burglary, in Atlantic City and 63 counties surrounding Atlantic City after introduction of casinos in Atlantic City.* • the less accessible (in minutes of driving time) a community is to Atlantic City, the lower the effect of Atlantic City casinos on crime rates in all categories.*
Ochrym (1990)	U.S.	1967-1987	• mean crime rates for three tourist destinations, one of which was Atlantic City, were not significantly different from one another. • mean crime rates between three tourist and two non-tourist destinations were significantly different from one another. • the introduction of casinos in Atlantic City resulted in significant increases in rape, robbery, assault and larceny.
Stitt, Giacopassi and Nichols (2000)	U.S.	1990's (various)	• statistically insignificant or statistically significant negative change in all crimes after introduction of casinos in 62% of the cases. • statistically significant positive change in all crimes after introduction of casinos in 38% of the cases.
Stitt, Nichols and Giacopassi (2003)	U.S.	1990's (various)	• statistically insignificant or statistically significant negative difference in all crime between casino and non-casino control counties after introduction of casinos in 72% of all crime cases. • statistically significant and positive difference in all crime between casino and non-casino control counties after introduction of casinos in 28% of the cases. • statistically insignificant or statistically significant and negative difference in Part I crime between casino and non-casino control counties after introduction of casinos in 72% of the cases. • statistically significant and positive difference in Part I crime between casino and non-casino control counties after introduction of casinos in 28% the cases • statistically insignificant or statistically significant and negative difference in Part II crime between casino and non-casino control counties after introduction of casinos in 72% of the cases. • statistically significant and positive difference in Part II crime between casino and non-casino control counties after introduction of casinos in 28% the cases
Lottery Effect			
Mikesell and Pirog-Good (1990)	U.S.	1970-1984	increase in property crime from presence of a *state lottery*:*: 3%
*statistically significant **mixed, significant and negative change or insignificant			

As can be seen from this summary, the results are varied with respect to the effect of casinos on crime, with findings of no change, increases and decreases in crime with the introduction of casino gambling. The question of whether increased tourism or characteristics particular to casinos are related to crime was investigated in one of the studies reviewed (Ochrym, 1990). In that study, no difference in crime rate was detected between Atlantic City (with casinos) and two other New Jersey tourist destinations. This study also found an increase in crime in Atlantic City due to tourism. In the lone study on the relationship of lotteries to crime (Mikesell and Priog-Good), crime was found to increase 3% with the presence of a state lottery.

CHAPTER 9
PROBLEM GAMBLING

9. PROBLEM GAMBLING

1. Introduction

Problem or pathological gambling can be broadly defined as "an impulse control disorder consisting of consistent and recurrent maladaptive gambling behavior that disrupts family, personal, or vocational pursuits.[18]

In virtually all jurisdictions where commercial gambling is permitted, governments have become increasingly concerned with the issue of problem gambling in recent years. Indeed, governments have increasingly moved toward the position that protections of consumers of various kinds, including the "protection of the vulnerable" from problem gambling, has become a primary concern in gambling policy. Moreover, as commercial gaming industries increasingly become part of mainstream entertainment offerings, this sentiment is likely to grow in political importance. Furthermore, as jurisdictions experiment with policies, regulations, and constraints with the intent of mitigating problem and pathological gambling, we are likely to see greater attention paid to the efficacy of such strategies in realizing their objectives.

Most EU jurisdictions to date have sought to discourage—or at least not to encourage—excessive gambling by substantially restricting the quality and availability of gambling services that can be provided. This has been true of casinos and machine gambling permitted in arcades and bars, as well as with betting and lottery services. European jurisdictions and policy makers have also been aware of the potential for other negative social impacts associated with commercial gambling industries, such as participation by organized crime, money-laundering, loan-sharking, fraud and tax evasion. This has led to policies that constrain commercial gambling industries so that those which are permitted and licensed can be easily and effectively regulated. As a by-product, this has reinforced the tendency to authorize only a limited number of commercial gambling licenses or outlets. In the same spirit, governments have typically regulated quite strictly such matters as who may work in gambling enterprises, where gambling may be conducted, and what kind of gambling services can be offered. Concerns with problem gambling issues are likely to be increasingly cited in the future as reasons for maintaining tight regulation in these areas.

This suggests that—for such restrictive policies to be effective—they must have an evidence-based and scientific foundation on which to base regulations and other market constraining rules. Unfortunately, this is an area that, until quite recently, did not receive much serious attention from scholars and from the research community. There is still relatively little peer-reviewed research available on problem gambling in the EU as a whole, though there is a growing body of literature primarily aimed at the this issue in English speaking countries (i.e. United States, Canada, Australia, New Zealand, and the United Kingdom)[19].

For the most part, most EU Member States have neither carried out prevalence studies nor put into place explicit strategies for developing a greater understanding of the causal or contributing factors to problem and pathological gambling within their borders. In light of changing legal principles and political sentiments, along with jurisprudence pressures from within the EU, one can expect that this situation will change rapidly in the near future.

---

18 Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Washington, D.C.: American Psychiatric Association (1994.)

19 See Appendix II.g.

A general discussion of some of the main themes in the peer-reviewed scientific literature on problem gambling is presented below. It will be helpful, however, first to sketch briefly the historical background which has led to the situation in which EU jurisdictions now find themselves or are likely soon to find themselves, where problem gambling is a major issue in general debates about gambling legislation and policy.

2. The Historical Background on Problem Gambling and Public Opinion

Historically, governments have prohibited or restricted the legal availability of various forms of gambling because they were enforcing a code of morality—usually religious but sometimes secular— which regarded gambling as a vice. Furthermore, until relatively modern times, it was often assumed that it was the duty of government to control or eliminate vice.

As a more pragmatic view emerged, there was concern that gambling—especially in excess—would be disruptive to the general social fabric. Almost always, governments and the general public have had concerns about the capacity of gambling to render families of limited means destitute, and therefore have sought to make it especially difficult for those of lower income to gamble. In a similar vein, it has long been believed that the dangers of gambling would have disproportionate risks for the young. As a result, policy toward gambling, from an historic perspective, has often had different attitudes for enforcing prohibitions against gambling by lower income individuals and youth, than gambling by people of more substantial means and greater maturity.[20]

In the Member States of the EU, as in jurisdictions of North America and elsewhere, opportunities to participate in commercial gambling have been quite limited until fairly recently. There have been national lotteries, betting on horse racing, places with casinos such as Monaco and Baden-Baden, and limited amounts of charitable gambling for good causes, but—in general—legal gambling was rare. Governments regulated quite strictly such matters as who may work in the gambling business, where gambling may be conducted, what kind of gambling can be offered, who would benefit economically from the spending, and how much commercial gambling of different sorts may be made available.

In the past half century, attitudes with respect to the morality of gambling changed substantially. On the whole, there has been steady growth in the prevalence of the view that individuals should be free to decide for themselves how to spend their own time and money in pursuit of entertainment, and that it is not the business of government to impose moral codes to which they do not adhere. Rather, at least for gambling, there has been a growing consensus that the proper role of government is to protect citizens from harm at the hands of others (i.e. consumer protections) and, in some cases, to protect consumers from harming themselves (i.e. protecting the vulnerable.)

In this respect, it is important to note that governments increasingly make a distinction between gambling to excess in a manner that might be harmful, and gambling responsibly for the pleasure and the entertainment to be derived. The general approach which governments presently take is that moderate consumption of gambling activities for recreational purposes is relatively harmless, and it is only of when problems of excessive consumption emerge that governments need to take note. The specific consequence of these changes in attitude—and arguably the main reason for liberalizing gambling laws—has been the fact that public opinion no longer supports the use of extensive and expensive law enforcement resources to stop people from gambling, and broadly supports the view that government should not

[20] David Miers (2004), Regulating Commercial Gambling: Past, Present and Future. New York: Oxford University Press

concern itself with the vast majority of gamblers who do no obvious harm either to others or to themselves.

On the other hand, over the same period, public opinion has also increasingly demanded that the state protect people from various kinds of harm, including especially those which would once have been thought of as character defects but are now more likely to be judged to flow from psychological disorders. Consequently in Europe, as in North America and Australasia, the recent liberalization of permitted gambling has been accompanied by an increasing concern to do so only within a regulatory context which ensures that the incidence of—and harm caused by—excessive gambling is properly mitigated.

Moreover, the concern with regulating to "protect the vulnerable" in relation to problem gambling has been intensified as a consequence of technological developments. Concerns about the incidence of problem gambling have been raised with respect to the increasing popularity of electronic gambling machines in conveniently located venues and, more recently, of opportunities to gamble using the internet, mobile phones and interactive television.[21] Because these new forms of gambling are both continuous and highly convenient, they have the potential to tempt people to gamble excessively on impulse, especially when high stakes and prizes are available.

3. Consequences of Public Concerns about Problem Gambling.

Although EU jurisdictions have been concerned in principle to minimize the negative social impacts of commercial gambling, different EU Member States differ with respect to the nature and structure of the gambling industries they have authorized, as well as with respect to their taxation policies dealing with gambling industries. There has, consequently, been no uniformity in the way the governments of EU Member States have addressed the issue of negative social impacts, including problem gambling.

Most EU countries have a single national lottery at least in part because of a belief that this provides a degree of control so that problem gambling and player protection issues can be effectively addressed. For the same reason, some countries—such as Holland, Finland, Sweden and Austria—have kept casino gambling under government ownership and control. Increasingly, those countries which have allowed a proliferation of gambling machines in convenience locations outside of casinos are seeking ways to address the perception—and perhaps the reality—that such machines are especially likely to elicit problem gambling behaviors. EU Member States are also agreed in principle that it would be desirable to be able to regulate gambling on the internet, but they have not yet agreed on how this can and should be done.

In general—as is the case in other parts of the world—EU Member States have only recognized problem and pathological gambling as a significant public health issue relatively recently. So far, they have put comparatively light regulations in place to deal specifically with this issue, and have yet only allocated limited resources to the research, treatment, public education about, and prevention of problem and pathological gambling within their societies, cultures, and social environments.

As is discussed elsewhere in this report, one important consequence of restricting the availability or quality of gambling services offerings as part of policy to protect the vulnerable,

[21] See, for example, Griffiths, M. (1999), "Gambling technologies: Prospects for problem gambling," Journal of Gambling Studies, 15, 265–284., and Griffiths, M., & Wood, R. (2000), "Risk factors in adolescence: The case of gambling, videogame playing, and the Internet," Journal of Gambling Studies, 16, 199–225.

is to create market conditions where gamblers pay more for gambling services than would be the case in less restrictive competitive environments. As a by-product of such conditions, excess profits can be made. Typically, both gambling service providers and governments financially benefit by such restrictions, in comparison to the more competitive alternatives, by capturing the economic rents created by the restrictions through statutory privileges and contractual relations.

Under the broad economic principles of the EU, commerce is to be governed by the concepts of "free and fair trade." This suggests that there cannot be discrimination in the provision of services against organizations from other Member States with respect to access to particular markets, unless explicit exceptions are granted and can be justified. Because of its perceived and real "moral" challenges, gambling services have been delegated such exceptional status. As a result, many of the gambling services sectors in Member States are characterized by commercial arrangements that would be unacceptable in law in other commercial sectors in the EU.

The essence of recent European Court of Justice findings in cases such as *Gambelli* is that the exceptional status accorded to gambling services sectors can only be justified if the policy of the Member State is indeed to protect their citizens from the dangers associated with the commodity so protected. (It is not enough to justify discrimination, or monopoly privileges, on the basis that the revenues thus generated are allocated for "good causes.") Furthermore, the restrictions on fair and free trade must be *in proportion* to the loss of economic welfare that accrues to the EU at large because of such uncompetitive policy.

Proportionality implies that the existing economic and legal arrangements that create the uncompetitive conditions are indeed the most efficient way to mitigate the adverse and unintended social impacts associated with permitted gambling services. This in turn implies that those factors to be mitigated are measurable, and that the particular strategies to be implemented can be empirically tested for their efficacy. At present, the state of knowledge and research within the EU on the prevalence levels of problem gambling and the effectiveness of policies intended to deal with it are not at an adequate level to justify such a clear causal path.

One of the challenges around this issue is that, even with peer-reviewed academic research on problem gambling and its social costs, it may still be difficult to segregate scientific findings from the hidden (or no so hidden) agendas of researchers or institutions.[22] This can be a major obstacle to the generation of evidence-based policy because serious attempts at trying to provide relevant evidence may come under attack by those who have an economic or political interest in discrediting the findings.

In summary, concerns over problem gambling issues ensure that proposals to change gambling law—or to allow new technologies linked to gambling services—will be controversial. Without a substantial base of knowledge that could emerge from a growing body of peer-reviewed research on problem gambling and related issues, such controversies will too often be characterized by claims and counter-claims which are not warranted by hard evidence, because the hard evidence would not yet be available.

[22] See, for example, Kindt, J.W. (2001), "The costs of addicted gamblers: should the states initiate mega-lawsuits similar to the tobacco cases?" Managerial And Decision Economics, vol. 22, pp. 17-63, and Eadington, W.R., "Comment on 'The costs of addicted gamblers: Should the states initiate mega-lawsuits similar to the tobacco cases?," in Managerial and Decision Economics, vol. 25, pp. 191-196 (2004)

4. Obstacles to Measuring Problem Gambling and its Costs

The two most important obstacles to measuring prevalence accurately are that there is as of yet no "gold standard" for measuring problem gambling, i.e. there is no internationally agreed upon and culturally neutral instrument that has yet emerged. The South Oaks Gambling Screen (SOGS), which is probably the most widely used instrument, has been widely criticized for various shortcomings, and in some jurisdictions, it has been abandoned in favor of more tailored instruments.[23]

Such instruments also have difficulties in implementation because when people are asked about their gambling behavior, they may have a high propensity to answer untruthfully either out of shame or because they are genuinely deceiving themselves about their gambling behavior and its effects on their lives. For example, the Australian Productivity Commission reported that 30% of addictive gamblers in recovery said that if they had been asked to fill in a problem gambling survey while they were still gambling, they would have lied.[24]

Once one has measured prevalence rates, there is still the more subtle and difficult issue of determining what is an appropriate measure of social cost associated with gambling, and how it should be interpreted. There are also serious difficulties in attributing causality to the incidence of problem gambling. Indeed, there is still an absence of consensus on whether particular venues (i.e. casinos), games (i.e. video poker), or availability (i.e. expanded legalization) increase or decrease the incidence or prevalence of problem gambling.[25]

5. Areas of Published Literature in Problem Gambling Research

Though there is only limited research available on the economic and cost-benefit implications of problem gambling,[26] there is a substantial body of work that has emerged since the mid-1990s in other disciplines. No attempt is made here to summarize the content of findings of the existing body of scientific literature on problem and pathological gambling, but it is worth noting the areas that have attracted the greatest recent attention.

Considerable effort has been devoted to establishing and measuring prevalence rates of problem and pathological gambling in various jurisdictions throughout the world.[27] A few of

---

23 See, for example, Culleton, R.P. (1989), "The prevalence rates of pathological gambling: A look at methods," Journal of Gambling Behavior, 5, 22–41; Smith, G. J, & Wynne, H. J. (2002), "Measuring Gambling and Problem Gambling in Alberta Using the Canadian Problem Gambling Index," Alberta Gaming Research Institute, retrieved at http://gaming.uleth.ca/; and Koeter, M. J. W., de Fuentes-Merillas, L., Schippers, G. M., & van den Brink, W. (2003), "Severity of gambling addiction: Development of a new assessment instrument," World Psychiatry, 2, 6 (Supplement 1).

24 Productivity Commission (1999), *Australia's Gambling Industries*, Report No. 10, AusInfo, Canberra.

25 Volberg, R. A. (2004), "Fifteen years of problem gambling prevalence research: What do we know? Where do we go?" eGambling, 10 http://www.camh.net/egambling/issue10/ejgi_10_volberg.html

26 Eadington, W.R. (2003), "Measuring Costs from Permitted Gaming: Concepts and Categories in Evaluating Gambling's Consequences", Journal of Gambling Studies, 19, 185-213; Walker, D.M. and Barnett, A. H. (1999), "The Social Costs of Gambling: An Economic Perspective", Journal of Gambling Studies, 15, 181-212; Henriksson, L., E., (2001), "Gambling in Canada: Some insights for cost-benefit analysis," Managerial & Decision Economics, 22, 113.

27 See in particular Shaffer, H.J., Hall, M.N. & Vander Bilt, J. (1999), "Estimating the prevalence of disordered gambling behavior in the United States and Canada: A research synthesis," American Journal of Public Health 89 (9), 1369–1376; Orford, J., Sproston, K., Erens, B., White, C. & Mitchell, L. (2003), Gambling and Problem Gambling in Britain. London: Brunner-

these have been undertaken in EU countries, and are therefore of particular interest to this study.[28]

There is a strong degree of consistency across national borders and cultures, with the prevalence of the most serious types of problem gambling (pathological gambling, or level 3 gambling) typically at one percent or less of the adult population, A considerable number of studies have examined problem and pathological gambling from the context of a public health issue, suggesting that governments and policy makers need to be more pro-active in exploring problem and pathological gambling in greater detail among vulnerable groups and subcategories, and devising tailored strategies with broad mitigation as a desired outcome.[29]

Various studies have examined pathological gambling within the context of particular sub-groups such as youth, the elderly, or particular ethnic groups, and have noted differing degrees of vulnerability linked to additional variables such as education, ADHD, or parental history of problem gambling.[30] Issues of multiple addiction and co-morbidity have received considerable attention, with findings that suggest a relatively strong tendency for people to experience addictive behavior over a number of substances. This raises important questions about both causality and about the proper way to offer treatment for co-morbidity subjects.[31]

There has also been considerable attention paid to genetics and pathological gambling[32] as well as to neurobiological linkages to problem and pathological gambling.[33] These are

Routledge; and the various reports and published articles by Rachel Volberg, listed in Appendix II.g.

28 Abbott, M.W., Volberg, R.A. & Rönnberg, S. (in press), "Comparing the New Zealand and Swedish national surveys of gambling and problem gambling," Journal of Gambling Studies; Bondolfi, G., Osiek C. & Ferrero, F. (2000), "Prevalence estimates of pathological gambling in Switzerland," Acta Psychiatrica Scandinavica, 101 (6), 473–475; Volberg, R.A., Abbott, M.W., Rönnberg, S. &. Munck, I.M. (2001), "Prevalence and risks of pathological gambling in Sweden," Acta Psychiatrica Scandinavica, 104 (4), 250–256.

29 Korn, D., & Shaffer, H. (1999), "Gambling and the health of the public: Adopting a public health perspective," Journal of Gambling Studies, 15, 289–365; Shaffer, H. J., & Korn, D. A. (2002), "Gambling and related mental disorders: A public health analysis," Annual Review of Public Health, 23, 171 – 212.

30 Gupta, R., & Derevensky, J. (1998), "Adolescent gambling behaviour: A prevalence study and examination of the correlates associated with excessive gambling," Journal of Gambling Studies, 14, 319–345; Emerson, M. O. & Laundergan, J. C. (1996), "Gambling and problem gambling among adult Minnesotans: Changes 1990 to 1994," Journal of Gambling Studies, 12 (3), 291–304; Messerlian, C., Derevensky, J., & Gupta, R. (2005), "Youth gambling problems: A public health framework," Health Promotion International. 20(1), 69-79; Volberg, R. A. (1994), "The prevalence and demographics of pathological gamblers: Implications for public health," American Journal of Public Health, 84, 237–241.

31 Welte, J. W., Barnes, G. M., Wieczorek, W. F., Tidwell, M., & Parker J. (2001), "Alcohol and gambling among U.S. adults: Prevalence, demographic patterns and comorbidity," Journal of Studies on Alcohol, 62, 706–712; Steinberg MA, Kosten TA, Rounsaville BJ (1992), "Cocaine abuse and pathological gambling," Am J Addict 1(2):121-132; Feigelman W., Kleinman P. H., Lesieur H. R. et al. (1995), "Pathological gambling among methadone patients," Drug Alcohol Depend 39(2):75-81; Petry, N. M. (2001), "Substance abuse, pathological gambling, and impulsiveness," Drug Alcohol Depend 63(1):29-38; Crockford, D. N., & el-Guebaly, N. (1998), "Psychiatric comorbidity in pathological gambling: A critical review," Canadian Journal of Psychiatry—Revue Canadienne de Psychiatrie, 43, 43–50.

32 Comings, D. E. (1998), "The molecular genetics of pathological gambling," CNS Spectrums 3(6):20-37; Eisen S. A., Slutske W. S., Lyons M. J. et al. (2001), "The genetics of pathological gambling," Semin Clin Neuropsychiatry 6(3):195-204; Slutske W. S., Eisen S., True W. R. et al. (2000), "Common genetic vulnerability for pathological gambling and alcohol dependence in men," Arch Gen Psychiatry 57(7):666-673.

33 Potenza M. N. (2001), "The neurobiology of pathological gambling," Sem Clin Neuropsychiatry 6(3):217-226; Potenza M. N. (in press), "Pathological gambling-clinical aspects and

potentially cutting new ground in the understanding of maladaptive gambling behavior, and are opening the door to possible new treatments, and well as a greater understanding of the phenomenon itself. For example, it is plausible that as the body of scientific knowledge advances in these areas, we may increasingly understand that problem and pathological gambling is something that some people are pre-disposed to encounter because of their genetic make-up or because of levels of activity in the pre-frontal cortex of their brain.

Other studies have examined brain-chemistry linkages to pathological gambling, increasingly suggesting that, at least for some pathological gamblers, it may be less a behavioral issue than a physiological one. Recent studies have linked drugs used for the treatment of Parkinson's disease to pathological gambling behavior,[34] as well as to drugs that seem reduce the urge to gamble.[35]

Should the research results in genetics, neurobiology, and psychopharmacology continue with positive and increasingly definitive findings, then it suggests that problem and pathological gambling may be far more curable than previous research and experience has suggested, by way of combinations of counseling, drug protocols, and enforced abstinence for people with certain vulnerable characteristics.

Indeed, research published in 2006 suggests that certain drug protocols have demonstrated promising results in the treatment of pathological gambling.[36] If these patterns of cause and effect prove to be significant in the aggregate for explaining problem and pathological gambling, then policy strategies for efficacious treatment of such cases may become increasingly clear.

6. The Relationship between the Availability of Commercial Gambling Opportunities and Problem Gambling

The research evidence suggests that most people who gamble do so in such a way as to enhance their enjoyment of life, and without causing themselves significant harm. A minority of the population gambles in a manner that causes substantial harm to themselves and their families, and such individuals find it unusually difficult to stop or to control their gambling. In a minority of these cases, the harm caused by severe pathological gambling is as devastating as that caused by alcoholism and other addictions.

It is a matter of judgment to decide to what extent restricting freedom of choice for the majority of people who gamble harmlessly is justified in the hope of protecting a minority who might otherwise gamble excessively. However, prohibition and restriction of opportunities to gamble clearly do not eliminate the incidence of problem gambling. It is not known whether or to what extent, if any, they reduce it.

---

neurobiology," In: Handbook of Medical Psychiatry, Soares J, Gershon S, eds. New York: Marcel Dekker Inc.

34 Dodd, M. L.; Klos, K. J.; Bower, J. H.; Yonas E. Geda, Y. E.; Josephs, K. A.; Ahlskog, J. E., "Pathological Gambling Caused by Drugs Used to Treat Parkinson Disease," Archives of Neurology, Sep 2005; 62: 1377 - 1381.

35 Kim S. W. , Grant J. E. (2001), "The psychopharmacology of pathological gambling," Semin Clin Neuropsychiatry 6(3):184-194; Kim S. W., Grant J. E., Adson D. E., Shin Y. C. (2001), "Double-blind naltrexone and placebo comparison study in the treatment of pathological gambling," Biol Psychiatry 49(11):914-921.

36 Grant. J. E., Potenza M. N., Hollander, E., Cunningham-Williams, R., Nurminen, T., Smits, G., and Kallio, A. (2006), "Multicenter Investigation of the Opioid Antagonist Nalmefene in the Treatment of Pathological Gambling," Am J Psychiatry 163: 303-312

It is plausible to think that some people who have a psychological, genetic, or neurobiological propensity to become problem gamblers are more likely to be elicited by certain kinds of legal and regulatory frameworks than others. Evidence and casual observation suggest that the risk of developing a gambling problem increase if gambling opportunities:

- are continuous
- offer frequent prizes
- offer what are perceived to be high prizes
- allow large sums to be staked
- allow credit to be used
- are located in venues where people are likely to gamble on impulse
- are introduced without an accompanying public education campaign which makes people aware of the dangers of gambling and how to avoid them.

No form of gambling is risk-free, but one can deduce that casino games are riskier than betting on sporting and other events, and betting on events is riskier than buying weekly lottery tickets. Casino games are safer if they are offered at a single venue where people must make a conscious decision in advance to visit rather than simply encountering an opportunity to gamble while undertaking other activities, i.e. gaming machines in a bar. They are less safe in venues that are close to where people live and work. They are less safe in venues—such as supermarkets and bars—where people go for other purposes and may be more readily tempted to gamble on impulse.

The introduction or expansion of casinos does not necessarily lead to an increase in problem gambling. A study by Volberg on the introduction of casinos and gaming machines in Montana, North Dakota, Oregon and Washington State compared problem gambling rates before and after the introduction of casinos or gaming machines. [37] She found that in Montana and North Dakota the incidence of problem and pathological gambling—as measured by the South Oaks Gambling Screen—increased substantially. In Montana, which had the largest increase, problem gambling grew from 2.2% of the adult population to 3.2%, and pathological gambling from 0,7% to 1.6%. However, in Oregon, numbers for problem and pathological gamblers declined from 3.3% to 2.3% for problem gamblers and from 1.4% to 0.9% for pathological gamblers. The critical variable, according to Volberg, was whether the introduction of casinos was accompanied by the provision of services for problem gamblers, including programs to enhance public awareness about gambling and its dangers.

Volberg's findings—that the introduction of casinos or gaming machines does not necessarily lead to an increase in problem gambling—is replicated in the study which she undertook with Abbott into the incidence of problem gambling in New Zealand. They found that, before and after the introduction of casinos—where problem gambling services were extensive—problem gambling numbers decreased.[38]

In summary, the evidence linking expanded gambling opportunities to problem gambling is scientifically inconclusive, though there is some ad hoc evidence (i.e. number of Gamblers Anonymous meetings, hotline calls, etc.) suggesting that increases in availability leads to increases in the level of problem gambling. This is clearly an area where greater scientific research is needed to clarify the underlying cause-effect relationships.

---

37 Volberg, R. A. 2001. *Gambling and Problem Gambling in North Dakota: A Replication Study, 1992 to 2000*. Report to the North Dakota Office of the Governor. Bismarck, ND: Office of the Governor

38 Abbott, M. W., & Volberg, R. A. (1996), "The New Zealand National Survey of problem and pathological gambling," Journal of Gambling Studies, 12, 143–160.

7. Availability of Services for Problem Gamblers

Researchers for this report received little information about the availability of problem gambling services as a result of our inquiries either from government or from service providers. The information that follows has been extracted from published sources including chapter three of a report prepared for the Gambling Industry Charitable Trust in the United Kingdom.[39]

There are four main categories of service or program which jurisdictions tend to put into place on either a statutory or a voluntary basis in order to mitigate harm caused by problem gambling: treatment; public awareness and prevention; training; and research.

It is only in the UK's Gaming Act 2005 that provision is made to ensure that all these activities are developed and funded through the establishment of an industry body—the Responsibility in Gambling Trust— (RIGT, formerly the Gambling Industry Charitable Trust) and through the requirement that licensees demonstrate social responsibility.

The two other European jurisdictions which have significant responsible gambling programs authorized by the government are Holland and Sweden where the casinos industry as well as the lottery are owned by the state. Otherwise, from our findings, EU jurisdictions treat problem gambling in the context of the mental health services as are provided. Also, some jurisdictions have self-help groups for compulsive gamblers based on the program of Gamblers Anonymous or Alcoholics Anonymous.

In various Member States, there are established services available for problem gamblers. For example, in the UK, The Netherlands, France and Sweden, there are help-lines available for problem gamblers, as well as dedicated out-patient treatment services. In the UK, these are mainly offered through the service provider GamCare, which also operates the helpline. In The Netherlands, they are offered through the Jellinek Foundation which specializes in all addictions. In France, the helping service SOS Joueurs offers a variety of services over the internet and other information for problem gamblers. In Sweden, such services are offered through local organizations financed by local communities. Furthermore, research and education programs are offered in Sweden through the National Institute of Health and the Spel Institutet. Gordon House in the UK, as far as we were able to determine, is the only charitable organization which offers in-patient treatment for compulsive gamblers in the EU. Increasingly, help for problem gamblers in all these jurisdictions is being made available on the internet.

The following information is offered to the extent that it may be of interest:

- Dutch mental health services in total treated 3,941 problem gamblers in 2001 compared with 25,510 people with alcohol problems and 36,658 people with drug problems
- GamCare's helpline recorded 14,915 calls in 2004, of whom by far the largest number learnt of the service through the Yellow Pages
- GamCare treated 239 new clients on a face-to-face basis in 2004.

39 Collins, P. et al (2003), *Towards a Strategy for Addressing Problem Gambling in the UK: A Report to the Gambling Industry Charitable Trust,* The Responsibility in Gambling Trust, http://www.rigt.org.uk/

8. Methodological Problems in Addressing Problem Gambling

The following is offered as an example of the difficulties inherent with non-scientific considerations that affect the quality of published research in the area of problem gambling. One can argue that the process of peer-reviewed refereeing reduces the incidence of compromise in the research process.

The report produced by NORC (National Opinion Research Center) was commissioned by, and submitted to, the (U.S.) National Gambling Impact Study Commission (NGISC) in April 1999.[40] The major purpose of this study was to conduct a comprehensive national survey to update and expand upon a prior survey conducted in 1975 (published in 1976) by the University of Michigan Survey Research Center, for the Commission on the Review of the National Policy toward Gambling.[41]

To achieve the goals of the NGISC, the sample size for the study was based on a number of factors: number of households with adult females and adult males, population of the two strata – lottery and non-lottery states, expected number of pathological and problem gamblers among males and females, distance to major gambling facilities, and the expected number of completed interviews (NORC 1999, Appendix B). It is important to note that one of the criteria used by NORC was the expected number of pathological and problem gamblers. It should also be noted that the NORC report states that: "…as the data collection progressed, we determined that we would achieve our sampling objectives without the safety margin; thus we never released these cases" (NORC 1999, Appendix B).

The NORC sample started out with 11,500 RDD (random digit dial numbers) of households stratified by lottery and non-lottery states. Of the initial 11,500 RDD households, 80%—or 9,200 numbers—were initially assigned for data collection, holding an additional 20%—or 2,300—in reserve to provide a safety margin. The completion rate of 2,417 for the 4,358 working residential numbers was 56%. The assumption was that there was no bias in the large group of non-respondents (respondents), an assumption which could not be tested. This is a problem common to all primary data surveys and not just to the NORC survey.

As was pointed out in the NORC report, the sample size for the problem and pathological groups (30 problem gambler and 21 pathological gambler respondents) is too small for generalizable analysis. This result seems somewhat unexpected (even though NORC stated that it was expected) since the sample was designed using—as one of the criteria—the expected number of problem and pathological gamblers. It should also be pointed out that even though the sample size was small it was, by design, unbiased (under certain qualifying assumptions concerning the 44% non-respondents).

Under pressure from the National Gambling Impact Study Commission, NORC increased the sample size of problem and pathological gamblers, and supplemented their sample with an intercept sample of gambling facility patrons, stratified by lottery and non-lottery states and at various gaming facilities in the United States. But this was not a random sample (equally likely to be selected) of households, such as the RDD sample. Intercept samples are not truly random and do not have well-defined statistical properties; it is therefore not possible to draw valid general conclusions for the population from their results. In addition, the interviews were conducted face-to-face, unlike the relatively more impersonal RDD telephone interviews.

---

[40] Gerstein, D.R., Volberg, R.A., Toce, M.T., Harwood, H., Johnson, R.A., Buie, T., Christiansen, E. et al. (1999), *Gambling impact and behavior study: Report to the National Gambling Impact Study Commission*. Chicago: National Opinion Research Center, the University of Chicago.

[41] Kallick, M., Suits, D., Dielman, T. & Hybels, J. (1976), Survey of American Gambling Attitudes and Behavior: Final Report to the Commission on the Review of the National Policy Toward Gambling, Ann Arbor, Michigan: University of Michigan Press.

Nonetheless, NORC combined the intercept sample, conducted to "find" more problem and pathological gamblers, with the RDD sample and used the combined sample for analysis.

This procedure is fatally flawed since the patron survey was not a truly random sample as was the RDD sample. All of the care taken to assure an unbiased random sample using the RDD method was negated when the two samples were combined. Thus, it was not possible to analyze the respondents using the combined using statistically methods.

Unfortunately, even though they acknowledged the problems with the merged sample, the NORC team still proceeded to analyze the results of the survey with respect to pathological and problem gambling. However, the results of their analysis with respect to problem and pathological gambling are not valid in terms of their ability to generalize to the target population, and therefore should not be used in research or policy analyses.

9. Submissions on Problem Gambling in Response to Information Requests

As part of this study, the research team received comments and summaries of reports submitted by organizations we had approached in the information gathering phase. The following submissions are presented with the caveat that their findings need to be subject to critical analysis in a manner consistent with other research in these areas. They are presented as they were received.

AUSTRIA

One of the three landers made a comparative study of before and after these soft gaming machines were introduced. In the year 1997, they found the percentage of gambling addicts was 2.1% in the addiction hospital out of all addicts. In 1998, this estimate rose to 17.9% and in 2001 to 20%. Out of all the problem gamblers, 60% were addicted to small prize automatics gaming machines. This also encourages criminal activities, where players are determined to get money to feed their gambling addiction.

One can conclude that soft gaming machines, which have no age or entry/concession control and provide very fast games with fast replay, seem to lead to a high tendency to become a gambling addict. This lander has since treated these small prize gaming machines as the same as any other gaming industry. Their opinion was that if these machines were not properly controlled, there was a very high possibility that the rate of gambling addiction could increase rapidly.

ESTONIA

According to a study conducted in Estonia in 2004 by Consumer Protection Board, there are about 25,000 (plus or minus 10,000) gambling addicts in Estonia, which is 2,4 % (plus or minus 1%) of the Estonian population. About 1% of those pathological gamblers are under 20 years of age. In addition to that number there is also a risk group of potential pathological gamblers of 27,250 (plus or minus 10,000) people, which is 2,6 (plus or minus 1%) of the whole population.

According to the Consumer Protection Board 2004 study, pathological gamblers are most often men between the ages of 20-44 years; they can be both entrepreneurs/executive management and skilled labour. Young people between the ages of 15-19 years are most often the group at risk of becoming gamblers. There is no specific distribution of the consumers by age group in either the earlier mentioned study or in State official statistics. Divided by the social status of the gamblers or potential gamblers, the statistics are as follows:

Problem Gambling Statistics in Estonia 2004:

	Pathological gamblers (%)	**Potential pathological gamblers (%)**	**Some gambling related problems (%)**
Entrepreneur/executive management/leading specialist	4	2	7
Specialist, civil servant, server	1	2	9
Skilled labour	6	5	19
Other employees	4		7
Student	2	5	12
Pensioner	1		4
Unemployed	3	3	14

There is no special legal protection for problem gamblers, but they can seek help from Estonian not-for-profit organisations, which provide the necessary help and information in fighting this problem, such as:

- Association of Estonian Gambling Addicts
- Information Centre for the Casino-addicts
- The Institute for Problem Gambling and Treatment [http://www.huvi.ee/institute/]

FINLAND

Sininauhaliitto (The Finnish Blue Ribbon) is a Christian-based central association for nearly one hundred member organisations, and they have about five thousand contacts from clients every day (homeless people, those having problems with alcohol or drugs, prisoners serving their sentence and prisoners who have newly been released from prison, gambling addicts, children and families who are at social risk). Services are provided through day centres, units of supportive residential accommodation (mainly dwellings or groups of dwellings, constructed with funding by state-subsidised ARAVA housing loan), and treatment and rehabilitation institutions. In addition, group activities, employment projects, camps etc. are provided.

The Finnish Blue Ribbon finances its operation by funding from RAY, through project financing from the Ministry of Social Affairs and Health, the Ministry of Labour, education administration, Church Council and the Ministry of Foreign Affairs, is also common.

The Finnish Blue Ribbon has studied problem gambling since early 1990's and has produced several studies of problem gambling with A-clinic Foundation. The latest study and the following pilot project started a helpline for problem gamblers and their relatives (Peluuri Helpline Project).

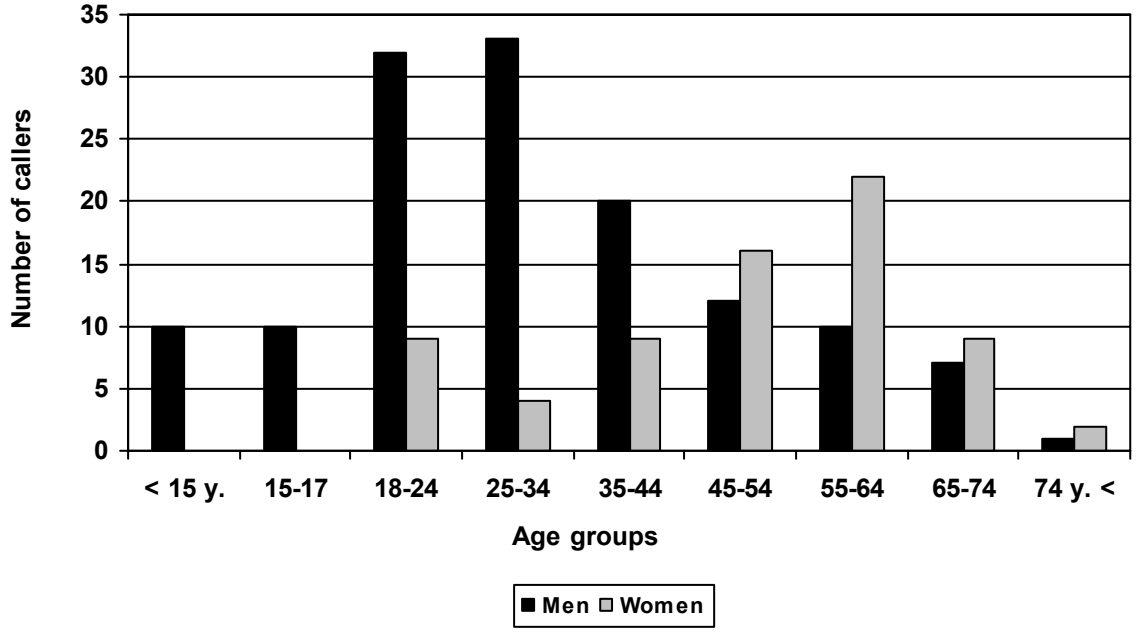
The Peluuri Helpline's reports contain information and statistics concerning 700 calls. Peluuri was operating as a pilot project from 1.9.2004 to 31.5.2005. The organisation had answered 687 calls during the first nine months. That is 45% of all incoming calls and 69% answered of calls that came during the working hours, 12 am to 6 pm.

The Addiction Helpline Callers Statistics:

Callers	**Number**	**% of all callers**
- Gender		
Men	231	48 %
Women	251	52 %
All	482	100 %
- Type		
Gamblers	363	61 %
Relatives*	132	22 %
Professionals**	25	4 %
Other***	78	13 %
All	597	100 %

* *Relatives= relatives, parents, spouses, sons, sisters, grandparents, friends eg.*
** *Professionals= Professionals working in the fields of social work, health care treatment media eg.*
** *Other = Hoax calls, wrong number and the calls where the caller is not specified.*

The Gambler's Profile



Detailed Gambler's Profile:

Gamblers age	Men, number	%	Women, number	%	All, number	%
< 15 years	10	7,4 %	0	0,0 %	10	4,9 %
15 – 17	10	7,4 %	0	0,0 %	10	4,9 %
18 – 24	32	23,7 %	9	12,7 %	41	19,9 %
25 – 34	33	24,4 %	4	5,6 %	37	18,0 %
35 – 44	20	14,8 %	9	12,7 %	29	14,1 %
45 – 54	12	8,9 %	16	22,5 %	28	13,6 %
55 – 64	10	7,4 %	22	31,0 %	32	15,5 %
65 -74	7	5,2 %	9	12,7 %	16	7,8 %
74 <	1	0,7 %	2	2,8 %	3	1,5 %
All, age and gender known	135	100 %	71	100 %	206	

- 23% of men and 2 % of women also needed loans to finance their gambling
  - Of all gamblers that have called Peluuri Helpline 4% used illegal means to obtain money for gambling

- Almost half of women gamblers were over 55 years (47%)
  - And a quarter had mentioned having mental health problem (23%)

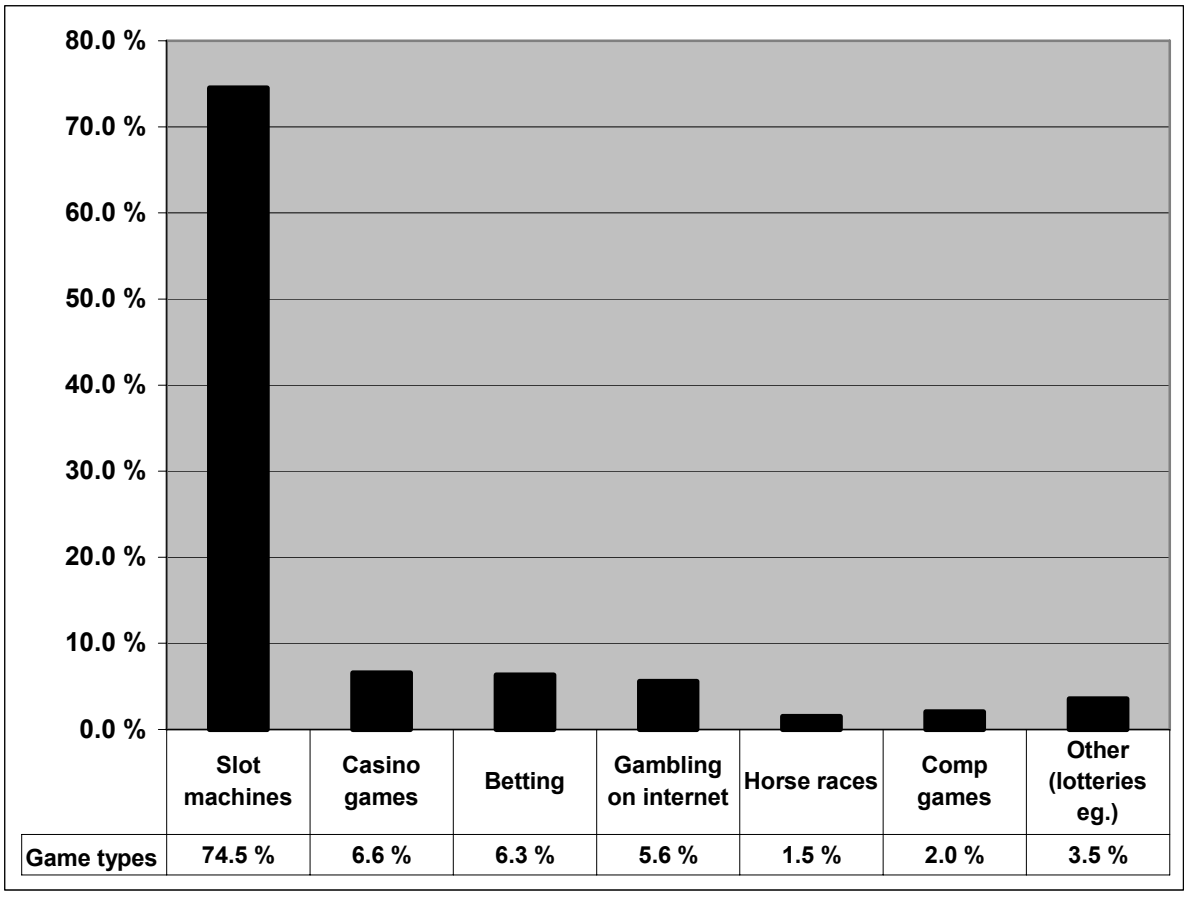
- 59 % of women gamblers were retired
  - Men were more often employed (57% M/22% W)
  - Unemployment was almost equal between men and women (6,8% M/6,3% W)

- 13 % of gambler callers were or had sought outpatient or inpatient treatment because of a gambling problem
- 48% of callers were referred for treatment (outpatient or inpatient), 18% to peer groups (GA eg.)

Type of Gambling

- Of all callers/gamblers 74,5% played slot machines
  - 95% of women played slot machines as primary game.
  - Betting in the calls was mostly a male activity.
  - Internet gamblers were all male.
  - Computer/video games were mostly played by men/boys and most of them also gambled.
  - Every fourth (23%) gambler said they also played other games.
    - Slot machine players seem to play less other games.

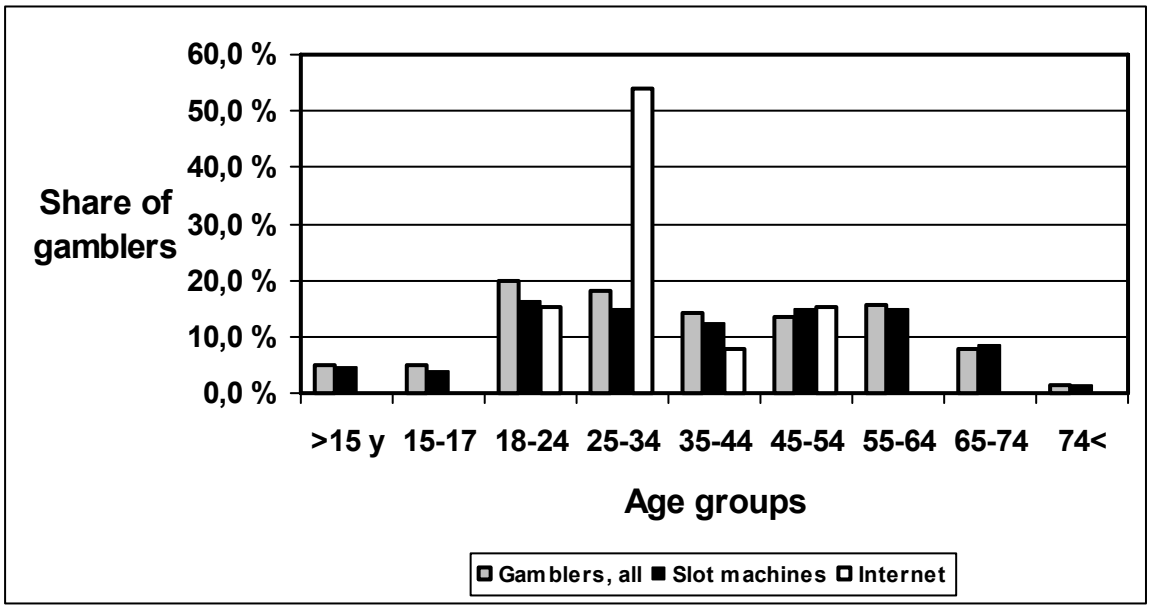
Participation in Different Types of Gambling:



	Slot machines	Casino games	Betting	Gambling on internet	Horse races	Comp games	Other (lotteries eg.)
Game types	74.5 %	6.6 %	6.3 %	5.6 %	1.5 %	2.0 %	3.5 %

- More middle aged people gamble on slot machines
- Internet gambling is done mostly by young adult males

Participation in different types of gambling by age:



UNITED KINGDOM

The National Centre for Social Research has found from the 2001 British Prevalence Gambling Survey that Britains have a positive perception about gambling and the National Lottery in particular, where 72% of the population gambled in a year prior to the survey and 65% of the population bought a National Lottery ticket. 53% of the population had gambled in a week prior to the survey and 47% bought a lottery ticket.

Compared with many other countries it appears that the British are less likely to gamble, at least given the current regulation. While only 72% of British adults gambled in the past year, nine in ten adults do so in Sweden and New Zealand, and eight in ten in Australia. In the USA, however, it is only 63% who gamble, considerably less then in the UK.

There is only 7% of the population who are "multiple interest gamblers", one-third buy only National Lottery tickets and another third participate only in one or two activities. Men are more likely to gamble than women and 16-24 year olds and those over 65 are less likely to gamble. Different social classes exhibit different gambling preferences. In addition, the level of participation in gambling activities tends to increase along with household income until around £36,000 and after that, participation level steadied and even slightly declined.

The likely number of problem gamblers in Britain is 370,000 according to the SOGS instrument and 275,000 according to the DSM-IV, where SOGS and DSM-IV are different screening tests, estimating the prevalence of problem gambling is 0.8% (SOCS) and 0.6% (DSM-IV). Compared with other countries the prevalence of problem gambling in Britain appears to be relatively low to average.

Multivariate analysis revealed that the typical problem gambler is male, from the lowest income group, and is separated or divorced, with a parent who was or had been a problem gambler. This suggests that gambling might be regressive and problem gamblers come from an already problematic background, which can trigger not only problem gambler behaviour, but also all sorts of other behaviours.

A survey conducted by National Opinion Polls on behalf of the Department for Culture Media, and Sport during February 2004 found that the number of British citizens who had gambled during the previous year was 71%, 2% less than the number who reported they had five years previously to the British Gambling Prevalence Study. Generally fewer people are participating in most forms of gambling, with the exception of bingo, sports and events betting and greyhound race betting. The most noticeable declines are in scratch card, lotteries, gaming machines and football pools betting. The prevalence of gambling during the previous seven days has also fallen suggesting that the frequency of gambling may well have fallen for the majority of forms of gambling.

CHAPTER 10
EUROPEAN STATISTICAL OVERVIEW

10. EUROPEAN STATISTICAL OVERVIEW

I. GROSS GAMING REVENUES

The following data represent the summary of statistical information provided either through primary sources (i.e. requests from organizations from throughout the EU), or from secondary sources, in particular GBGC (2005), Double or Quits? - Global Gaming Review 2004-2005. London: Report by Gaming and Betting Global Consultants. Note that shaded numbers in the tables below are from the GBGC secondary source, while the ones that are not shaded are from the primary sources.

These statistics are based on the best available information that the research team was able to compile. However, they are subject to revision, based on possible inaccuracies on information submitted to us as part of the research process for this project.

GROSS GAMING REVENUES, BY COUNTRY
(€ millions)

Country	Total Gambling	Lottery	Casino	Gaming Machines	Betting	Bingo
Austria						
2000	857.31	639.00	218.31	0.00	n/a	n/a
2001	901.82	631.00	221.57	0.00	49.25	n/a
2002	893.64	605.00	227.77	0.00	60.86	n/a
2003	893.54	595.00	217.95	0.00	80.59	n/a
2004	823.32	618.00	205.00	0.00	n/a	n/a
2005		621.00				
Belgium						
2000	495.93	495.93	n/a	n/a	n/a	0.00
2001	608.11	483.33	31.31	86.35	7.13	0.00
2002	633.82	471.77	48.83	105.77	7.46	0.00
2003	679.31	485.73	47.48	136.77	9.33	0.00
2004	579.81	534.67	45.13	n/a	n/a	0.00
Cyprus						
2000	31.42	31.42	0.00	0.00	n/a	n/a
2001	64.54	39.15	0.00	0.00	25.39	n/a
2002	71.73	42.31	0.00	0.00	29.42	n/a
2003	72.58	34.06	0.00	0.00	38.52	n/a
2004	0.00	n/a	0.00	0.00	n/a	n/a

GROSS GAMING REVENUES, BY COUNTRY
(Continued, € millions)

Country	Total Gambling	Lottery	Casino	Gaming Machines	Betting	Bingo	Other
Czech Republic							
2000	414.40	98.50	58.70	229.60	20.70	1.90	5.00
2001	455.90	91.20	65.80	258.80	28.10	1.90	10.10
2002	574.80	107.60	73.30	334.10	39.00	2.00	18.80
2003	593.40	109.20	66.30	346.70	34.30	1.90	35.00
2004	640.30	96.50	67.80	374.30	46.30	1.90	53.70
Denmark							
2000	550.34	391.95	40.27	n/a	84.56	33.56	
2001	557.72	399.33	40.27	n/a	84.56	33.56	
2002	757.73	417.45	42.95	169.14	87.92	40.27	
2003	829.55	428.86	43.62	220.82	95.97	40.27	
2004	887.92	453.02	46.31	252.35	95.97	40.27	
Estonia							
2000	4.34	4.34	n/a	n/a	n/a	n/a	
2001	18.10	5.20	12.90	n/a	n/a	n/a	
2002	20.31	5.97	14.33	n/a	n/a	n/a	
2003	24.73	6.54	18.19	n/a	n/a	n/a	
2004	7.98	7.98	n/a	n/a	n/a	n/a	
Finland							
2000	1,135.00	441.00	19.00	506.00	169.00	n/a	
2001	1,150.24	428.00	20.00	530.00	168.00	4.24	
2002	1,201.53	450.00	21.00	552.00	174.00	4.53	
2003	1,240.87	485.00	22.00	571.00	157.00	5.87	
2004	1,282.00	515.00	25.00	581.00	161.00	n/a	
France							
2000	6,163.80	2,671.90	1,732.00	0.00	1,759.90	n/a	
2001	6,558.30	2,835.00	1,896.00	0.00	1,827.30	n/a	
2002	7,263.30	2,962.50	2,456.00	0.00	1,844.80	n/a	
2003	7,603.20	3,085.20	2,546.00	0.00	1,972.00	n/a	
2004	8,084.70	3,392.30	2,613.00	0.00	2,079.40	n/a	
2005	8,388.70	3,554.80	2,647.00	0.00	2,186.90	n/a	
Germany							
2000	7,157.74	4,897.74	n/a	2,260.00	n/a	n/a	
2001	8,348.89	5,124.92	840.04	2,285.00	98.94	n/a	
2002	8,372.04	5,013.73	942.19	2,310.00	106.12	n/a	
2003	8,420.82	4,991.22	958.67	2,335.00	135.93	n/a	
2004	6,070.22	5,114.22	956.00	n/a	n/a	n/a	
Greece							
2000	N/a					0.00	
2001	710.05	467.97	60.72	32.93	148.42	0.00	
2002	859.13	406.00	67.58	18.94	366.61	0.00	
2003	1,068.20	474.00	88.72	0.00	505.48	0.00	
2004	659.00	659.00	n/a	0.00	n/a	0.00	

GROSS GAMING REVENUES, BY COUNTRY
(Continued, € millions)

Country	Total Gambling	Lottery	Casino	Gaming Machines	Betting	Bingo
Hungary						
2000	313.57	127.13	29.27	134.18	22.99	N/a
2001	379.44	149.92	31.81	169.90	24.62	3.19
2002	478.88	213.81	34.11	200.20	26.52	4.24
2003	580.18	278.24	36.96	235.85	23.53	5.60
2004	580.69	242.00	39.44	273.55	25.71	N/a
Ireland						
2000	236.80	236.80	0.00	n/a	n/a	N/a
2001	743.88	255.80	0.00	133.45	336.21	18.42
2002	834.33	252.20	0.00	162.60	399.20	20.33
2003	1,143.64	264.90	0.00	242.69	608.91	27.13
2004	273.30	273.30	0.00	n/a	n/a	N/a
Italy						
2000	0.00	n/a	n/a	0.00	n/a	N/a
2001	6,667.45	5,536.96	396.02	0.00	663.55	70.92
2002	6,505.89	5,170.67	481.03	n/a	768.04	86.15
2003	6,204.71	4,502.00	616.74	n/a	974.98	110.99
2004	0.00	n/a	n/a	n/a	n/a	N/a
Latvia						
2000	42.42	2.91	4.01	34.64	0.01	0.85
2001	46.66	3.24	4.20	38.22	0.11	0.89
2002	51.94	3.52	4.91	42.03	0.17	1.09
2003	66.83	4.16	7.11	52.83	1.16	1.35
2004	93.69	5.17	9.64	75.38	1.66	1.60
Lithuania						
2000	18.88	18.88	n/a	n/a	n/a	N/a
2001	26.92	24.98	0.90	0.00	1.03	N/a
2002	29.33	24.51	3.38	0.00	1.44	N/a
2003	40.72	24.69	13.52	0.49	2.03	N/a
2004	31.92	27.33	n/a	2.56	2.04	N/a
Luxembourg						
2000	0.00			n/a	n/a	N/a
2001	55.42	14.19	41.24	n/a	n/a	N/a
2002	73.43	13.43	60.00	n/a	n/a	N/a
2003	96.58	18.68	77.91	n/a	n/a	N/a
2004	0.00	n/a	n/a	n/a	n/a	N/a
Malta						
1999		24.71	12.42	0.00		
2000	38.72	21.67	17.05	0.00	n/a	n/a
2001	143.11	24.07	16.43	0.00	102.39	0.23
2002	124.05	23.15	21.52	0.00	78.77	0.61
2003	113.92	23.88	23.27	0.00	65.92	0.85
2004	1.13	n/a	n/a	0.00	n/a	1.13

GROSS GAMING REVENUES, BY COUNTRY
(Continued, € millions)

Country	Total Gambling	Lottery	Casino	Gaming Machines	Betting	Bingo
The Netherlands						
2000	1,121.10	599.1	504.30	n/a	17.7	n/a
2001	1,850.00	670.6	600.50	549.00	17.9	12
2002	1,948.20	724.1	672.80	532.00	19.3	n/a
2003	2,064.50	783.2	699.40	564.00	17.9	n/a
2004	2,084.30	819.7	681.70	565.00	17.9	n/a
Poland						
2000	400.13	277.24	51.08	48.16	20.08	3.59
2001	403.53	272.91	45.56	53.72	28.33	3.02
2002	423.78	285.88	45.35	52.39	37.62	2.54
2003	432.41	295.39	44.54	52.70	37.69	2.09
2004	460.25	305.72	49.06	59.30	44.55	1.62
Portugal						
2000	368.60	n/a	256.00	n/a	n/a	112.60
2001	1,316.57	741.26	285.68	162.14	15.07	112.43
2002	1,389.60	770.54	315.74	161.98	13.35	127.99
2003	1,434.38	801.98	301.01	200.67	10.65	120.08
2004	1,424.10	1,003.26	299.47	n/a	10.49	110.89
Slovakia						
2000	69.00	69.00	n/a	n/a	n/a	n/a
2001	153.58	71.00	54.32	28.24	0.02	n/a
2002	177.50	67.00	72.70	37.78	0.02	n/a
2003	216.15	71.00	95.48	49.64	0.03	n/a
2004	76.00	76.00	n/a	n/a	n/a	n/a
Slovenia						
2000	218.30	29.23	170.03	19.04	n/a	n/a
2001	237.83	36.05	178.62	23.16	n/a	n/a
2002	253.20	43.78	187.02	22.39	n/a	n/a
2003	264.48	38.19	193.23	33.06	n/a	n/a
2004	318.61	50.71	206.47	61.43	n/a	n/a
Spain						
2000	1,565.28	1,167.60	397.68	n/a	n/a	n/a
2001	4,275.93	1,234.90	123.28	2,241.58	40.36	635.81
2002	4,859.51	1,212.50	343.38	2,591.97	48.54	663.12
2003	4,886.81	1,126.40	320.91	2,550.00	62.26	827.24
2004	1,437.16	1,144.10	293.06	n/a	n/a	n/a
Sweden						
2000	1,380.00	670.50	53.90	88.40	491.80	69.20
2001	1,434.00	690.20	53.70	153.10	488.30	65.90
2002	1,522.00	701.60	83.90	194.10	477.40	63.90
2003	1,584.00	664.20	124.90	224.10	506.70	63.30
2004	1,599.00	645.50	137.20	235.40	513.40	66.90

GROSS GAMING REVENUES, BY COUNTRY (Continued, € millions)

Country						
UK						
2000	10,523.73	3,698.00	897.29	1,840.00	2,875.61	1,212.82
2001	9,906.88	3,621.00	858.96	2,227.69	2,602.24	597.00
2002	11,266.77	3,527.00	960.87	1,996.26	3,492.68	1,289.96
2003	10,972.02	3,389.00	950.01	1,858.83	3,525.96	1,248.22
2004	3,366.00	3,366.00	n/a	n/a	n/a	n/a

EUROPE – 25	Total Gambling	Lottery	Casino	Gaming Machines	Betting	Bingo	Other
2001	47,015	23,852	5,880	8,973	6,757	1,560	10
2002	50,586	23,516	7,181	9,484	8,079	2,307	19
2003	51,528	22,981	7,514	9,675	8,867	2,455	35

	Total Gambling	Lottery	Casino	Gaming Machines	Betting	Bingo	Other
% Share							
2003	100.00%	44.60%	14.58%	18.78%	17.21%	4.76%	0.07%

EUROPEAN UNION ECONOMIC STATISTICS

GDP	
(€ millions)	
2002	9,626,056
2003	9,821,685
2004	10,256,987

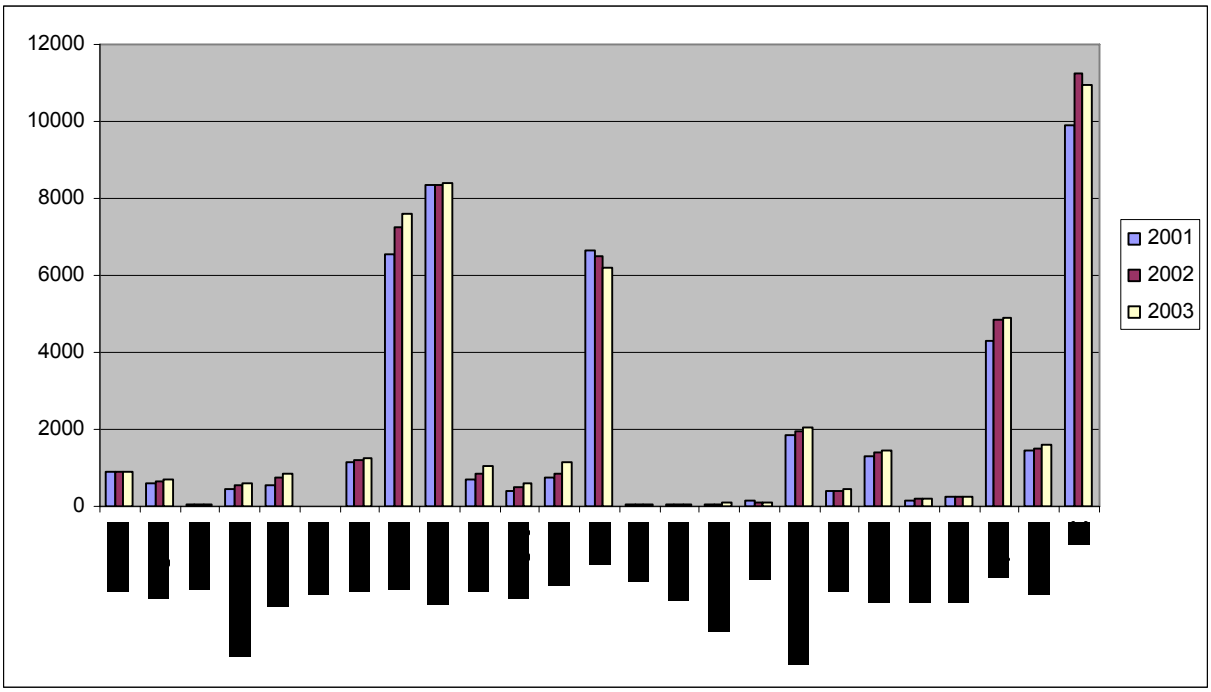
Propensity to gamble (%)						
2002	0.526%	0.244%	0.075%	0.099%	0.084%	0.024%
2003	0.525%	0.234%	0.077%	0.099%	0.090%	0.026%

Population (millions of inhabitants)	
2003	454.56
2004	456.45

Spending per person (Euro)						
2003	113.36	50.56	16.53	21.28	19.51	5.40

GGR of EU Total Gambling Market by Country 2000-2003

(in € millions)



II. GAMING SECTOR ANALYSIS

1. Lotteries

These statistics are based on the best available information that the research team was able to compile. However, they are subject to revision, based on possible inaccuracies on information submitted to us as part of the research process for this project. Note that shaded numbers in the tables below are estimated from secondary sources, while the ones that are not shaded are from the primary sources.

Lotteries GGR by Country 2000-2004 (€ millions)

	Austria	Belgium	Cyprus	Czech Republic	Denmark
2000	639.00	495.93	31.42	98.50	391.95
2001	631.00	483.33	39.15	91.20	399.33
2002	605.00	471.77	42.31	107.60	417.45
2003	595.00	485.73	34.06	109.20	428.86
2004	618.00	534.67		96.50	453.02
2005	621.00				

	Estonia	Finland	France	Germany	Greece
2000	4.34	441.00	2,671.90	4,897.74	
2001	5.20	428.00	2,835.00	5,124.92	467.97
2002	5.97	450.00	2,962.50	5,013.73	406.00
2003	6.54	485.00	3,085.20	4,991.22	474.00
2004	7.98	515.00	3,392.30	5,114.22	659.00

	Hungary	Ireland	Italy	Latvia	Lithuania
2000	127.13	236.80		2.91	18.88
2001	149.92	255.80	5,536.96	3.24	24.98
2002	213.81	252.20	5,170.67	3.52	24.51
2003	278.24	264.90	4,502.00	4.16	24.69
2004	242.00	273.30		5.17	27.33

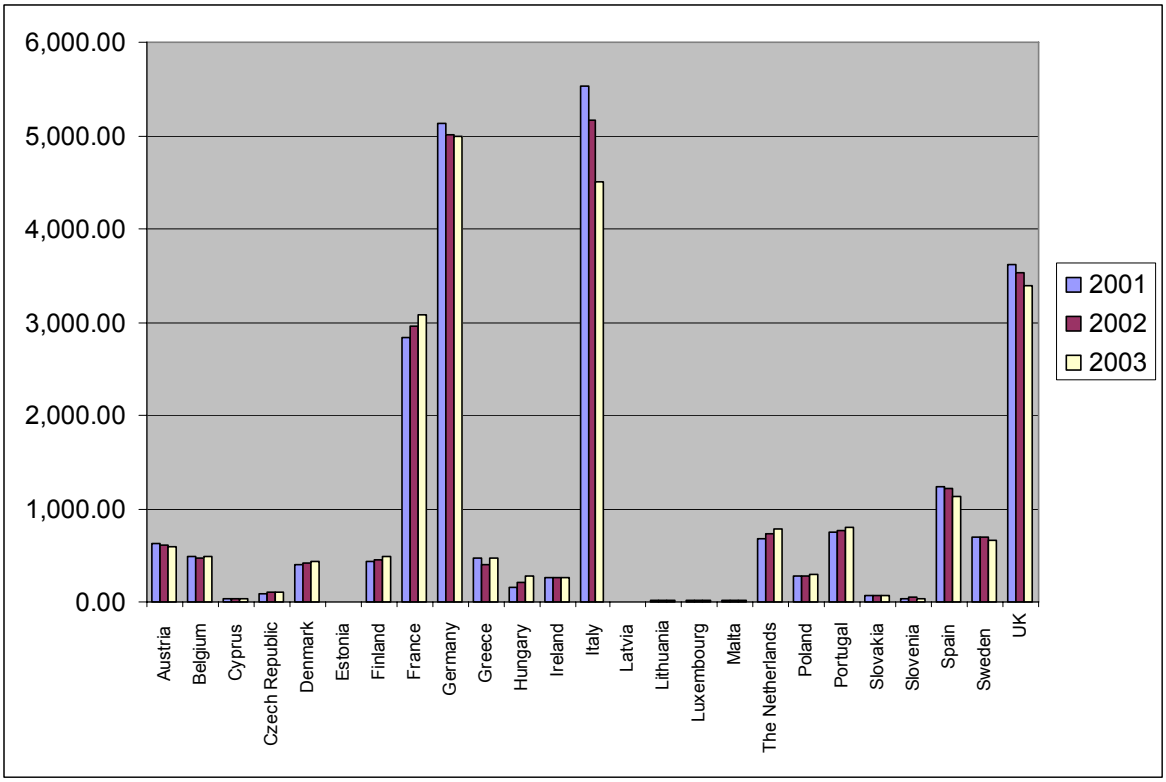
	Luxembourg	Malta	The Netherlands	Poland	Portugal
2000		21.67	599.1	277.24	
2001	14.19	24.07	670.6	272.91	741.26
2002	13.43	23.15	724.1	285.88	770.54
2003	18.68	23.88	783.2	295.39	801.98
2004			819.7	305.72	1,003.26

	Slovakia	Slovenia	Spain	Sweden	UK
2000	69.00	29.23	1,167.60	670.50	3,698.00
2001	71.00	36.05	1,234.90	690.20	3,621.00
2002	67.00	43.78	1,212.50	701.60	3,527.00
2003	71.00	38.19	1,126.40	664.20	3,389.00

Lotteries Statistics for All EU member states

	GGR (Euro m)	Propensity to gamble (%)	Spending per person (Euro)
2001	23,852		
2002	23,516	0.24%	
2003	22,981	0.23%	50.56

GGR of EU Lotteries by Country 2000-2003 (in €m):



2. Casino Gaming

These statistics are based on the best available information that the research team was able to compile. However, they are subject to revision, based on possible inaccuracies on information submitted to us as part of the research process for this project. Note that shaded numbers in the tables below are estimated from secondary sources, while the ones that are not shaded are from the primary sources.

Casino GGR by Country 2000-2004 (€ millions)

	Austria	Belgium	Cyprus	Czech Republic	Denmark
2000	218.31		not permitted	58.70	40.27
2001	221.57	31.31		65.80	40.27
2002	227.77	48.83		73.30	42.95
2003	217.95	47.48		66.30	43.62
2004	205.00	45.13		67.80	46.31

	Estonia	Finland	France	Germany	Greece
2000		19.00	1,732.00		
2001	12.90	20.00	1,896.00	840.04	60.72
2002	14.33	21.00	2,456.00	942.19	67.58
2003	18.19	22.00	2,546.00	958.67	88.72
2004		25.00	2,613.00	956.00	
2005			2,647.00		

	Hungary	Ireland	Italy	Latvia	Lithuania
2000	29.27	not permitted		4.01	
2001	31.81		396.02	4.20	0.90
2002	34.11		481.03	4.91	3.38
2003	36.96		616.74	7.11	13.52
2004	39.44			9.64	

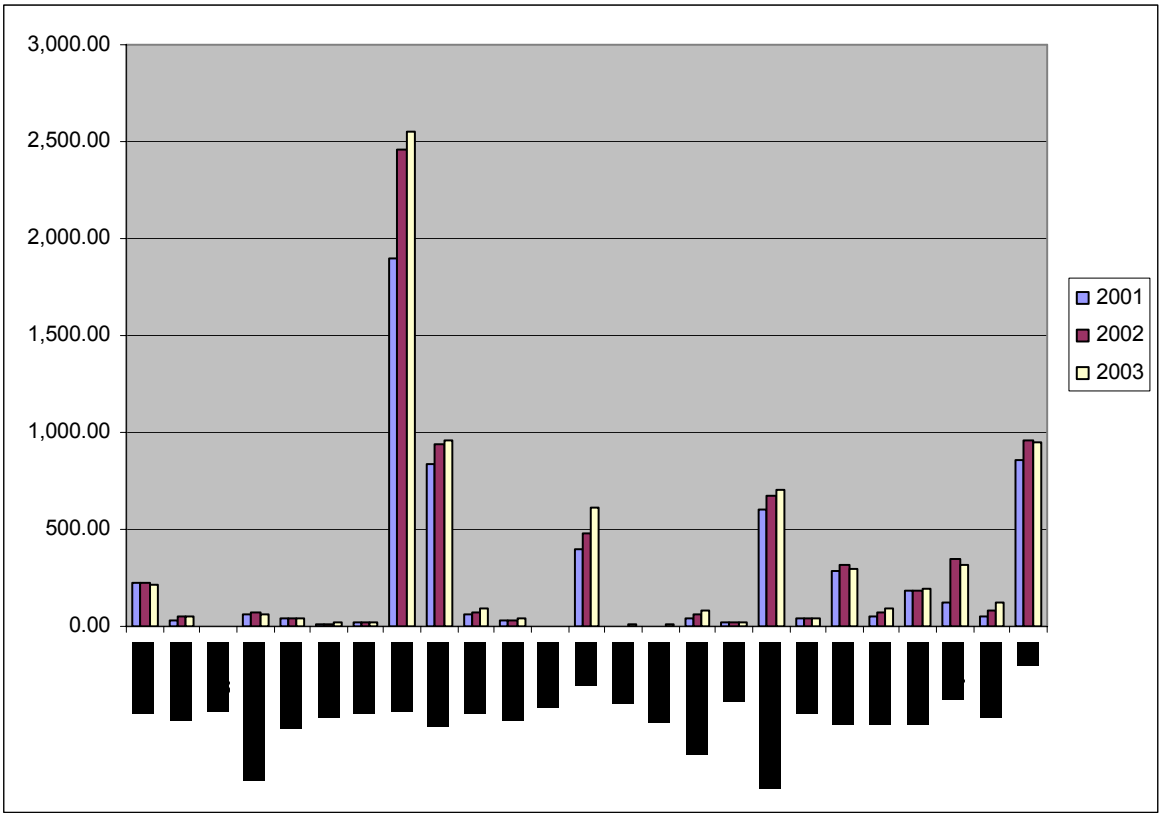
	Luxembourg	Malta	The Netherlands	Poland	Portugal
1999		12.42	452.50		
2000		17.05	504.30	51.08	256.00
2001	41.24	16.43	600.50	45.56	285.68
2002	60.00	21.52	672.80	45.35	315.74
2003	77.91	23.27	699.40	44.54	301.01
2004			681.70	49.06	299.47

	Slovakia	Slovenia	Spain	Sweden	UK
1999					741.97
2000		170.03	397.68	53.90	897.29
2001	54.32	178.62	123.28	53.70	858.96
2002	72.70	187.02	343.38	83.90	960.87
2003	95.48	193.23	320.91	124.90	950.01
2004		206.47	293.06	137.20	
2005		239.65			

Casino Statistics for EU member states

	GGR (Euro m)	Propensity to gamble (%)	Spending per person (Euro)
2001	5,880		
2002	7,181	0.075%	
2003	7,514	0.077%	16.53

GGR of EU Casinos by Country 2000-2003 (in € millions)



3. Machine Gambling Outside Casinos

These statistics are based on the best available information that the research team was able to compile. However, they are subject to revision, based on possible inaccuracies on information submitted to us as part of the research process for this project. Note that shaded numbers in the tables below are estimated from secondary sources, while the ones that are not shaded are from the primary sources.

Gaming Machines GGR by Country 2000-2004 (€ millions)

	Austria	Belgium	Cyprus	Czech Republic	Denmark
2000	not permitted		not permitted	229.60	
2001		86.35		258.80	584.06
2002		105.77		334.10	169.14
2003		136.77		346.70	220.82
2004				374.30	252.35

	Estonia	Finland	France	Germany	Greece
2000	n/a	506.00	not permitted	2,260.00	
2001		530.00		2,285.00	32.93
2002		552.00		2,310.00	18.94
2003		571.00		2,335.00	0.00
2004		581.00			0.00

	Hungary	Ireland	Italy	Latvia	Lithuania
2000	134.18		n/a	34.64	
2001	169.90	133.45		38.22	0.00
2002	200.20	162.60		42.03	0.00
2003	235.85	242.69		52.83	0.49
2004	273.55			75.38	2.56

	Luxembourg	Malta	The Netherlands	Poland	Portugal
2000	n/a	not permitted		48.16	
2001			549.00	53.72	162.14
2002			532.00	52.39	161.98
2003			564.00	52.70	200.67
2004			565.00	59.30	

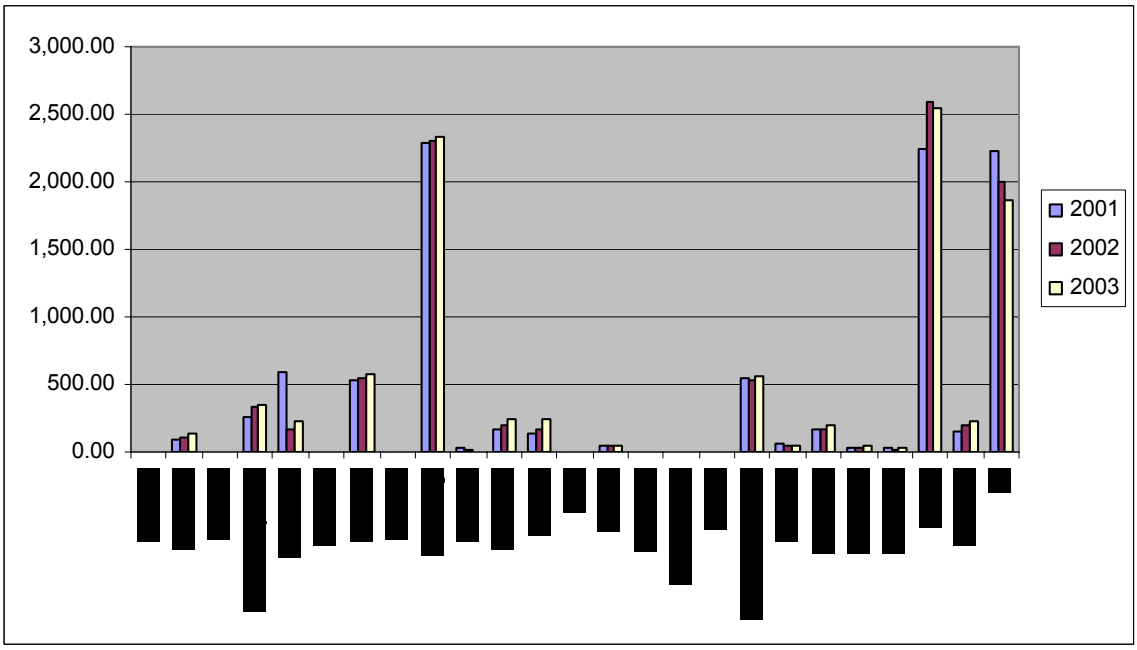
	Slovakia	Slovenia	Spain	Sweden	UK
2000		19.04		88.40	1,840.00
2001	28.24	23.16	2,241.58	153.10	2,227.69
2002	37.78	22.39	2,591.97	194.10	1,996.26
2003	49.64	33.06	2,550.00	224.10	1,858.83
2004		61.43		235.40	
2005		75.75			

Gaming Machines Statistics for EU member states

	GGR (Euro m)	Propensity to gamble (%)	Spending per person (Euro)
2001	9,557		
2002	9,484	0.099%	
2003	9,675	0.099%	21.28

GGR of EU Gaming Machines by Country 2000-2003

(in € millions)



4. Betting

These statistics are based on the best available information that the research team was able to compile. However, they are subject to revision, based on possible inaccuracies on information submitted to us as part of the research process for this project. Note that shaded numbers in the tables below are estimated from secondary sources, while the ones that are not shaded are from the primary sources.

Betting GGR by Country 2000-2004 (€ millions)

	Austria	Belgium	Cyprus	Czech Republic	Denmark
2000				20.70	84.56
2001	49.25	7.13	25.39	28.10	84.56
2002	60.86	7.46	29.42	39.00	87.92
2003	80.59	9.33	38.52	34.30	95.97
2004				46.30	95.97

	Estonia	Finland	France	Germany	Greece
2000	n/a	169.00	1,759.90		
2001		168.00	1,827.30	98.94	148.42
2002		174.00	1,844.80	106.12	366.61
2003		157.00	1,972.00	135.93	505.48
2004		161.00	2,079.40		
2005			2,186.90		

	Hungary	Ireland	Italy	Latvia	Lithuania
2000	22.99			0.01	
2001	24.62	336.21	663.55	0.11	1.03
2002	26.52	399.20	768.04	0.17	1.44
2003	23.53	608.91	974.98	1.16	2.03
2004	25.71			1.66	2.04

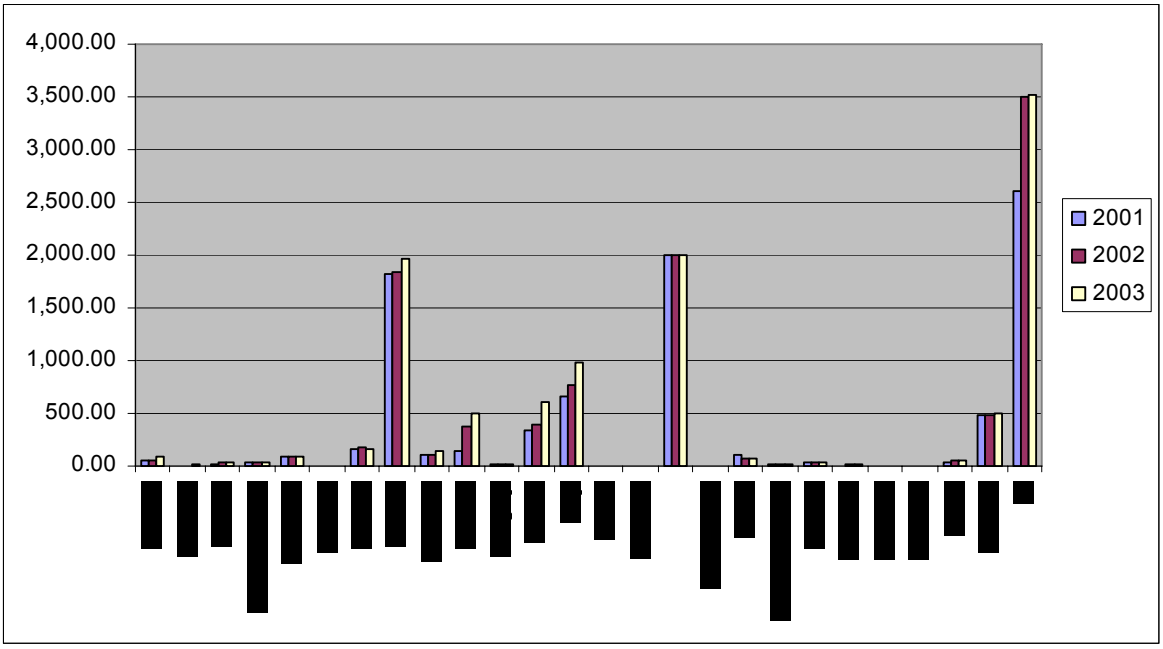
	Luxembourg	Malta	The Netherlands	Poland	Portugal
1999			12.30		
2000	n/a		17.7	20.08	
2001		102.39	17.9	28.33	8.71
2002		78.77	19.3	37.62	9.06
2003		65.92	17.9	37.69	11.35
2004			17.9	44.55	

	Slovakia	Slovenia	Spain	Sweden	UK
2000		n/a		491.80	2,875.61
2001	0.02		40.36	488.30	2,602.24
2002	0.02		48.54	477.40	3,492.68
2003	0.03		62.26	506.70	3,525.96
2004				513.40	

Betting Statistics for EU member states

	GGR (Euro m)	Propensity to gamble (%)	Spending per person (Euro)
2001	6,757		
2002	8,079	0.084%	
2003	8,867	0.090%	19.51

GGR of EU Betting by Country 2000-2003 (in € millions)



5. Bingo

These statistics are based on the best available information that the research team was able to compile. However, they are subject to revision, based on possible inaccuracies on information submitted to us as part of the research process for this project. Note that shaded numbers in the tables below are estimated from secondary sources, while the ones that are not shaded are from the primary sources.

Bingo GGR by Country 2000-2004 (€ millions)

	Austria	Belgium	Cyprus	Czech Republic	Denmark
2000	n/a	0.00	n/a	1.90	33.56
2001		0.00		1.90	33.56
2002		0.00		2.00	40.27
2003		0.00		1.90	40.27
2004		0.00		1.90	40.27

	Estonia	Finland	France	Germany	Greece
2000	n/a		n/a	n/a	0.00
2001		4.24			0.00
2002		4.53			0.00
2003		5.87			0.00
2004					0.00

	Hungary	Ireland	Italy	Latvia	Lithuania
2000				0.85	n/a
2001	3.19	18.42	70.92	0.89	
2002	4.24	20.33	86.15	1.09	
2003	5.60	27.13	110.99	1.35	
2004				1.60	

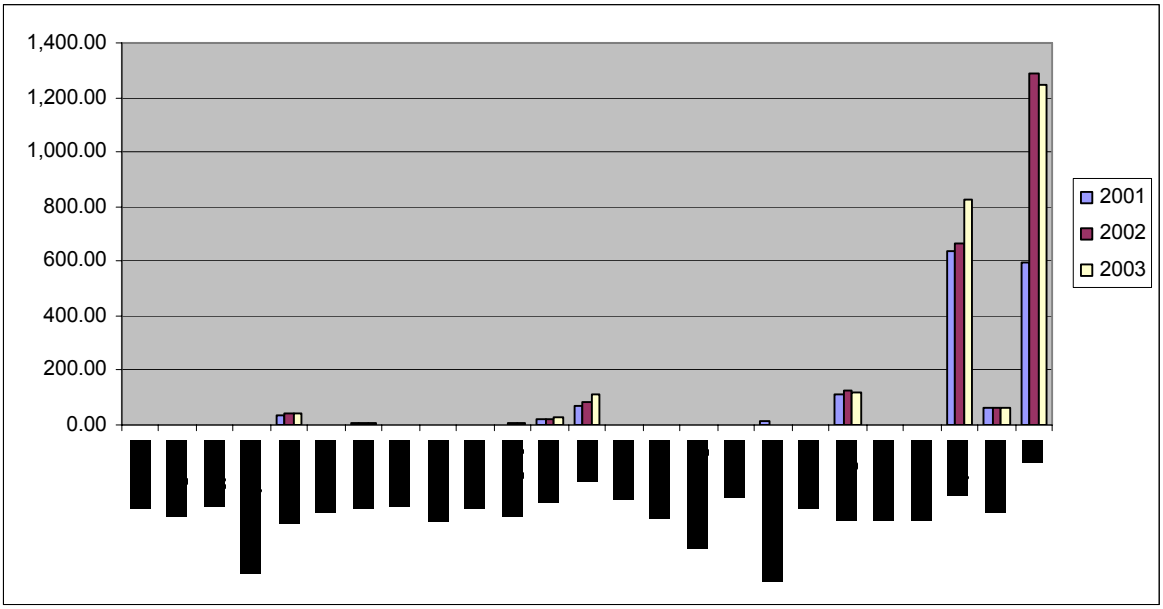
	Luxembourg	Malta	The Netherlands	Poland	Portugal
2000	n/a			3.59	112.60
2001		0.23	12.00	3.02	112.43
2002		0.61		2.54	127.99
2003		0.85		2.09	120.08
2004		1.13		1.62	110.89

	Slovakia	Slovenia	Spain	Sweden	UK
2000	n/a	n/a		69.20	1,212.82
2001			635.81	65.90	597.00
2002			663.12	63.90	1,289.96
2003			827.24	63.30	1,248.22
2004				66.90	

Bingo Statistics for EU member states

	GGR (Euro m)	Propensity to gamble (%)	Spending per person (Euro)
2001	1,552		
2002	2,305	0.024%	
2003	2,453	0.025%	5.40

GGR of EU Bingo by Country 2000-2003 (in € millions)



6. Media Gambling Services

The researchers for this report were unable to obtain any European-wide data on this gambling sector.

7. Sales Promotional Gambling

There are no European-wide data available on this gambling sector.

8. Charity Gambling

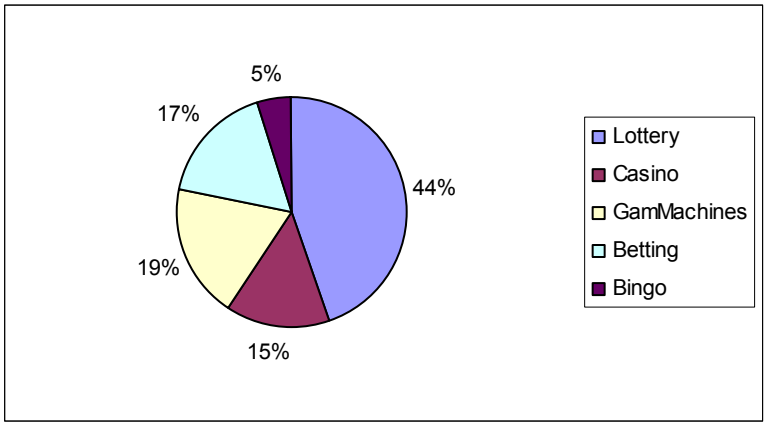
The data for charitable gambling is included in the other gambling industry sectors. For example, charitable lotteries are included in the Lotteries section of this report.

III. EU SUMMARY

EU Summary for 2003

	Total Gambling	Lottery	Casino	Gaming Machines	Betting	Bingo
GGR (€ millions)	51527	22981	7514	9675	8867	2455
GDP (€ millions)	9821685					
Propensity to gamble (%)	0.52%	0.23%	0.08%	0.10%	0.09%	0.03%
Population (1000 000 inhabitants)	455					
Spending per person (EURO)	113.36	50.56	16.53	21.28	19.51	5.40

EU Gambling Market Shares by Sector 2003:



IV. DISCUSSION OF THE EU GAMING MARKETS

Based upon the results that were compiled by the research team, the following general observations and conclusions can be drawn about the legal gambling services markets in the European Union. First, as a result of our undertakings, we were able to determine that the five largest sectors of gambling services in the EU: lotteries, casinos, gaming machines located outside of casinos, betting services, and bingo, generated Gross Gaming Revenues (operator winnings, less payment of prizes) in excess of €51 million in 2003. For the most part, these are relatively "mature industries," whose revenue growth is more or less paralleling growth in aggregate personal income in the 25 Member States. Thus, it can be expected that many of the gambling services sectors at the country level will experience single-digit growth in the years ahead, unless there are substantial changes in either legal or regulatory environments that determine the types of games, their quality and availability, that can be offered; or in the technological aspects of games and wagering opportunities that might affect their over-all attractiveness to consumers or to potential customers.

Our findings from earlier in this report (pages 10-11) suggest that aggregate consumer demand for gambling services—as measured by the ratio of country Gross Gaming Revenues (GGRs) to country GDP—may be quite elastic with respect to various supply factors, such as the availability, variety, accessibility, attractiveness, and pricing of gambling offerings.[42]

Therefore, if new legislation substantially changes the legal and regulatory environment for a particular gambling services sector, it may have dramatic effects on that sector, and—depending on the strength of cross-elasticities of demand—may also affect other sectors as well. In a similar vein, if European Court of Justice or European Commission rulings change the fundamentals of competition or rules of engagement, then significant shifting of spending patterns and sectoral profitability may also follow.

Thus, we can expect gambling services sectors to act like mature industries as long as the external legal and competitive environments are stable. Exceptions to this "mature industry" hypothesis can occur when supply conditions are changed. This can be illustrated by a number of recent examples. The rapid expansion of Fixed Odds Betting Terminals (FOBTs) in the United Kingdom in the early 2000s has led to a substantial increase in handle and GGRs in betting shops in the UK (see text and charts on pages 310-313.)[43] In a similar manner, the introduction and launch of the National Lottery in the UK in November 1994 created a new gambling services sector in that country that generated total annual lottery sales of about €7.5 billion each year thereafter.

One could expect that the recent passage of the Gaming Act 2005 in the UK will have significant supply side impacts that will affect the various gambling services sectors in a variety of ways, but also increase the aggregate spend by British citizens on gaming services in that country. In general, for all EU member states, if legislative changes or conditions brought about significant casino resorts of the size and style found in Las Vegas, in Australia, or South Africa, then the casino sector would likely grow dramatically in those countries affected. In late 2005, the American firm Harrah's Entertainment announced strategic initiatives in Slovenia and Spain that could ultimately lead to destination resort casinos with

[42] The substantially higher ratios of GGR/GDP in Australia (1.93%), New Zealand (1.45%), and Canada (1.11%) than are found in the EU (0.52%) are arguably because of a number of supply factors, including better developed casino sectors, more attractive and available gaming machines, and fewer constraints on pricing and marketing alternatives.

[43] This also points out some of the problems of classification; logically, FOBTs should be treated as gaming machines, but—as reported—they show up in the statistics as part of betting services.

capital investments of between €500 million and €1 billion. If indeed these come to pass, and depending on what catalytic effect they would have on other countries, these kinds of development could change the relative importance of the casino sector in the EU, and lead to a more significant role of gaming in the aggregate (as measured by the ratio of GGRs to GDP) throughout the EU.

CHAPTER 11

DEVELOPING SCENARIOS FOR THE FUTURE

11. DEVELOPING SCENARIOS FOR THE FUTURE

As part of the terms of reference of this report, alternative scenarios for the future of the gambling services sectors of the Member States of the EU are put forward. Sufficient historical data on gambling revenues and factors causing changes in those revenues for all EU countries were not available to develop standard statistical models to forecast GGRs for EU countries to the year 2010. As an alternative, based on the information gathered with respect to the various sectors, as well as results of statistical analyses from the review of published peer reviewed economics literature discussed above, we have developed a methodology to analyze potential outcomes for GGRs to the year 2010. Using information from the peer-reviewed literature relative to the statistically determined relationship of turnover in a particular gambling sector to its price, to the price of competing products, and to various restrictions, the model generates estimates of changes in turnover under alternative assumptions of changes in price and other factors. The resulting change in gross revenue is then computed by applying the change in price to the estimated change in handle. The percent change in GGRs is then applied to GGRs for each country to obtain an estimate of GGRs under alternative scenarios. Details of the method and assumptions used are given throughout this section.

A baseline scenario and two possible alternatives have been developed using this economic method. These scenarios are by no means all-inclusive and are presented to demonstrate how, under different assumptions, GGRs for the EU might be affected. The underlying assumptions could be further modified with this methodology (or modifications to it), to explore how future GGRs might be affected by particular changes in the underlying cause-effect relations, or in the availability of certain types of gaming services. For example, these scenarios have not assumed major growth in the number of slot machines at casinos to 2010 for most of the EU countries. If this were to be the case, projections would show more growth in GGRs. The following scenarios along with their accompanying assumptions are presented below.

BASELINE SCENARIO

This scenario assumes that not much will change in the near future regarding the legal status, ownership structure, and general competitive nature of the gambling services sectors in the Member States of the EU. The one main exception within the Baseline Scenario is a relatively rapid growth of remote gambling offerings, which would likely occur primarily in the betting services sector, but would have some distribution as well in the lottery sector (sales of lottery products on-line) and in the casino sector (with internet offerings of table games, simulated gaming devices, and internet poker.) For simplicity, we assume in the Baseline Scenario that all extraordinary growth in remote gambling offerings would show up in the betting services sector.

In order to gain a relative sense of how the different scenarios would affect the level of GGRs among countries and among gambling services sectors—as well as each sector's capabilities to contribute to tax revenues, contributions to designated beneficiaries (i.e. "good causes"), and earnings for shareholders—we made reasonable estimates as to the level of profit margins[44] by gambling services sector. These are then modified explicitly for the various sectors under each of the three scenarios.

[44] We define profit margins for this analysis as [GGRs less operating costs, but before taxes and claims from designated beneficiaries] divided by GGRs, per sector.

BASELINE SCENARIO: Assumptions

1. The five main gambling services sectors—lottery, casinos, gaming machines, betting services, and bingo—will grow in proportion to Member State gross domestic product (GDP) within each of the 25 Member States. Exceptions to this occur with remote gambling offerings and with gambling services in the UK, which will be affected by implementation of the Gaming Act 2005 and the growth of FOBTs.[45, 46]

2. Growth rates that are forecast for GDP for the period from 2005 to 2010 are the average of country specific GDP growth rates from 2000 to 2005, where data are available, or the estimated country GDP growth rate for 2005 (based on data availability.) These are presented in the table below.

PROJECTED GROWTH RATES,[47] BY MEMBER STATE, 2005-2010

MEMBER STATE	ANNUAL GDP GROWTH 2005-2010	MEMBER STATE	ANNUAL GDP GROWTH 2005-2010
AUSTRIA	1.5%	LATVIA	7.8%
BELGIUM	1.7%	LITHUANIA	6.4%
CYPRUS	3.8%	LUXEMBOURG	3.5%
CZECH REPUBLIC	3.4%	MALTA	1.4%
DENMARK	2.2%	NETHERLANDS	1.4%
ESTONIA	7.1%	POLAND	0.9%
FINLAND	2.2%	PORTUGAL	0.4%
FRANCE	1.5%	SLOVAK REPUBLIC	5.1%
GERMANY	0.5%	SLOVENIA	3.8%
GREECE	4.3%	SPAIN	3.1%
HUNGARY	4.3%	SWEDEN	1.0%
IRELAND	5.2%	UNITED KINGDOM	2.4%
ITALY	0.8%		

3. There will be no changes among the three minor gambling services sectors—charitable gambling, media services, and sales promotion services—that would be significant enough to alter the demand patterns for any of the five main gambling service sectors.

4. There will be no important legal, technological, or competitive changes in EU Member State gambling services sectors between 2005 and 2010. Pricing structures and strategies, ownership regimes, available technologies, and tax structures for the

---

45 Due to the relatively short historical period (2000-2004) over which data were solicited from respondents to the surveys administered for this project, reliable statistical relationships between GGRs and their determinants could not be accurately estimated. We use the simplifying assumption that GGRs are a function of income with unitary elasticity (i.e. a *normal good*.) This is consistent with the use of income as one of the revenue determinants in studies of the economics of gaming.

46 The new Gaming Act in the UK should stimulate growth in the casino and gaming machine sectors. We dealt with this by assuming the growth rate of these sectors would be twice the rate that otherwise would have occurred under this scenario.

47 Sources: www.economy.com and The CIA World Factbook, retrieved at www.cia.gov

Gaming Services sectors will remain the same between 2005 and 2010 as they were in 2005.

5. One significant dynamic component of the gambling services sectors over this period will be the remote gambling portion of gambling services. Because remote gambling—as a new product development in its own right, as well as a delivery system for gambling services—has been growing rapidly since 2000, and apparently has not yet experienced a slowdown in growth rates that would suggest market maturity, we project this segment will continue to grow at above average rates from 2005 to 2010. We use as an estimate a growth rate for the remote gaming revenues at 15% per annum, adjusted for the Member State growth rate in GDP.[48, 49] This growth rate reflects the current constraints on access to markets for remote gambling services in the EU. The growth rate for remote gambling services will be affected by future legal rulings within the EU.

6. For the sake of simplicity, we assume all growth in remote gaming activities will be incorporated into the betting services sector. Thus, besides the UK casino and gambling machines sectors, this component will be the only one to grow at a rate greater than the growth rate of GDP. It also implies that betting services will grow in market share in comparison to the other gambling services sectors in the Baseline Scenario.

7. The UK passed significant legislation in 2005 that will have the effect of increasing the supply of casinos (through less restrictive licensing for casinos authorized under the Gaming Act 1968, as well as 8 small, 8 large, and one regional casino, as specified under the Gaming Act 2005), encouraging expansion of remote gaming segments of gambling services sectors, and relaxing constraints on gambling machines. These changes, in conjunction with the *de facto* legalization of FOBTs, will lead to greater growth in GGRs for casinos and gaming machines in the UK in comparison to other Member States. For the baseline model, we assume the UK casino and gaming machines sectors will grow at twice the rate from 2005 to 2010 as would otherwise have been the case.

8. As noted, we define profit margins to be the ratio of [gross gaming revenues less operating expenses (but before taxes and other distributions to shareholders or designated beneficiaries are made)] divided by GGRs. For the baseline scenario, we presumed the profit margins by sector will be approximately the values given in the following table. These are not intended to be accurate estimates, but rather baseline numbers that can be adjusted as the conditions of the Scenarios are changed.

---

48 The adjustment is computed as [expected annual growth rate plus 12%.] The average EU expected growth rate is 3.0% per annum.

49 The online gaming companies that responded to the survey estimated that their GGRs in 2004 were €1.178 billion, and for 2009 would be €6.3 billion, a 40% growth rate. We believe this is too high to be achieved under the Baseline Scenario's assumptions. We chose to use a more conservative estimate with a compound growth rate for remote gaming of 15% per annum in the Baseline Scenario, starting from a €2.75 billion base in 2004.

ASSUMED PROFIT MARGINS AS PERCENT OF GGRs BY SECTOR,[50] BASELINE SCENARIO

GAMING SERVICES SECTOR	ASSUMED PROFIT MARGIN
Lotteries	85%
Casinos (tip pooling and/or monopoly)[51]	80%
Casinos (no tip pooling and/or more competitive)[52]	50%
Gaming Machines	80%
Betting Services	40%
Bingo	50%

9. The existing Member States will continue to develop and provide protection strategies against unintended side effects associated with permitted gambling (i.e. problem gambling, crime, etc.) that will be deemed satisfactory both by the courts and by the general public.

10. For the baseline scenario (only), we assume that the growth in the provision of remote gambling offerings among the Member States will not have a significant disproportionate effect or substitution effect upon spending in other market sectors besides betting services. (We note that the projections for remote gaming sales suggest an increase from €2.75 billion in 2004 (or about 5.2% of EU GGRs) to around €6.4 billion in 2010 (about 10.4% of GGRs.)

11. We assume there will be no findings of the European Court of Justice, rulings of the European Commission, or passage of law by the European Parliament that would alter any of the rules of competitive engagement among gambling services sectors in the Member States.

BASELINE SCENARIO: RESULTS: The baseline assumptions regarding market sector growth generates a forecast for the gambling services revenues of €63.9 billion for 2010. This is a 24% increase over GGRs generated in 2003. The breakdown by sector and country is given in the following table.

---

50 Profit margins are basically net revenues (total GGRs less operating and accrued capital costs) as a percentage of total GGRs. The high margins assumed here are intended to be representative across the EU, but have to be enough to cover tax obligations, mandated contributions to beneficiaries, and returns to private owners in the various Member States. For example, marginal tax rates on casinos are as high as 92% in Germany, and the Finnish Lottery (Veikkaus Oy) pays over 75% of its GGRs to the State for "good causes" and another 12% in lottery tax. Similar circumstances—with considerable quantitative variations—prevail throughout the Member States.

51 Some countries' casinos pay a high portion of their wage bill from the tip pool, or *tronc*. Such practices are found in the countries of Portugal, Spain, France, Italy, Germany, Luxembourg, Belgium, Netherlands, Denmark, and Austria.

52 These countries' casinos pay a considerably higher portion of wage costs from their revenue base, though tips may also be an important component of labor compensation. Such practices are found in the countries of United Kingdom, Sweden, Finland, Estonia, Latvia, Lithuania, Poland, Slovenia, Slovakia, Malta, Czech Republic, Greece, and Hungary.

BASELINE SCENARIO
PROJECTED GROSS GAMING REVENUES BY GAMBLING SERVICES SECTOR, BASELINE SCENARIO 2010 (€ millions)

COUNTRY	CASINOS	LOTTERY	GAMING MACHINES	BETTING SERVICES	BINGO SERVICES
AUSTRIA	€ 244,978	€ 668,783	€ 0	€ 115,088	€ 0
BELGIUM	€ 53,737	€ 549,765	€ 154,796	€ 13,435	€ 0
CYPRUS	€ 0	€ 44,221	€ 0	€ 62,878	€ 0
CZECH REPUBLIC	€ 86,278	€ 142,105	€ 451,170	€ 55,561	€ 2,473
DENMARK	€ 50,802	€ 499,426	€ 257,159	€ 142,101	€ 46,894
ESTONIA	€ 29,396	€ 10,577	€ 0	€ 0	€ 0
FINLAND	€ 25,892	€ 570,791	€ 672,003	€ 233,690	€ 6,913
FRANCE	€ 2,842,242	€ 3,444,181	€ 0	€ 2,808,373	€ 0
GERMANY	€ 998,619	€ 5,199,192	€ 2,432,295	€ 181,778	€ 0
GREECE	€ 118,550	€ 633,362	€ 0	€ 847,243	€ 0
HUNGARY	€ 49,906	€ 375,731	€ 318,489	€ 39,706	€ 7,566
IRELAND	€ 868,498	€ 6,339,711	€ 0	€ 1,718,206	€ 156,292
ITALY	€ 0	€ 278,402	€ 255,062	€ 823,830	€ 28,515
LATVIA	€ 12,035	€ 7,036	€ 89,376	€ 2,392	€ 2,287
LITHUANIA	€ 20,868	€ 38,113	€ 760	€ 3,868	€ 0
LUXEMBOURG	€ 99,119	€ 23,761	€ 0	€ 0	€ 0
MALTA	€ 25,647	€ 26,325	€ 0	€ 92,920	€ 931
NETHERLANDS	€ 773,932	€ 866,662	€ 624,103	€ 25,309	€ 0
POLAND	€ 48,832	€ 323,895	€ 57,788	€ 52,369	€ 2,286
PORTUGAL	€ 311,307	€ 829,421	€ 207,533	€ 14,161	€ 124,193
SLOVAK REPUBLIC	€ 135,247	€ 100,572	€ 70,321	€ 48	€ 0
SLOVENIA	€ 250,870	€ 49,585	€ 42,921	€ 0	€ 0
SPAIN	€ 397,753	€ 1,396,111	€ 3,160,584	€ 97,400	€ 1,025,320
SWEDEN	€ 133,504	€ 709,953	€ 239,537	€ 696,253	€ 67,660
UNITED KINGDOM	€ 1,318,648	€ 4,000,610	€ 2,580,137	€ 5,279,619	€ 1,473,480
TOTALS	€ 8,896,659	€ 27,128,292	€ 11,614,037	€ 13,306,226	€ 2,944,811
GRAND TOTAL		€ 63,890,026			

Market shares of GGRs broken down by gambling services sector as is shown in the following table:

GAMING SERVICES SECTOR	GGR MARKET SHARE (2010)
Lottery	**42.5%**
Casino	**13.9%**
Gaming Machines	**18.2%**
Betting Services	**20.8%**
Bingo	**4.6%**

Our model suggests the betting services sector increases its market share from 17.2% to 20.8% of all EU GGRs between 2003 and 2010. The relative growth in the betting services sector is due to the assumptions made regarding the expansion of remote gaming services throughout the European Union, though some of these revenues would actually be accruing to national lotteries that had the authorization within their respective jurisdictions to offer remote gambling services to their customers, as well as to internet casinos and internet poker services.

If we use the same set of assumptions for profit margins in the Baseline Scenario and apply them to estimated 2003 GGRs, the total amount of *Economic Rents*[53] available for taxes, distributions to designated beneficiaries, or as above-normal profits for gaming operations, would have been €37.6 billion, about 73% of GGRs. In light of the high tax rates imposed on many privatized forms of gambling within the EU (e.g., see table on page 18) as well as the major contributions that are made to either government general fund revenues or earmarked "good causes," as discussed in the various country reports, these seem to be reasonable estimates in the absence of a detailed accounting of the specific breakdown of Economic Rents among stakeholders.

Applying the same margins to the forecasts for the year 2010 implies an aggregate of Economic Rents available for taxation, distribution to designated entities (so-called "good causes") and for distribution to shareholders and retained earnings to be €45.3 billion on GGRs of €63.9 billion, or about 71% of GGRs. The following Table provides the estimates of Economic Rents available by country and by sector for the forecast to 2010.

53 *Economic Rents* are defined as earnings for an enterprise over and above a normal return on invested capital, caused by the scarcity of supply of the resources used to generate revenues for the enterprise. In these examples, Economic Rents accrue because of constraints on supply of gambling services. In competitive markets without supply constraints, Economic Rents would get bid away via competition typically by lower prices.

BASELINE SCENARIO
PROJECTED GENERATION OF ECONOMIC RENTS BY GAMBLING SERVICES SECTOR, BASELINE SCENARIO 2010 (€ millions)

	CASINOS	LOTTERY	GAMING MACHINES	BETTING SERVICES	BINGO SERVICES
COUNTRY					
AUSTRIA	**€ 195,982**	**€ 568,465**	**€ 0**	**€ 46,035**	**€ 0**
BELGIUM	**€ 42,989**	**€ 467,300**	**€ 123,837**	**€ 5,374**	**€ 0**
CYPRUS	**€ 0**	**€ 37,588**	**€ 0**	**€ 25,151**	**€ 0**
CZECH REPUBLIC	**€ 43,139**	**€ 120,789**	**€ 360,936**	**€ 22,225**	**€ 1,236**
DENMARK	**€ 40,642**	**€ 424,512**	**€ 205,728**	**€ 56,840**	**€ 23,447**
ESTONIA	**€ 14,698**	**€ 8,991**	**€ 0**	**€ 0**	**€ 0**
FINLAND	**€ 12,946**	**€ 485,172**	**€ 537,603**	**€ 93,476**	**€ 3,457**
FRANCE	**€ 2,273,793**	**€ 2,927,554**	**€ 0**	**€ 1,123,349**	**€ 0**
GERMANY	**€ 798,895**	**€ 4,419,314**	**€ 1,945,836**	**€ 72,711**	**€ 0**
GREECE	**€ 59,275**	**€ 538,358**	**€ 0**	**€ 338,897**	**€ 0**
HUNGARY	**€ 24,953**	**€ 319,371**	**€ 254,792**	**€ 15,883**	**€ 3,783**
IRELAND	**€ 434,249**	**€ 5,388,754**	**€ 0**	**€ 687,282**	**€ 78,146**
ITALY	**€ 0**	**€ 236,642**	**€ 204,050**	**€ 329,532**	**€ 14,257**
LATVIA	**€ 6,017**	**€ 5,981**	**€ 71,501**	**€ 957**	**€ 1,144**
LITHUANIA	**€ 10,434**	**€ 32,396**	**€ 608**	**€ 1,547**	**€ 0**
LUXEMBOURG	**€ 79,296**	**€ 20,197**	**€ 0**	**€ 0**	**€ 0**
MALTA	**€ 12,824**	**€ 22,376**	**€ 0**	**€ 37,168**	**€ 466**
NETHERLANDS	**€ 619,146**	**€ 736,663**	**€ 499,282**	**€ 10,124**	**€ 0**
POLAND	**€ 24,416**	**€ 275,311**	**€ 46,231**	**€ 20,948**	**€ 1,143**
PORTUGAL	**€ 249,045**	**€ 705,008**	**€ 166,026**	**€ 5,664**	**€ 62,097**
SLOVAK REPUBLIC	**€ 67,623**	**€ 85,486**	**€ 56,257**	**€ 19**	**€ 0**
SLOVENIA	**€ 125,435**	**€ 42,148**	**€ 34,337**	**€ 0**	**€ 0**
SPAIN	**€ 318,202**	**€ 1,186,694**	**€ 2,528,467**	**€ 38,960**	**€ 512,660**
SWEDEN	**€ 66,752**	**€ 603,460**	**€ 191,630**	**€ 278,501**	**€ 33,830**
UNITED KINGDOM	**€ 659,324**	**€ 3,400,518**	**€ 2,064,110**	**€ 2,111,847**	**€ 736,740**
TOTALS	**€ 6,180,076**	**€ 23,059,048**	**€ 9,291,230**	**€ 5,322,490**	**€ 1,472,406**
GRAND TOTAL	**€ 45,325,251**				

Under the Baseline Scenario, it would not be expected that EU employment in gambling services would change any more than the rate of growth of GGRs, and perhaps less due to continuing efforts at operational efficiencies. Exceptions to this would be within the casino industry in the UK, and with the remote gambling segment of the gambling services sectors.

UK employment in the casino industry was approximately 12,000 in 2003, and it could be expected to grow to perhaps 20,000 within the UK by 2010 with the new Act and relaxations on new licenses.[54] However, it should be noted that the mega-casinos found in Las Vegas, Atlantic City, and Connecticut in the United States can employ 5,000 or more per facility, so if similar mega-casinos come into the market anywhere in the EU, they may have more dramatic employment impacts.

With regard to remote gaming services, it had been noted above (pages 351-352) that this is not a very labor intensive segment of the market. Even with the forecast growth in GGRs for this segment, total employment within the entire EU would likely only grow from about 5,000 in 2004 to between 10,000 and 15,000 individuals by 2010.

ALTERNATIVE SCENARIOS

Two alternative scenarios to the Baseline Scenario are developed in this analysis. We have constructed these scenarios to try to provide some flavor as to how such contingencies that might emerge in the EU would affect the size, market shares, profitability, and Economic Rent generating capabilities of Member States. We use the scenarios to make projections on a variety of economic measures, tied to the underlying assumptions used.

The First Alternative Scenario is considered the more moderate of the two, involving changes that would emphasize the principles of "free and fair trade" in allowing enterprises the opportunity to gain access to EU Member State gambling services sectors, but without relaxing restrictions and constraints on those sectors that are presently in place. The Second Alternative Scenario is more extreme, and assumes that a combination of legal, technological, competitive, and policy decisions substantially open up the gambling services sectors to intra-EU competition. Both scenarios are driven by the following economic considerations:

ECONOMIC CONSIDERATIONS IN ESTABLISHING QUANTITATIVE MODELS FOR ALTERNATIVE SCENARIOS

The Baseline Scenario is intended to provide a basis for comparison of the economic and social impacts when varying degrees of relaxation of economic, ownership, and competitive constraints are imposed on the gambling services sectors of the EU. Generally speaking, relaxation of such constraints has the effect of reducing Economic Rents while, at the same time, enhancing value that accrues to consumers in general, so-called *Consumer Surplus*.[55] Based on the experience in other parts of the world, such relaxations will also expand the

[54] The new Act will likely result in 17 newly authorized casinos, as well as a number of other casinos that will likely be authorized under the relaxed guidelines of the 1968 Act. If a total of 30 new casinos appear in the UK between 2003 and 2010, this would imply employment of about 267 per casino.

[55] *Consumer Surplus* is defined as the difference between what a consumer is willing and able to pay for a commodity and what he has to pay, aggregated over all consumers. Thus, a price reduction (or improvement in the quality or availability of the product) has the effect of increasing Consumer Surplus.

aggregate amount of spending on gambling services, and increase the ratio of GGRs to GDP in the affected countries.

Based on our review of the scientific economic literature on gambling in Section VIII of this report, we summarize our findings that are applied to the Alternative Scenarios below. The general effects on gaming and wagering, and on GGRs brought about by changes in the price of gambling services offered, as well as from relaxation of government restrictions, are presented in the following table.

Relationships within Gaming Sectors – Empirical Estimates

GAMING SECTOR	PRICE SENSITIVITY (elasticity)	GOVERNMENT RESTRICTIONS IMPACTS
CASINO(1)	Elastic at high price (win percent)	Large Negative Impacts
GAMING MACHINES(1)	Elastic at high price (win percent)	Large Negative Impacts
LOTTERY	Inelastic at high price (win percent)	
BETTING SERVICES(2)	Elastic at high price (win percent)	Negative Impact Magnitude Unknown
BINGO	No clear evidence	No clear evidence

(1) Results are largely from studies of U.S. venues where slot machines are by far the largest component of casino GGRs. The effects of competition on casinos and gaming machines are assumed to be the same for this analysis.
(2) Assumes that these are predominantly horse and sports betting services.

Discussion

Price Sensitivity (elasticity) –Casinos (Gaming Machines)

In comparing results from the United States to Member States in the EU, it is important to keep in mind that, for the most part, gaming machines outside of casinos are not common in the US, whereas because of the restricted size, variety of offerings, and other constraints of EU casinos, much of the demand for gaming machines in the EU manifests itself outside of casinos. For the following analysis, we have assumed that casinos and gaming machines will be affected by similar economic forces, and are therefore grouped together when summarizing the scientific literature findings.

Only one study was found in our review of the scientific literature which estimated the price-elasticity of casino gaming (Thalheimer and Ali, 2003). In that study of casinos in the highly competitive U.S. market, revenue was found to be maximized at a win percent (house advantage) of approximately 7%. Demand was found to be price elastic at win percentages greater than 7%. For example, price elasticity was found to be –1.5 at a win percent of 10%.

Price Sensitivity (elasticity) – Lottery

The review of the scientific literature revealed a number of studies which estimated the price elasticity of demand for the lottery and specific lottery products such as Lotto. Price elasticities varied from a low of approximately –0.9 to a high of –3.2. The typical price elasticity was about –1.2, in the elastic region of demand.

Price Sensitivity (elasticity) – Betting Services

The review of the scientific literature revealed many studies which estimated the price elasticity of demand for pari-mutuel wagering and bookmaker betting. The median takeout rate elasticity from these studies cited was –1.7. Typical pari-mutuel wagering takeout rates in the United States currently average about 21%.

Government Restrictions – Casinos (Gaming Machines)

According to the review of the scientific literature, the imposition of government restrictions results in a negative impact on casino gaming. In one study, Thalheimer and Ali (2003) casino slot machine handle was estimated to decrease 59% as a result of a combination of restrictions on bet limits, total loss limits, and access time at casino locations.

Government Restrictions – Lottery

No studies were identified in the review of the scientific literature which addressed the issue of the effects of government restrictions on lottery wagering.

Government Restrictions – Betting Services

Only one study was found in the review of the scientific literature which estimated the effects of government restrictions on pari-mutuel wagering (Church and Bohara, 1992). Government regulations were found to have had a negative effect on pari-mutuel wagering revenue as a result of a suboptimal allocation of race days between racetracks in a state. Although the impact of restrictions was negative, the lack of other studies on the effects of regulation and the limited focus of this paper does not permit for an empirical estimate of the magnitude of the effects of government restrictions on pari-mutuel wagering.

Quantitative estimates of price-quantity and restriction impacts are summarized below.

Relationships within Gaming Sectors – General Findings

GAMING SECTOR	PRICE SENSITIVITY-ELASTICITY*	GOVERNMENT RESTRICTIONS MAXIMUM IMPACTS
CASINO	-1.5 at win percent of 10%	-59%
GAMING MACHINES	-1.5 at win percent of 10%	-59%
LOTTERY	-1.2 typical at relatively high takeout	Not estimated
BETTING SERVICES	-1.7 typical at takeout of about 21%	
BINGO	Not Available	Not Available

Competition

The general effects on the GGRs of the major gaming sectors examined in this report due to competition from competing venues is given in the following table.[56] Table entries are based on the scientific literature review in Section VIII.

[56] In instances where wagering was the variable of interest such as in the pari-mutuel wagering demand studies, the impacts of competition on revenue is assumed to be the same as the impact on wagering at constant takeout rates.

Relationships between Gaming Sectors – General Findings

GAMING SECTOR From\To	CASINO(1)	GAMING MACHINES(1)	LOTTERY	BETTING SERVICES(3)	BINGO
CASINO	Strong Substitute	Strong Substitute	Strong Substitute	Strong Substitute	Not Known
GAMING MACHINES	Strong Substitute	Strong Substitute	Strong Substitute	Strong Substitute	Not Known
LOTTERY	Weak Substitute	Weak Substitute	Substitute Magnitude Unknown	Strong Substitute	Not Known
BETTING SERVICES	Weak Substitute	Weak Substitute	Weak Substitute	Strong Substitute	Comp-lement
BINGO	Not Known	Not Known	Not Known	Not Known	Not Known

(1) Results are largely from studies of U.S. venues where slot machines are the dominant component of casino GGRs. The effects of competition on casinos and gaming machines are assumed to be equal for this analysis.
(2) Assumes that these are predominantly horse and sports betting services.

Discussion

Casinos relative to other Casinos; Gaming Machines relative to other Gaming Machines

According to the review of the literature, the introduction of new casino/gaming machine venues in an existing casino's market area may cause extensive reductions in the existing casino's levels of handle and GGRs. A number of studies found that there was a statistically significant and negative impact from the introduction of competing casino sites in an existing casino gaming market. The degree of impact was found to depend on the number of competing sites and the location of those sites relative to the existing casino site's market area customers. Statistically significant impacts on existing casinos, as high as –27%, from the introduction of competition from other casinos were reported (Thalheimer and Ali, 2003).

Casinos (Gaming Machines) relative to Lottery

The review of the scientific literature revealed that casino/machine gaming has a statistically significant negative impact on lottery wagering. As an example of the potential magnitude of the impact of casino-type gaming on lottery sales, Tosun and Skidmore (2004) estimated that the impact of large-scale slot machine gaming at pari-mutuel racetracks resulted in a 13% to 20% reduction in traditional lottery sales in the same state.

Casinos (Gaming Machines) relative to Betting Services

The review of the scientific literature resulted in findings of a statistically significant and negative impact of casino gaming on pari-mutuel horse race wagering. Impacts were found to range from –24% to –32% (Ali and Thalheimer, 1997; Thalheimer, 2998; Thalheimer and Ali, 1995a).

Lottery relative to other Lottery

The review of the scientific literature resulted in findings that for states in the U.S. which had a lottery, competition from adjacent states which also had a lottery resulted in statistically significant and lower sales. The order of magnitude of the impacts were generally not reported. In one study (Tosun and Skidmore, 2004), lottery sales were found to initially increase and then to decrease over time.

Lottery relative to Casinos (Gaming Machines)

Only one study was found in the review of the scientific literature which estimated the impact of a lottery on casino gaming (Shonkwiler, 1993). In this case the lottery was located in a state (California) neighboring the state where the casinos were located (Nevada). One could deduce that it would likely have a larger effect if the lottery were located in the same state as the casinos. The impact of the neighboring state lottery was found to be statistically significant resulting in a 3% reduction in casino GGRs.

Lottery relative to Betting Services

The review of the scientific literature revealed that presence of a state lottery can result in statistically significant and large reductions in pari-mutuel wagering. Estimated impacts of presence of a state lottery on pari-mutuel wagering ranged from –10% to –36% (Simmons and Sharp, 1987; Thalheimer and Ali, 1995b and 1995c) with typical impacts nearer the upper end of this range.

Betting Services relative to other Betting Services

The review of the scientific literature revealed that the presence of competition from other live or simulcast wagering sites resulted in a statistically significant and negative reduction in pari-mutuel wagering at a subject site or sites. Estimated impacts ranged from as low as –5% to as high as –29% (Thalheimer and Ali, 1992, 1995 and 1995b). A typical impact would be somewhere in the midpoint of this range.

Betting Services relative to Casinos (Gaming Machines)

Only one study was found in the review of the scientific literature which estimated the impact of betting services (horse and greyhound wagering) on casino (machine) gaming (Thalheimer and Ali, 2003). The impact of betting on casino (machine) gaming was found to be negative but statistically insignificant.

Betting Services relative to Lottery

The review of the scientific literature revealed that the presence of pari-mutuel wagering did not have a statistically significant effect on lottery wagering in two of the three studies for which results were reported. The effect was found to be statistically significant and negative in the third study.

Bingo relative to other Bingo and relative to Betting Services)

The review of the scientific literature revealed only one study of the economics of bingo gaming and there, only in the context of the effects of bingo on bookmaking in the UK. In that study, bingo gaming was found to have a positive (complementary) effect on bookmaker betting. We do not include this single instance of the estimated impact of bingo gaming on betting services in the results table below.

Summary – Empirical Results of Competition Effects

The cells in the following table show relationships between gaming sectors, and are filled in with the upper-end estimates of impacts of competition between gaming sectors.

Relationships between Gaming Sectors – Maximum Reported Empirical Estimates

GAMING SECTOR From\To	CASINO(1)	GAMING MACHINES(1)	LOTTERY	BETTING SERVICES(2)	BINGO
CASINO	-27%	-27%	-20%	-32%	
GAMING MACHINES	-27%	-27%	-20%	-32%	
LOTTERY	-3% (low-end)	-3% (low-end)	Substitute Magnitude Unknown	-36%	
BETTING SERVICES	0%	0%	Weak Substitute	-17%	
BINGO					

(1) Results are largely from studies of U.S. venues where slot machines are by far the largest component of casino GGRs. The effects of competition on casinos and gaming machines are assumed to be equal for this analysis.
(2) Assumes that these are predominantly horse and sports betting services.

The following table attempts to summarize the primary relationships that exist within the gambling services sectors of the EU and key economic relationships. There are obviously considerable variations among the Member States, so this table is only intended as a general guide.

TYPICAL ECONOMIC CHARACTERISTICS AND RELATIONSHIPS OF GAMING SECTORS

GAMING SECTOR	MARKET STRUC-TURE	NET-WORK EF-FECTS	CROSS-BORDER DEMAND	PRICE SENSI-TIVITY	BENE-FACTORS	TAX RE-GIME	LEGAL CON-STRAINTS	MAIN INDUSTRY LINKAGES
Casino	Limited franchise, monopoly	Very weak	Moderate & desired	Strong	Private owners, government	High	Location, games, marketing	Tourism, hotels
Lottery	Monopoly	Strong	Potential issue	Weak to mode-rate	Good causes, government	Govt. owner-ship		Retail outlets
Gaming machines	Dispersed, competi-tive	Weak to mode-rate	Low to very low	Strong	Private owners, government	High	*Locatio ns*	Bars & taverns
Bingo	Competi-tive	Weak to mode-rate	Low	Low to mode-rate		Low		
Betting services (racing & betting)	Competi-tive but consolida-ting	Weak to mode-rate	Land based: low Remote: high	Strong	Private owners, government, racing	Mode-rate	Restric-tions on market access	Racing
Remote Gaming (internet casino & poker)	Competi-tive	Mode-rate to strong	High	Strong	Private owners, government	Low	Restric-tions on market access	

RELAXATION OF CONSTRAINTS

Relaxation of constraints can take place in a number of ways, many of which have been mentioned earlier in this report. The following are illustrative of what could transpire, with the general implications of their impacts.

For lottery

Alternate Assumptions

1. Permitting lottery products from other Member States to be sold anywhere within the EU.[57]
2. Allowing other enterprises to sell various lottery products, such as numbers games and scratch tickets.
3. Removing exclusive rights of lotteries to offer gaming machines, casinos, and betting services.

Discussion

The general effect of the first or second of these options would be to increase the extent of competition for lottery products directly, thus leading to lower prices (lower take-out rates), greater product differentiation, and other value enhancers for consumers. Depending on price elasticities, this might increase total GGRs on lottery purchases, but reduce Economic Rents. The net effect would probably reduce contributions to benefactor organizations,

[57] This is in addition to such existing products as EuroMillions, a multi-state lottery product. This implies, for example, that the National Lottery (UK) would be able to market its lotto and instant games in France, Germany, and other EU Member States, and other Member States could sell their products in the UK.

depending on the magnitude of the price elasticity. On the other hand, Consumer Surplus would unambiguously increase by more than the loss in Economic Rents.[58]

The third option would remove the monopoly over gambling services that are not inherently lottery products from existing State Lottery operators. Such gambling services clearly give lotteries an ability to capture Economic Rents. Depending on how the supply rights are offered to other enterprises, the governments that own the lotteries might capture a portion—or conceivably all—of the lost Economic Rents back through a bidding process, or through taxation. Depending on the extent of competition that emerges, and restrictions on the products offered, there could be increases in Consumer Surplus and in total GGR on these gambling services. Magnitudes would depend on consumer responses to the changes imposed.

For casinos

Alternate Assumptions

1. State monopolies for operation of casinos within specific Member States (Netherlands, Austria, Finland, Sweden, parts of Germany) are dissolved and are replaced by either privatized monopolies (through some kind of a tendering process) or with either a limited license or free market industry;
2. Constraints on what casinos can offer, in terms of mix of games and gaming machines, certain industry practices (i.e. granting credit, providing complementary services ("comps") for good players, and non-gaming offerings (such as hotels, entertainment, liquor at the tables, etc.) are relaxed or removed;
3. Tax rates are substantially reduced to encourage capital investment.

Discussion

As noted above, the first option could lead to greater competitive conditions depending on how the divestiture of government owned and operated casinos went about, as well as other considerations. Economic Rents accruing to the State might be preserved depending on tax rates and tendering processes. Consumer Surplus would increase if competition among different casino operators emerged. The shift from government as operator to private sector operators might lead to greater efficiencies in operations, and more focus on consumer tastes and preferences. However, private sector operators, especially under competitive market conditions, might not be as conscientious on mitigating social impact considerations, such as costs associated with problem gambling. This last consideration is at least partly due to the fact that government owned and operated casinos are going to be much more politically vulnerable to backlash over problem gambling issues than would be private sector operators.

Relaxation of the various operating constraints mentioned in the second option would have the effect of increasing the general appeal and attractiveness of the casino product, thus growing the market. One would expect expansion in GGRs and the ratio of GGRs to GDP as a result.

The third option, if it came to pass, could lead to substantial capital investment if accompanied by legislation that would authorize or permit major destination resort style

[58] This is due to a reduction in "deadweight loss" (a loss of social welfare attributable to monopoly).

casino developments.[59] The proposals that were put forward in late 2005 involving Harrah's Entertainment in Spain and Slovenia are examples of this potential. Under this option, it is likely that the effects on GGRs, GGR/GDP, and employment would all be positive. Depending on elasticities and effective tax rates, it may or may not increase Economic Rents accruing to the affected States. Consumer Surplus would certainly increase.

For gaming machines

Alternate Assumptions

1. Where applicable (i.e. Finland, Sweden), state monopolies on gaming machines are removed. They could be replaced by (private sector) vendors who would compete for licenses based on a tendering process. Alternatively, location owners could be licensed to purchase their own gaming machines.
2. Constraints on gaming machines, such as maximum stakes that can be wagered, maximum payouts, number of machines in a given location, prohibitions against linked progressive jackpots and other technologies, etc., are relaxed.
3. Restrictions on numbers of permitted gaming machines, their permitted locations (i.e. age restricted areas only v. convenience shops), and machine types are relaxed.

As with casinos, the first option could lead an erosion of Economic Rents accruing to the State, depending on how the divestiture of government monopolized gaming machines takes place, and other considerations. Economic Rents accruing to the State might be preserved depending on tax rates and bidding processes. Consumer Surplus would be increased if competition among different vendors or locations becomes more sensitive to consumer tastes and preferences.

The second and third options would likely expand the amount of GGR on gaming machines, as well as increase GGR/GDP where such restrictions are relaxed. In comparison to casinos and to lotteries, gaming machine policies would not have as much in the way of cross-border implications as lotteries (unless similar machines are prohibited in adjacent Member States.) Gaming machines are typically not a tourist product but rather are utilized by local residents. Therefore, the consequences, both in economic terms and social impacts, would tend to be relatively localized.

For betting services and bingo

Legal access for remote gaming service companies that provide services for sports and race wagering to EU Member States, along with new technological innovations and new product offerings, are the major factors that would affect betting services over the next five years. Furthermore, the legal and market access status of remote gaming service companies that provide other gambling services via the internet and other remote media—such as virtual casino games, virtual gaming machines, internet poker, interactive skill/chance based tournaments, etc.—will also be affected by legal and market access issues. As with other gambling services presently authorized only for State lotteries, determination of whether lotteries can retain a monopoly over such activities is going to have significant bearing on the pricing, competition, and therefore size and growth of this sector.

There are also various questions of substitutability that come into play among the various gambling services sectors. It would seem, for example, that if the quality, quantity, and

[59] See, for example, William R. Eadington (2006), "The future of casinos in Europe," Society for the Study of Gambling Newsletter, No. 39, pp. 7-9.

variety of offerings of gaming machines and casinos were increased in Member States, it would have adverse impacts on bingo and race wagering in general. Expansion of permitted betting services by remote gaming providers would likely cause a reduction in a portion of the betting shop portion of betting services that presently takes place in physical locations such as at racetracks or in betting shops. The offering of virtual casino games and gaming machines via the internet may result in a reduction in revenues that otherwise would accrue to land-based casinos or to gaming machine operators. The fiscal effects of all of these alternatives would depend on tax regimes and the empirical strength of cross-elasticities, as well as on the elasticity of spending on gambling services in general to increases in availability and attractiveness of new gambling services options. Many of these issues are addressed, at least in structure, in terms of the next two Scenarios.

FIRST ALTERNATIVE SCENARIO: MODERATE ACCOMODATION

The following set of assumptions is intended to reflect a hypothetical situation where courts or legislative bodies are generally sympathetic with the argument that state monopolies and other constraints on free and fair trade in the gambling services sector cannot be justified because of the principles of free and fair trade and proportionality. Furthermore, remote gaming services providers would be able to enter into presently protected Member States in the offering of their services, though they would have to abide by the constraints dictated by the gambling laws of national governments. Nonetheless, we assume that there would be no significant relaxation in the constraints on how games or wagering opportunities can be offered (except with regard to access provided to remote gambling services.)

Assumptions

1. Court decisions or legislation—in conjunction with technological developments—would bring about a more competitive environment in the Member States by eliminating certain structural elements presently in place, and replace them with rules of engagement consistent with principles of "free and fair trade," and equal access of EU companies to commercial opportunities anywhere else within the EU.

2. Member States would still be permitted to organize gambling services sectors around the principles of monopoly with specific "protecting" restrictions if they so choose. The justification would still be to allow Member States to protect their citizens through politically determined decisions constraining or prohibiting specific gambling services that were deemed undesirable. However, Member States would have to adhere to free and fair competition among eligible enterprises in granting such exclusive licenses through procedures that utilize transparent bidding processes among candidate organizations.

3. Because of their unique economies of scale,[60] lotteries—in terms of their offerings of traditional lottery products such as lotto, scratch tickets, and numbers draws—would remain within state ownership for the most part.[61] (Alternatively—as is the case in the UK—lottery operations could be franchised to a private company or companies using a fair and transparent tendering process.) However, under this scenario, we assume that national lotteries would be forced to divest other non-traditional lottery gaming activities such as casinos, betting services, and gaming machines, to other (private sector) entities, either by allowing an open competitive environment (with required licensing and restrictions) or a competitive bidding process for the granting of limited licenses. Under this assumption, the Member State could still retain significant restrictions on gambling services, but would not be able to preserve monopolies for itself or grant them to other parties without competitive tendering processes.

4. State owned monopolies for casinos—such as Holland Casino's, Ray (in Finland), or Casinos Austria—would be forced to either open their industries to competition under the "free and fair" principles, or to divest the state-owned monopolies through privatization. The Member State could still dictate appropriate restrictions or prohibitions that would apply to licensees. If a Member State permitted more than one casino operation, then Member State or EU anti-monopoly rules would apply to license

---

60 Cook, P.J., and Clotfelter, C.T. (1993), "The Peculiar Scale Economies of Lotto", American Economic Review, 83, 634-643.

61 Member States would not be permitted to prohibit private sector entities from offering similar products, however. Nonetheless, their ability to retain an effective monopoly over lotto-style products would be a bi-product of economies of scale and network effects.

holders. If there was only one casino license to be granted, it would have to go through a “free and fair” process in its issuance.

5. Remote gaming services would be permitted for all EU enterprises that can meet licensing standards within any particular Member State. Individual Member States can impose restrictions on offerings within those states as conditions of licensing, such as prohibitions against credit, against certain kinds of wagers or game offerings, and limits on stakes for specific wagers or contests. Enforcement of such constraints could be accomplished through civil proceedings, with violations leading to fines and/or loss of license.

6. Member States can prohibit all gaming machines if they so choose (i.e. France, Austria), or establish terms and conditions under which enterprises can bid on licenses to operate or place gaming machines. Alternatively, they could permit them under relatively unrestricted conditions.

7. The same rules for licensing of other gambling services would apply to bingo as well.

The above assumptions can be quantified with the following set of estimated values. It should be noted that these are illustrative of what might occur in 2010 if these assumptions were generally reasonable of the situation that might emerge. However, they should be treated as hypothetical as opposed to definitive.

The major effects of this First Alternative Scenario would be to shift the composition of Economic Rents from government (i.e. because of the loss of monopoly status for some products, i.e. casinos, gambling machines, betting services) to new service providers (i.e. those who were successful in the tendering process.) Furthermore, the greater access of remote gambling service providers to markets within the EU would increase competition in the betting services sector and perhaps in the casino and gambling machine markets as well. This would likely result in price competition in these areas. Because of substitution effects, we could expect relative reduction in sales for land-based casino and gambling machine products. Furthermore, we could expect substitution away from Bingo because it is a relatively less convenient product in comparison to the remote gambling offerings. However, besides remote gambling, there would only be limited effects on the extent of competition among and within the other gambling services sectors.

For the First Alternative Scenario, we assume that the growth rate of the remote gambling services sector is 20% per annum through 2010. The growth rate of casinos and gaming machines are reduced (in comparison to the Baseline Scenario) by 0.5% per annum from 2006 onward, reflecting the substitution effect from remote gambling services. Bingo’s growth rate is reduced by 1.0% from 2006 onward in comparison to the Baseline Scenario, and lottery GGR growth will remain the same as under the Baseline Scenario.

The First Alternative Scenario assumptions regarding market sector growth generates a forecast for the gambling services revenues of €64.4 billion for 2010. This is a 25% increase over GGRs generated in 2003. The breakdown by sector and country is given in the following table.

FIRST ALTERNATIVE SCENARIO
PROJECTED GROSS GAMING REVENUES BY
GAMBLING SERVICES SECTOR, BASELINE SCENARIO 2010 (€ millions)

COUNTRY	CASINOS	LOTTERY	GAMING MACHINES	BETTING SERVICES	BINGO SERVICES
AUSTRIA	€ 239,003	€ 668,783	€ 0	€ 128,797	€ 0
BELGIUM	€ 52,429	€ 549,765	€ 151,028	€ 15,036	€ 0
CYPRUS	€ 0	€ 44,221	€ 0	€ 70,088	€ 0
CZECH REPUBLIC	€ 84,212	€ 142,105	€ 440,368	€ 61,860	€ 2,355
DENMARK	€ 49,571	€ 499,426	€ 250,930	€ 158,930	€ 44,644
ESTONIA	€ 28,716	€ 10,577	€ 0	€ 0	€ 0
FINLAND	€ 25,264	€ 570,791	€ 655,721	€ 261,157	€ 6,581
FRANCE	€ 2,772,948	€ 3,444,181	€ 0	€ 3,144,777	€ 0
GERMANY	€ 974,024	€ 5,199,192	€ 2,372,389	€ 203,981	€ 0
GREECE	€ 115,734	€ 633,362	€ 0	€ 943,641	€ 0
HUNGARY	€ 48,721	€ 375,731	€ 310,928	€ 44,197	€ 7,210
IRELAND	€ 848,050	€ 6,339,711	€ 0	€ 1,911,313	€ 149,002
ITALY	€ 0	€ 278,402	€ 248,797	€ 924,569	€ 27,128
LATVIA	€ 11,758	€ 7,036	€ 87,322	€ 2,645	€ 2,183
LITHUANIA	€ 20,382	€ 38,113	€ 742	€ 4,289	€ 0
LUXEMBOURG	€ 96,748	€ 23,761	€ 0	€ 0	€ 0
MALTA	€ 25,021	€ 26,325	€ 0	€ 104,105	€ 886
NETHERLANDS	€ 755,045	€ 866,662	€ 608,873	€ 28,351	€ 0
POLAND	€ 47,634	€ 323,895	€ 56,371	€ 58,618	€ 2,175
PORTUGAL	€ 303,635	€ 829,421	€ 202,418	€ 15,896	€ 118,133
SLOVAK REPUBLIC	€ 132,060	€ 100,572	€ 68,664	€ 53	€ 0
SLOVENIA	€ 244,886	€ 49,585	€ 41,897	€ 0	€ 0
SPAIN	€ 388,199	€ 1,396,111	€ 3,084,671	€ 108,714	€ 976,541
SWEDEN	€ 130,233	€ 709,953	€ 233,669	€ 781,004	€ 64,378
UNITED KINGDOM	€ 1,197,896	€ 4,000,610	€ 2,233,031	€ 5,901,762	€ 1,402,897
TOTALS	€ 8,592,172	€ 27,128,292	€ 11,047,821	€ 14,873,782	€ 2,804,114
GRAND TOTAL		€ 64,446,181			

Market shares of GGRs broken down by gambling services sector for the First Alternative Scenario are shown in the following table:

GAMING SERVICES SECTOR	GGR MARKET SHARE (2010)
Lottery	42.1%
Casino	13.3%
Gaming Machines	17.1%
Betting Services	23.1%
Bingo	4.4%

The presumed profit margins for the gambling services sectors will be affected by the changes in competition under the First Alternative Scenario,[62] and are given in the following table:

GAMING SERVICES SECTOR	ASSUMED PROFIT MARGIN (1st Alternative)
Lotteries	**85%**
Casinos (tip pooling and/or monopoly)[63]	**75%**
Casinos (no tip pooling and/or more competitive)[64]	**45%**
Gaming Machines	**75%**
Betting Services	**30%**
Bingo	**40%**

Economic Rents decline in this scenario, but not dramatically. The reduction in Economic Rents occurs because of the presumed lower profit margins in various sectors, and is in the magnitude of 6% in comparison to the Baseline Alternative. Results on a sector-by-sector and country-by- country basis are provided in the following table.

62 The assumed directions of change of profit margins for this (and the following) scenario can be justified based on changing levels of competition, the prevailing tax structures, and changes to availability of gaming services, as noted in the assumptions. However, we do not have empirical evidence to validate the magnitude of changes in profit margins. Thus, the results on estimates of Economic Rents for this and the second alternative scenario should be taken as illustrative rather than predictive.

63 This covers the countries of Portugal, Spain, France, Italy, Germany, Luxembourg, Belgium, Netherlands, Denmark, and Austria.

64 This covers the countries of United Kingdom, Sweden, Finland, Estonia, Latvia, Lithuania, Poland, Slovenia, Slovakia, Malta, Czech Republic, Greece, and Hungary.

FIRST ALTERNATIVE SCENARIO
PROJECTED GENERATION OF ECONOMIC RENTS BY
GAMBLING SERVICES SECTOR, BASELINE SCENARIO 2010 (€ millions)

	CASINOS	LOTTERY	GAMING MACHINES	BETTING SERVICES	BINGO SERVICES
COUNTRY					
AUSTRIA	€ 179,252	€ 568,465	€ 0	€ 38,639	€ 0
BELGIUM	€ 39,322	€ 467,300	€ 113,271	€ 4,511	€ 0
CYPRUS	€ 0	€ 37,588	€ 0	€ 21,026	€ 0
CZECH REPUBLIC	€ 37,896	€ 120,789	€ 330,276	€ 18,558	€ 942
DENMARK	€ 37,179	€ 424,512	€ 188,198	€ 47,679	€ 17,858
ESTONIA	€ 12,922	€ 8,991	€ 0	€ 0	€ 0
FINLAND	€ 11,369	€ 485,172	€ 491,791	€ 78,347	€ 2,633
FRANCE	€ 2,079,711	€ 2,927,554	€ 0	€ 943,433	€ 0
GERMANY	€ 730,518	€ 4,419,314	€ 1,779,292	€ 61,194	€ 0
GREECE	€ 52,080	€ 538,358	€ 0	€ 283,092	€ 0
HUNGARY	€ 21,925	€ 319,371	€ 233,196	€ 13,259	€ 2,884
IRELAND	€ 381,622	€ 5,388,754	€ 0	€ 573,394	€ 59,601
ITALY	€ 0	€ 236,642	€ 186,598	€ 277,371	€ 10,851
LATVIA	€ 5,291	€ 5,981	€ 65,492	€ 794	€ 873
LITHUANIA	€ 9,172	€ 32,396	€ 556	€ 1,287	€ 0
LUXEMBOURG	€ 72,561	€ 20,197	€ 0	€ 0	€ 0
MALTA	€ 11,260	€ 22,376	€ 0	€ 31,232	€ 355
NETHERLANDS	€ 566,284	€ 736,663	€ 456,655	€ 8,505	€ 0
POLAND	€ 21,435	€ 275,311	€ 42,278	€ 17,585	€ 870
PORTUGAL	€ 227,726	€ 705,008	€ 151,814	€ 4,769	€ 47,253
SLOVAK REPUBLIC	€ 59,427	€ 85,486	€ 51,498	€ 16	€ 0
SLOVENIA	€ 110,199	€ 42,148	€ 31,423	€ 0	€ 0
SPAIN	€ 291,149	€ 1,186,694	€ 2,313,503	€ 32,614	€ 390,616
SWEDEN	€ 58,605	€ 603,460	€ 175,251	€ 234,301	€ 25,751
UNITED KINGDOM	€ 539,053	€ 3,400,518	€ 1,674,774	€ 1,770,529	€ 561,159
TOTALS	€ 5,555,958	€ 23,059,048	€ 8,285,866	€ 4,462,135	€ 1,121,645
GRAND TOTAL	€ 42,484,652				

SECOND ALTERNATIVE SCENARIO: OPENING THE MARKETS

The following set of assumptions is intended to reflect a hypothetical situation where events within the EU, whether driven by court decisions, legislative changes, or new technologies (or some combination of the three), lead to a considerably more open marketplace for gambling services sectors in the EU.[65] In this alternative, we build upon the assumptions from the First Alternative, and further assume that there would be significant relaxations in the present constraints on how games or wagering opportunities can be offered, increased competition among sectors manifesting itself in reduced prices of gambling services to consumers, subsequent greater penetration by remote gambling offerings, and a break-down in implicit agreements not to compete among the existing national lotteries in the EU.

In general, if this were to transpire, it would lead to a substantial reduction in Economic Rents, an even more substantial increase in Consumer Surplus[66], and a notable increase in aggregate spending on gambling services in the Member States of the EU. Based on the experience in other countries, such as the United States, Canada, New Zealand, and Australia, the ratio of GGR/GDP could be expected to increase dramatically, perhaps ultimately to increase by a factor of two or more.

The following discussion does not address the unintended adverse consequences associated with the Second Alternative Scenario; that is discussed separately following this section. Based on the experience of other jurisdictions, however, it is likely that such adverse consequences—such as bankruptcies, problem gambling, and gambling related crime—might indeed increase, though the scientific literature is not yet clear on the causal linkages of these variables to expanded gambling services, or to the magnitudes involved.

Assumptions

1. Court decisions, legislation, or technological developments would create a highly competitive environment in the Member States by opening gambling services markets to a large number of potential service providers, and substantially expanding the choices of services available to consumers throughout the EU.

2. Member States could still retain the licensing of gambling services providers and set appropriate tax rates and other conditions of doing business. Under this Scenario, however, the primary philosophic underpinning of the rules governing the gambling services sectors would be orientated toward the well being of consumers and the market principles of competition.[67]

3. National lotteries under this scenario would engage in competition with other EU lotteries in the sale of traditional lottery products across borders. They would also continue to enter into strategic alliances to develop products with other Member States

---

65 This can be considered an “extreme case” of opening gambling services markets in a manner that would allow for extensive cross-border competition, emergence of destination resort-style casinos, relatively unconstrained remote gambling offerings, and competition among lotteries regardless of their Member State affiliations.

66 It should be noted that the primary source for Economic Rent is from Consumer Surplus, e.g. suppliers are able to charge higher prices than market conditions would dictate because of constraints on supply. As prices are lowered and markets become more competitive, consumers gain from reduced Economic Rent, and there are further gains due to reduction in “deadweight losses,” inefficiencies associated with supply-constrained situations.

67 This philosophy was strongly reflected in the proposed reforms of the Gaming Act 1968 in the United Kingdom. See Budd, A. (2001), *Gambling Review Report*, Report by Gambling Review Body, Department for Culture, Media and Sport. London: The Stationary Office, July.

such as EuroMillions, that would take advantage of the peculiar scale economies of lotteries.[68] Private sector firms, such as remote gambling service providers, could also offer lottery-style products.

4. The casino sector would evolve in at least some Member States in a manner similar to casino industry developments in other countries such as the United States, South Africa, Australia or New Zealand. This could be driven by a willingness on the part of at least some Member States to pass enabling legislation, lower tax rates, and relax constraints in a manner consistent with large resort casino development; a desire to use large casino projects as a tool for economic or tourism development within specific Member States; and subsequent cross-border competition within the EU.

5. Member States could still prohibit all machine gaming outside of casinos if they so choose (i.e. France, Austria), or establish terms and conditions under which enterprises can operate or place gaming machines. Alternatively, they could permit them under relatively unrestricted conditions. We will assume that, on balance, Member States will permit an expansion of gaming machines, and remove or significantly reduce restrictions on wager size, jackpot size, and other product attributes.

6. Bingo services would remain relatively unchanged, but operators would bring in technological enhancements and offer better prizes (i.e. lower prices) to make their offerings more attractive. Furthermore, present restrictions on Bingo operations would be relaxed.

The major effects of the Second Alternative Scenario would be a substantial increase in price competition within gambling services sectors in specific Member States, increases in cross-border competition among gambling service companies located in different Member States, and increased competition among gambling products, i.e. casinos, gambling machines, betting services, lotteries, bingo. Furthermore, the greater availability of remote gambling services to markets within the EU would increase competition in the betting services sector and lead to a greater number of hybrid offerings across traditional product lines.[69]

All of these dynamics would likely result in significant price competition as well as greater product differentiation and aggregate sector growth. Because of substitution effects, we could expect relative reduction in sales for the "weaker" forms of gambling services, including Bingo and horse race wagering.[70] Economic Rents would be significantly reduced as supply constraints were removed. With the exception of lotteries (which have the characteristics of natural monopolies due to network effects), excess profits for gaming service providers would be driven downward. However, depending on excise tax rates imposed on gambling services industries, revenues to governments would not be reduced to the same extent.

The above assumptions are quantified for the Second Alternative Scenario with the following set of estimated values. It should be noted that these are illustrative of what might occur in 2010 if these assumptions were generally reasonable of the situation that might emerge. However, the value of the following discussion is more to demonstrate the possible interactions among the various sectors than to come up with specific forecasts.[71]

---

68 Cook and Clotfelter, op. cit.

69 For example, lotteries could partner with sporting teams to offer long-odds wagers on outcomes of sporting events using internet services and even betting services retail outlets. Casinos could link very large jackpots on gaming machines among casinos and even to non-casino sites.

70 This reflects the experience in the United States, Canada, and other countries in recent decades.

71 If it were known that the assumptions would be correct, and if there were strong evidence on quantitative values for price reductions, price and cross-elasticities, and deregulation impacts,

For the Second Alternative Scenario, we assume that the growth rate of the remote gambling services sector is 25% per annum through 2010. The growth rate for lottery GGRs, casino GGRs, gaming machine GGRs, betting services GGRs, and Bingo GGRs are all determined by the assumed price and cross-elasticities in conjunction with assumed price reductions, adjusted from the Baseline Scenario forecasts to 2010. The growth rates for casinos, gaming machines, and Bingo are slightly lower between 2005 and 2010 due to growing competition from remote gambling service providers.[72] These are discussed below.

In this Scenario, there are significant price reductions due to the increased levels of competition. For the following, we apply our estimates of price elasticities from the scientific literature. We also assume that the average price (take-out) of lottery products will be reduced from about 50% of total sales (handle) to about 30%, a decline of 40%. For casinos, it is assumed average house advantage falls by 20% in light of increased competition from other casinos as well as other gambling services products.[73] For gaming machines, prices are assumed to fall by 20% as well. For land based betting services (racing venues and betting shops), strong competition from remote gaming services, from other land based competitors, and from their weakened economic structure drives down prices by an assumed 25%. For Bingo, the assumed impact of increased competition from other gambling services sectors leads to price reductions of 30%.

The assumed price reductions and price elasticities are summarized in the following table. The table also presents estimates of the effect on sales (handle) from reducing or removing constraints on the gambling services.

Gambling Service Sector	Price Reduction	Price Elasticity (ε_x)[74]	Deregulation Effects (γ) on Handle[75]
Lottery	**40%**	**-1.2**	**30%**
Casino	**20%**	**-1.5**	**60%**
Gambling Machines	**20%**	**-1.5**	**60%**
Betting Services	**25%**	**-1.7**	**20%**
Bingo	**30%**	**-1.2**	**10%**

In order to estimate the over-all impacts of price changes in the various gambling services sectors on one another, it is also necessary to provide estimates of cross-price elasticities

then this approach could yield reasonable forecasts. In this case, the problem is too hypothetical and there are too many holes in the data to allow for much more than a demonstration of the relationships.

72 We assume the average annual growth rate of casino and gaming machine revenue would be 0.5% lower than the baseline scenario, and for Bingo, it would be 1.0% lower. This could be due to erosion in demand caused by remote gambling services in virtual casinos and internet poker, both of which might be viewed as substitutes for casinos, gambling machines, and bingo.

73 For gaming machines, this would be a reduction in win percentage. For table games, it could be represented by more favorable rules or payouts, or in increased complementaries or other benefits given to players in return for their action.

74 The proper measure for quantity sold in gambling sectors is "handle," the total amount of money wagered. Price elasticity (ε_x) measures the ratio of percentage change in handle to percentage change in win percentage. GGRs are computed as price times quantity, or "handle" times "win percentage." Thus, a price reduction that brings about a proportionate increase in quantity (elasticity of -1.0) would leave GGRs the same.

75 Deregulation effects, indicated by the symbol γ, would reflect the increase in demand that would result from removal of constraints on pricing, availability, quality, or other important attributes of gambling services.

among the gambling services sectors.[76] Based on the judgment of the authors and general indications from the scientific literature, the following table presents assumed values[77] for such cross-elasticities for this Second Alternative Scenario:

Cross Price Elasticities (η_{xy}) for Gambling Services Sectors: Ratio of percentage change in handle of X to a percentage change in the price of Y

GAMBLING SERVICE SECTOR	Lottery (X)	Casino (X)	Gambling Machines (X)	Betting Services (X)	Bingo (X)
Lottery (Y)	*	.05	.05	.05	.10
Casino (Y)	.10	*	.25	.15	.20
Gambling Machines (Y)	.10	.25	*	.15	.20
Betting Services (Y)	.02	.05	.05	*	.02
Bingo (Y)	.01	.02	.02	0	*

* Already accounted for in the direct price elasticity computation.

Based upon the above assumptions, the impacts on handle for the various gambling services sectors, and the resulting impacts on GGRs (= handle times price) in comparison to the Baseline Scenario are:

GAMBLING SERVICE SECTOR	CHANGE IN HANDLE[78]	CHANGE IN GGRs[79]
Lottery	73.2%	3.9%
Casino	81.2%	44.9%
Gambling Machines	81.2%	44.9%
Betting Services	54.5%	15.9%
Bingo	33.5%	-6.6%

The net effect of significant price competition and deregulation of the gambling services sectors in this model are substantial growth in GGRs for gambling machines and casinos, limited growth in betting services and lottery GGRs, a substantial transfer in revenues from

[76] The cross-elasticity of product Y on product X (η_{xy}) is defined as: the ratio of percentage change in quantity (handle) of X to a percentage change in price of Y. If the cross-elasticity is positive, the products are substitutes; if negative, they are complements; and if the value is zero, they are independent.

[77] These are probably correct in sign, but not necessarily accurate in magnitude. While there is limited evidence on discrete effects of one gaming sector on another as shown in this report's literature review, the literature provides a few estimates of continuous variable cross-price elasticity. The estimates of cross-price elasticity made here draw from the order of magnitude of discrete effects reported in the literature.

[78] Percentage change in handle for sector x is computed as $\mathbf{\Delta P_x * \varepsilon_x + \gamma + \Sigma\ \Delta P_y * \eta_{xy}}$ for all gambling services sectors y = 1,…,n; where $\mathbf{\Delta P_x}$ is change in the price of commodity X, $\mathbf{\Delta P_y}$ is change in price of other commodities indexed by y = 1,…,n; $\mathbf{\varepsilon_x}$ is the price elasticity of X, $\boldsymbol{\gamma}$ is the shift in handle created by relaxing constraints, and $\boldsymbol{\eta_{xy}}$, (y = 1,…,n; x≠y) are the cross-price elasticities (ratio of change in handle for X to the change in price of Y for y = 1,…,n.)

[79] Percentage change in GGRs is computed by estimating the new GGR based on new price*new quantity, divided by GGR before the price changes. This computation takes into account all direct and cross price elasticities, as well as the effect of constraint relaxation.

land-based betting services to remote gambling services (much of which is the same product, but different delivery systems), and a moderate decline in GGRs in the Bingo sector. These results, of course, are tied to the underlying assumptions from which they were generated.

The sector-by-sector and country-by-country results on GGRs are given in the following table:

SECOND ALTERNATIVE SCENARIO
PROJECTED GROSS GAMING REVENUES BY
GAMBLING SERVICES SECTOR, 2010 (€ millions)

COUNTRY	CASINOS	LOTTERY	GAMING MACHINES	BETTING SERVICES	BINGO SERVICES
AUSTRIA	€ 346,363	€ 694,999	€ 0	€ 171,072	€ 0
BELGIUM	€ 75,980	€ 571,316	€ 218,870	€ 19,970	€ 0
CYPRUS	€ 0	€ 45,954	€ 0	€ 92,679	€ 0
CZECH REPUBLIC	€ 122,040	€ 147,676	€ 638,182	€ 81,728	€ 2,201
DENMARK	€ 71,839	€ 519,003	€ 363,648	€ 210,918	€ 41,720
ESTONIA	€ 41,615	€ 10,992	€ 0	€ 0	€ 0
FINLAND	€ 36,613	€ 593,166	€ 950,272	€ 346,346	€ 6,150
FRANCE	€ 4,018,557	€ 3,579,193	€ 0	€ 4,179,047	€ 0
GERMANY	€ 1,411,555	€ 5,403,001	€ 3,438,066	€ 271,686	€ 0
GREECE	€ 167,722	€ 658,190	€ 0	€ 1,246,698	€ 0
HUNGARY	€ 70,607	€ 390,460	€ 450,597	€ 58,358	€ 6,738
IRELAND	€ 1,228,994	€ 6,588,228	€ 0	€ 2,521,453	€ 139,242
ITALY	€ 0	€ 289,316	€ 360,557	€ 1,231,429	€ 25,351
LATVIA	€ 17,040	€ 7,312	€ 126,547	€ 3,469	€ 2,040
LITHUANIA	€ 29,537	€ 39,607	€ 1,075	€ 5,640	€ 0
LUXEMBOURG	€ 140,208	€ 24,693	€ 0	€ 0	€ 0
MALTA	€ 36,261	€ 27,357	€ 0	€ 138,415	€ 828
NETHERLANDS	€ 1,094,212	€ 900,635	€ 882,378	€ 37,688	€ 0
POLAND	€ 69,032	€ 336,592	€ 81,693	€ 77,891	€ 2,033
PORTUGAL	€ 440,027	€ 861,934	€ 293,345	€ 21,179	€ 110,395
SLOVAK REPUBLIC	€ 191,382	€ 104,514	€ 99,508	€ 70	€ 0
SLOVENIA	€ 354,889	€ 51,529	€ 60,718	€ 0	€ 0
SPAIN	€ 562,578	€ 1,450,838	€ 4,470,305	€ 143,966	€ 912,578
SWEDEN	€ 188,734	€ 737,784	€ 338,633	€ 1,039,649	€ 60,161
UNITED KINGDOM	€ 1,735,990	€ 4,157,434	€ 3,236,109	€ 7,828,140	€ 1,311,007
TOTALS	€ 12,451,775	€ 28,191,721	€ 16,010,502	€ 19,727,489	€ 2,620,444
GRAND TOTAL		€ 79,001,932			

A summary comparison of results for total GGRs under the three scenarios is given in the following table.

GGRS FOR 2003 AND FOR 2010 UNDER ALTERNATIVE SCENARIOS
(€ billions)

	Total	Casinos	Lottery	Gaming Machines	Betting	Bingo
GGRs (2003)	€ 51.53	€ 7.51	€ 22.98	€ 9.68	€ 8.87	€ 2.45
Scenario for GGRS (2010):						
Baseline	€ 63.89	€ 8.90	€ 27.13	€ 11.61	€ 13.31	€ 2.94
First Alternative	€ 64.45	€ 8.59	€ 27.13	€ 11.05	€ 14.87	€ 2.80
Second Alternative	€ 79.00	€ 12.45	€ 28.19	€ 16.01	€ 19.73	€ 2.62

DISCUSSION

Based upon our assumptions, the Second Alternative Scenario produces an estimated 53% increase in total GGRs in 2010 over GGRs in 2003. This is much greater than growth rates of 24% and 25% relative to GGRs in 2003 under the Baseline and First Alternative Scenarios, respectively. Total handle actually grows considerably more than growth in GGRs but is negated to a large extent by the significant price reductions which we had assumed. Perhaps more significant is what our hypothetical model suggests with respect to particular gambling services sectors.

There is a considerable redistribution of GGRs in 2010 among the five main gambling services sectors under the Second Alternative Scenario relative to GGRs in 2010 for the Baseline Scenario. Total GGRs is 24% greater under the Second Alternative Scenario relative to the Baseline Scenario. The greatest growth occurs in the casino, gambling machine, and betting services sectors; 40%, 38%, and 48%, respectively; lower growth in the lottery sector, 4%; and a decline in the Bingo sector, -11%.[80] While the casino, gambling machine, and betting services sectors exhibit growth rates of 38% or greater, the 24% growth in total GGRs reflects the lower growth in the lottery sector, 4%, which has the greatest share of the overall market. The negative growth in the Bingo sector has little effect on the overall growth rate in GGRs due to that sector's small share of the overall market.

The Market shares of GGRs broken down by gambling services sector for 2003 and for the Baseline and First and Second Alternative Scenarios in 2010 are shown in the following table:

GAMING SERVICES SECTOR	GGR MARKET SHARE (2003)	GGR MARKET SHARE (2010) BASELINE	GGR MARKET SHARE (2010) FIRST ALTERNATIVE	GGR MARKET SHARE (2010) SECOND ALTERNATIVE
Lottery	**44.6%**	**42.5%**	**42.1%**	**35.7%**
Casino	**14.6%**	**13.9%**	**13.3%**	**15.7%**
Gaming Machines	**18.8%**	**18.2%**	**17.1%**	**20.3%**
Betting Services	**17.2%**	**20.8%**	**23.1%**	**25.0%**
Bingo	**4.8%**	**4.6%**	**4.4%**	**3.3%**

[80] The changes in the casino and gambling sectors are consistent with the recent experience in the United States and in other countries that have more extensive casinos and/or gambling machine sectors than are presently found in the EU.

The extent of Economic Rent change under the Second Alternative will depend on how much they have been eroded by deregulation and increased competition. The presumed profit margins (as defined above) for the gambling services sectors are given in the following table:

GAMING SERVICES SECTOR	ASSUMED PROFIT MARGIN (2nd Alternative)
Lotteries	**75%**
Casinos (tip pooling and/or monopoly)[81]	**50%**
Casinos (no tip pooling and/or more competitive)[82]	**25%**
Gaming Machines	**50%**
Betting Services	**15%**
Bingo	**20%**

The changes in Economic Rents for the various sectors, broken down by country, are given in the following table. The model suggests that Economic Rents would fall from €45.3 billion to €37.8 billion, a decline against the Baseline Alternative of about 17%. How the Economic Rents would be divided among tax revenues, contributions to designated beneficiaries, and returns to operators and owners would be a matter of tax policies and contractual obligations.

81 This covers the countries of Portugal, Spain, France, Italy, Germany, Luxembourg, Belgium, Netherlands, Denmark, and Austria.

82 This covers the countries of United Kingdom, Sweden, Finland, Estonia, Latvia, Lithuania, Poland, Slovenia, Slovakia, Malta, Czech Republic, Greece, and Hungary.

SECOND ALTERNATIVE SCENARIO
PROJECTED GENERATION OF ECONOMIC RENTS BY GAMBLING SERVICES SECTOR, 2010 (€ millions)

	CASINOS	LOTTERY	GAMING MACHINES	BETTING SERVICES	BINGO SERVICES
COUNTRY					
AUSTRIA	€ 173,182	€ 521,249	€ 0	€ 25,661	€ 0
BELGIUM	€ 37,990	€ 428,487	€ 109,435	€ 2,996	€ 0
CYPRUS	€ 0	€ 34,466	€ 0	€ 13,902	€ 0
CZECH REPUBLIC	€ 30,510	€ 110,757	€ 319,091	€ 12,259	€ 440
DENMARK	€ 35,920	€ 389,252	€ 181,824	€ 31,638	€ 8,344
ESTONIA	€ 10,404	€ 8,244	€ 0	€ 0	€ 0
FINLAND	€ 9,153	€ 444,875	€ 475,136	€ 51,952	€ 1,230
FRANCE	€ 2,009,278	€ 2,684,394	€ 0	€ 626,857	€ 0
GERMANY	€ 705,778	€ 4,052,251	€ 1,719,033	€ 40,753	€ 0
GREECE	€ 41,930	€ 493,642	€ 0	€ 187,005	€ 0
HUNGARY	€ 17,652	€ 292,845	€ 225,299	€ 8,754	€ 1,348
IRELAND	€ 307,248	€ 4,941,171	€ 0	€ 378,218	€ 27,848
ITALY	€ 0	€ 216,987	€ 180,279	€ 184,714	€ 5,070
LATVIA	€ 4,260	€ 5,484	€ 63,274	€ 520	€ 408
LITHUANIA	€ 7,384	€ 29,706	€ 538	€ 846	€ 0
LUXEMBOURG	€ 70,104	€ 18,519	€ 0	€ 0	€ 0
MALTA	€ 9,065	€ 20,518	€ 0	€ 20,762	€ 166
NETHERLANDS	€ 547,106	€ 675,477	€ 441,189	€ 5,653	€ 0
POLAND	€ 17,258	€ 252,444	€ 40,846	€ 11,684	€ 407
PORTUGAL	€ 220,014	€ 646,451	€ 146,672	€ 3,177	€ 22,079
SLOVAK REPUBLIC	€ 47,845	€ 78,386	€ 49,754	€ 10	€ 0
SLOVENIA	€ 88,722	€ 38,647	€ 30,359	€ 0	€ 0
SPAIN	€ 281,289	€ 1,088,129	€ 2,235,152	€ 21,595	€ 182,516
SWEDEN	€ 47,183	€ 553,338	€ 169,316	€ 155,947	€ 12,032
UNITED KINGDOM	€ 433,998	€ 3,118,075	€ 1,618,055	€ 1,174,221	€ 262,201
TOTALS	€ 5,153,274	€ 21,143,791	€ 8,005,251	€ 2,959,123	€ 524,089
GRAND TOTAL	€ 37,785,528				

UNINTENDED ADVERSE CONSEQUENCES

One could make a fairly strong case that the extent of unintended adverse consequences, such as social costs associated with increases in problem and pathological gambling, increases in crime associated with gambling, changes in bankruptcies, suicides, etc., would be quite similar under the Baseline Scenario and the First Alternative Scenario. This would be the case if the alternative institutional relationships between governments and service providers still delivered the same level and efficiency of consumer protections and other safeguards. Since the prices of gambling services and the level of constraints placed on the gambling services sectors remain more or less the same under these alternatives, there should not be much difference in unintended adverse consequences between them.

However, under the Second Alternative Scenario, there may very well be an increase in various unintended adverse consequences associated with gambling. As our review of the scientific literature revealed, there are several studies which show no statistically significant linkage between expanded gambling offerings and bankruptcies while several others show a statistically significant but relatively small linkage between expanded gambling offerings and bankruptcies. Results of the peer reviewed research on the relationship of expanded gambling to crime have produced mixed results, with instances of increases, no change, and decreases relative to the availability of casino gaming. As a result, the scientific evidence on direction and magnitude of expanded gambling offerings and crime is not conclusive one way or the other. (See pages 378-381.) There is no clear scientific research that links increases in the availability of gambling services to increases in the rates of problem and pathological gambling, even though there is considerable evidence that suggests this might be the case.[83] Nonetheless, under this Scenario, there very well may be increased attention paid to these possibilities, and a subsequent political backlash because of the perception (if not the reality) of the consequences of such expansion.[84]

Among other findings, it is clear from the results of this analysis that Member States of the European Union need to sponsor or encourage additional scientific research to address many of these important social impact questions. In the interim, policy will have to be made based upon the limited research that is available, much of which was generated in other countries, with perhaps important social, political, and cultural differences.

---

[83] See, for example, Volberg, R. A. 2001. *Gambling and Problem Gambling in North Dakota: A Replication Study, 1992 to 2000*. Report to the North Dakota Office of the Governor. Bismarck, ND: Office of the Governor, and Abbott, M. W., & Volberg, R. A. (1996), "The New Zealand National Survey of problem and pathological gambling," Journal of Gambling Studies, 12, 143–160.

[84] This indeed has been the case in Australia, New Zealand, and some Canadian provinces since the 1990s. For a serious study of this issue in considerable depth, see Productivity Commission (1999), *Australia's Gambling Industries*, Report No. 10, AusInfo, Canberra.

FINAL CONCLUSIONS

As this report has demonstrated, there is a considerable need for more uniform compilation of economic data relating to the gambling services industries in the EU. National reporting is scarce and in those instances where we could not find such data, we had to rely largely on trade association reports or survey results, which are effectively self-reported data, for which there is no easy way to validate accuracy or veracity. Where there were major gaps in data and information (as is the case with the charities and non-profits, media gambling services, and sales promotion services sectors), we had to rely solely on survey results or secondary (non-refereed) sources such as consultancy reports, or we were unable to find any information or data to report.

If future policy in the EU is going to be based on accurate data and factual information, and advised by evidence-based research, then there is going to have to be a greater commitment by Member States, service providers and other stakeholders in addressing these information and research shortcomings. The fact that gambling services in the EU are already characterized by revenues in excess of €50 billion as well as substantial contributions to tax revenues and good causes suggests that this should be a fairly high priority. This implies a commitment to develop official statistics to cover the gambling services industries, broken down by gambling services sector and by the individual Member States.[85]

[85] An excellent model is the official statistics gathered by the State of Nevada on its casino industry. See http://gaming.nv.gov/publications.htm