UBS

# UBS Investment Research

# PartyGaming

## Party diffused

Global Equity Research

United Kingdom

Casinos

| | |
|---|---|
| **Rating** | **Reduce 2*** |
| | *Prior: Neutral 2* |
| **Price target** | **75p/US$1.41** |
| | *Prior:135p/US$2.54* |
| **Price** | **107p/US$2.01** |

RIC: PRTY.L BBG: PRTY LN

**19 September 2006**

### ■ Weak long-term prospects

In this report we look at the long-term prospects for online poker under the current regulatory environment and conclude that revenues are likely to decline materially in the future. This view is based on two models: a 'diffusion' model and a 'predator-prey' model. Despite our view that short-term trading is healthy, we believe this is outweighed by the weakness of the long-term prospects. As a result, we downgrade PartyGaming to Reduce 2 from Neutral 2.

### ■ Attracting 'fish' becoming tougher

Attracting poor players - the fish - to feed the good ones - the sharks - is the only way the online poker model works. With advertising restrictions growing globally, we believe that customer acquisition will become more difficult. Our models show a decline in the growth of new customers, leading to falling revenues and profits.

### ■ Diversification remains key

We believe that diversification into other forms of gaming will help the group. However, PartyGaming's size in poker dwarfs its revenues from other areas, suggesting it is most at risk of the major betting operators.

### ■ Valuation: DCF - 75p per share

We value PartyGaming on a DCF basis. Our valuation now reflects the expected long-term decline in revenue which flows from our model assumptions. While a move to other forms of gaming is to be applauded, in our view it still does not make up for the potential decline in poker. We have cut our price target to 75p from 135p, and downgrade the stock to Reduce 2.

| Highlights (US$m) | 12/04 | 12/05 | 12/06E | 12/07E | 12/08E |
|---|---|---|---|---|---|
| Revenues | 602 | 978 | 1,371 | 1,532 | 1,475 |
| EBIT (UBS) | 386 | 571 | 734 | 830 | 786 |
| Net income (UBS) | 352 | 532 | 696 | 793 | 764 |
| EPS (UBS, US$) | 0.09 | 0.13 | 0.17 | 0.20 | 0.00 |
| Net DPS (UBS, US$) | 0.00 | 0.05 | 0.09 | 0.10 | 0.10 |

| Profitability & Valuation | 5-yr hist. av. | 12/05 | 12/06E | 12/07E | 12/08E |
|---|---|---|---|---|---|
| EBIT margin % | - | 58.4 | 53.5 | 54.2 | 53.3 |
| ROIC (EBIT) % | - | <-500 | >500 | 422.8 | 312.5 |
| EV/EBITDA x | - | 15.2 | 10.2 | 8.7 | 9.2 |
| PE (UBS) x | - | 16.5 | 11.5 | 10.1 | - |
| Net dividend yield % | - | 2.4 | 4.3 | 5.0 | 4.8 |

*Source: Company accounts, Thomson Financial, UBS estimates. (UBS) valuations are stated before goodwill, exceptionals and other special items.*
*Valuations: based on an average share price that year, (E): based on a share price of 106.75p on 18 Sep 2006 23:39 BST*

**Julian Easthope**
Analyst
julian.easthope@ubs.com
+44-20-7568 1964

**Mark Elliott**
Associate Analyst
mark.elliott@ubs.com
+44-20-756 82571

### Trading data (local/US$)

| | |
|---|---|
| **52-wk. range** | 155p-71/US$2.85-1.25 |
| **Market cap.** | £4.28bn/US$8.03bn |
| **Shares o/s** | 4,000m (ORD) |
| **Free float** | 23% |
| **Avg. daily volume ('000)** | 42,650 |
| **Avg. daily value (£m)** | 45.2 |

### Balance sheet data 12/06E

| | |
|---|---|
| **Shareholders' equity** | US$0.49bn |
| **P/BV (UBS)** | 16.5x |
| **Net cash (debt)** | US$0.32bn |

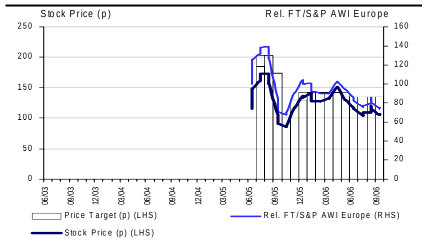
### Forecast returns

| | |
|---|---|
| **Forecast price appreciation** | -29.9% |
| **Forecast dividend yield** | 5.0% |
| **Forecast stock return** | -24.9% |
| **Market return assumption** | 10.0% |
| **Forecast excess return** | -34.9% |

### EPS (UBS, US$)

| | 12/06E | | | 12/05 |
|---|---|---|---|---|
| | From | To | Cons. | Actual |
| **Q1E** | - | - | - | - |
| **Q2E** | - | - | - | - |
| **Q3E** | - | - | - | - |
| **Q4E** | - | - | - | - |
| **12/06E** | 0.17 | 0.17 | *0.17* | |
| **12/07E** | 0.20 | 0.20 | *0.20* | |

### Performance (p)




*Source: UBS*

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**This report has been prepared by UBS Limited**

**ANALYST CERTIFICATION AND REQUIRED DISCLOSURES BEGIN ON PAGE 32**



***Exception to core rating bands; See Page 33**

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**Julian Easthope**
Analyst
julian.easthope@ubs.com
+44-20-7568 1964

**Mark Elliott**
Associate Analyst
mark.elliott@ubs.com
+44-20-756 82571

# Overview

**We believe that the online poker model is flawed in the long term. Small groups of skilled players create the majority of rake for PartyGaming and we believe they only play while making a profit. Using this fundamental assumption, we have analysed the business using two mathematical models – one based on 'diffusion' and one on a 'predator-prey' basis. We believe the market misunderstands the main driver of growth: it is focusing on new customer sign-ups, while we believe it should be focusing on *rising growth* in new customer sign-ups.**

**Downgrading to Reduce 2, price target cut to 75p**

**Advertising restrictions in the US, the group's main market, have led to a material slowdown in growth there (new sign-ups fell from 143,500 in H1 2005 to 125,500 in H1 2006), so it is now more reliant on markets elsewhere. Yet the rescinding of BWIN's licence in Germany and advertising restrictions in Italy suggest things are getting tougher in Europe as well. We believe Party is within a year of seeing lower growth in sign-ups, leaving it exposed to a material revenue reduction as the sharks seek easy pickings elsewhere. We have cut our rating from Neutral 2 to Reduce 2 and our price target from 135p to 75p.**

**Small numbers of good players (sharks) drive Party's income; but it needs large numbers of weak players (fish) to make a profit**

The biggest challenge in understanding the concept behind this report is to recognise the dynamics of how a poker website works. In our view, the common conception is that a poker site is a forum for casual players to have some fun playing poker, and that this generates most of the income. We do not believe this is the case. In our view, a relatively small number of people generate the majority of the revenue. These customers play for money – with many of them using it as their main source of income. If the site became so competitive that they did not make any money, these players would change sites or give up. The company itself defines its players into two categories:

**Sharks: dominate the revenue stream**

- **Sharks:** These are good players that generate a substantial amount of the rake for poker sites. Party stated at its IPO that 10% of customers generate 70% of the income. This has risen to 77% currently. These players are experts, play multiple tables, analyse results and play patterns. They can make a reasonable living out of the game.

**Fish: inadvertently drive growth and profitability**

- **Fish:** These players tend to be new sign-ups with limited experience and who lose money. Over time, a number of them tend to become either disillusioned or bored with the game, and find alternative sources of entertainment.

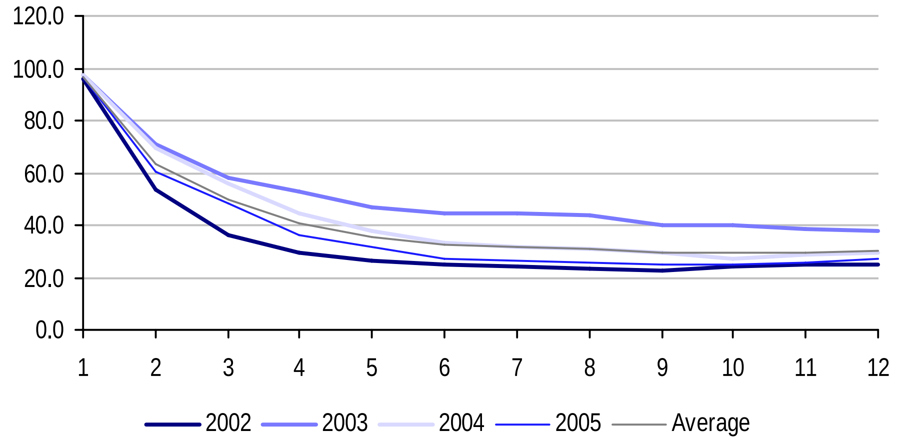
**Empire saw large attrition when weak players disappeared**

Loyalty is not a key part of the customer base, as was demonstrated last year, when the 'skins' (very large affiliates that make money by directing gambling traffic to Party's website) saw a material revenue decline following PartyGaming's decision to exclude them from its new platform. Empire Online – a very large affiliate of Party Gaming – was one such skin. When Party changed its platform to remove customers using the skins from playing against the large numbers of weak players, half of these people left and joined Party direct. Effectively, half of the main players were only on Empire as it provided a cheap way into Party's liquidity.

**Party's success driven by acquisition of fish**

Party believes the key to its success is its ability to attract fish to the site. It is important to understand the distinction between a typical business model and the PartyGaming model. Chart 1 shows the attrition rate at PartyGaming – with data derived from its full-year presentation.

**Chart 1: Party gaming attrition rate 2002-05 by month of attrition (Y axis months) – %**

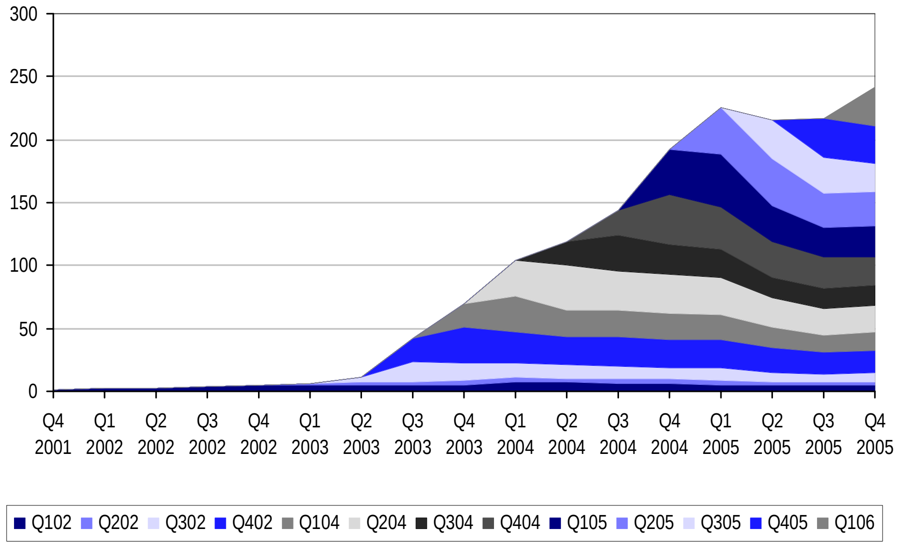



Source: PartyGaming presentation

**Within a year 70% plus players leave the Party network**

The chart shows the rate at which new players attracted to the site subsequently leave. For example, within four months of deciding to play at Party, c60% of players leave the site. This eventually falls to an attrition rate of c73% by the end of one year. It shows the life cycle of the fish, who quickly discover that being fed to sharks is not that much fun. Those that survive must be fairly good, as demonstrated by Chart 2.

**Chart 2: Rake generated by new customer sign-ups by quarter US$m**




Source: PartyGaming

**Remaining players make up the revenue shortfall as they become better**

This chart shows the amount made by players drawn to the site since inception. It appears that the amount made by the remaining 27% of the customer base is not a whole lot different from the 100% of sign-ups. This suggests that the fish progressively get better at playing poker as time goes on, until at some point they have effectively turned into sharks.

**Fish are the real revenue drivers**

We describe in this report two different mathematical models that show the relationship between sharks and fish. We believe they conclusively demonstrate that finding new fish to feed to the sharks is the most important requirement for PartyGaming to succeed over the next few years. In other words, while the sharks generate most of the income, the *real* driver of growth lies in finding as many new fish as possible: without these fish, the model falls apart.

**Rising growth in customer sign-ups – the key to profit enhancement**

Given that Party has been successful historically, why should it not be able to sustain the model? The reason is the need to provide increasing numbers of new fish. Given that the number of sharks increases over time as players improve, it is easy to understand that increasing numbers of fish will be required to feed the system. **So it is not customer sign-ups per se that are the driver of growth, but *rising growth* in customer sign-ups**. The two models we look at are:

- A diffusion model
- A predator-prey model

We make the following assumptions about the poker market generally – assumptions which seem to be backed up by thinking at Party Gaming.

## Diffusion model – more intelligent fish

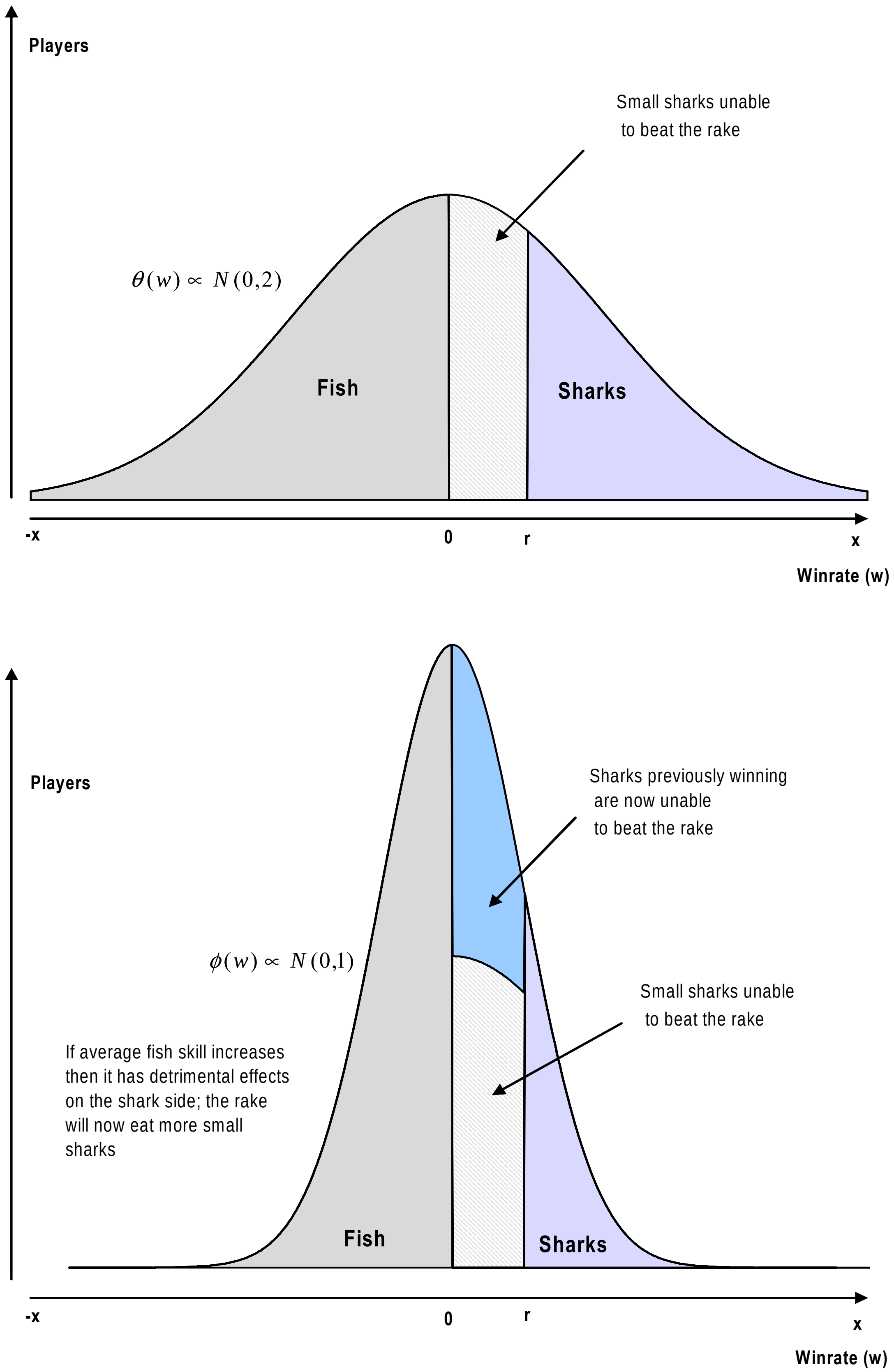
**Diffusion model – the most compelling – based on the assumption that some fish can evolve into sharks over time as they improve**

The first model we look at is called the diffusion model. We believe this model best fits the current situation. It models the assumption that players get better over time, and uses 12 levels of skill, with a player starting off at level 0 and progressively getting better. This is important for sharks since, as the fish become better at playing, it takes more games to win a given amount of cash. Each additional game costs more in rake, so the profitability of the sharks, on average, is reduced. The quality of players on a poker site is based around a normal distribution. It is of course a zero sum game: what is won by one player is lost by another. However, overall, the players lose cash, as the rake made by the online operators eats into PartyGaming's profits. In 2005, PartyGaming took nearly US$860m of rake out of the system.

**As weak players get better at poker the normal distribution compacts**

The problem with a fish learning to play better is that the normal distribution of player skill becomes considerably narrower. Chart 3 shows this graphically. In the upper diagram, we see a poker site in its infancy. There is a very wide skill difference between the best (towards the right) and worst players (towards the left). The diagonally shaded area represents above-average players who would be marginal winners in a zero-rake game, but are in fact net losers after paying rake to PartyGaming. Now, turning to the lower diagram, we see that over the course of time the fish have improved relative to the sharks, and the range of abilities on the x-axis is no longer as wide. This squeezes the whole distribution together, and all the players to the right (sharks) have lower win rates. In fact, for some of the lesser sharks (shaded in blue) the situation has got so bad they are now actually net losers after paying the house rake. We believe this trend results in a large number of them leaving the site for good, causing revenue loss.

**Chart 3: Diffusion model - The detrimental effects of a maturing player pool**




Source: UBS. The area for both charts is the same because the total number of players is unchanged. In the lower chart there is a smaller range of abilities.

## Predator-prey model

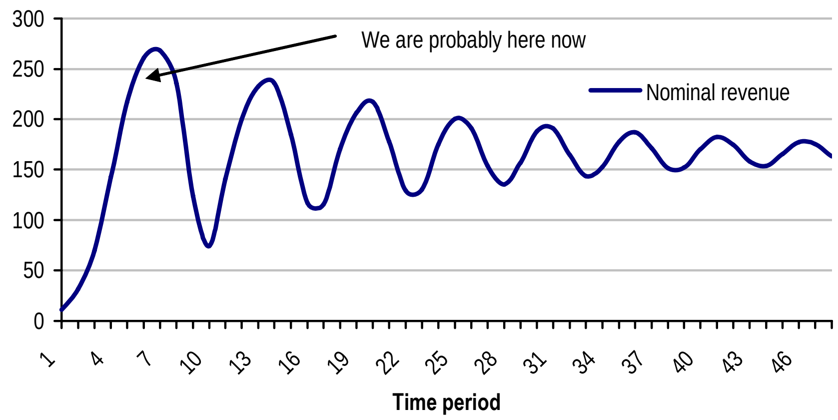
**Lessons can be learnt from the Lokta-Volterra predator-prey model, but adaptations are needed**

The second model we look at uses the Lokta-Volterra predator-prey model for showing the potential growth in the market. We explain the model, which is based on an eco-system, in detail later in the report. Using sharks and fish, it can be described in simplified form as follows.

**This suggests revenues will move in waves**

A sea is full of fish. A shiver of sharks are introduced into this sea, with each shark eating, say, two fish a day. The sharks flourish and breed to a level where the numbers of fish start to fall faster. The shark population continues to increase until there are not enough fish to eat. The shark numbers then start to fall as the famine starts to bite, giving the opportunity for fish numbers to increase again. This provides the fluctuating population wave, as shown in the chart below. This model has one or two problems with it (which is why we prefer the diffusion model) but the concepts are easier to grasp initially.

**Chart 4: Revenues from a predator-prey model (nominal scales)**




Source: UBS estimates

## Both models illustrate the importance of the derivative of new sign-ups

We believe both these models fairly reflect the likely pattern of the online poker market. If this is indeed the case, it is unlike a normal business model. In a normal start-up business model, revenue growth initially accelerates, then slows to a sustainable rate. This sustainable rate of revenue growth, on a constant cost base, would effectively deliver profits growth.

**Long-term compounding of growth unsustainable**

However, this is not the case in online poker. As the existing base becomes better educated, some fish develop into sharks, thus increasing the percentage of sharks, which in turn means a greater number of fish is required to ensure the system remains in equilibrium. Effectively, this means that simple new customer acquisition is not an important measure: the only way the system can continue to grow is if new customer growth in a given year is higher than the growth seen in the previous year. This is clearly unsustainable in the long term, as it would ultimately require more people coming into the system than there are on the planet. The key question is – where are we in the cycle?

## US year-on-year growth decelerating

**US customer acquisition in decline**

The group has hitherto been very focused on the US – with around 80% of income coming from there. But with the percentage of new sign-ups coming from the US in decline, Party's focus for a while now has been on increasing its base outside the US.

**Advertising restrictions do not help**

One of the main problems faced by the company is the clampdown on advertising by the Department of Justice. The industry has been facing an advertising clampdown since 2004, but it appears that the squeeze is intensifying. The DoJ has told media groups it believes that taking advertising revenue from online gaming websites is effectively a form of aiding and abetting an activity that is deemed illegal in most states. A number of groups responded: for example, Discovery Networks immediately ceased taking advertising. A defence for taking advertising is that firms could well be within their First Amendment rights in advertising on behalf of internet groups, but this has not yet been tested in court. We describe the regulatory position in the next section.

**US growth down in Q1 and Q2**

The group announced at its Q2 KPI update that 46% of new customer sign-ups came from outside the US compared with 23% in Q2 05. A similar situation occurred in Q1 where 125,500 new customers were signed up in 2006 against 143,500 in 2005. A similar situation occurred in Q2 where 160,000 new customers were acquired in 2006 against 180,000 in Q1 2005. This slowdown would cause a fall in revenue under our model – but the difference has been made up in Europe.

## Looking to Europe to sustain growth for now

**Regulators in Europe – the main driver of new Party fish – starting to clamp down too**

Europe has been the main driver of growth over the last few quarters, and we expect this to continue, but there are regulatory issues here too, as has been felt in both Italy and Germany. The Italian authorities have restricted advertising and non-licensed sites. Even though this appears to fly in the face of the Gambelli ruling, it has been done nonetheless. In Germany, the Saxony local authorities have just revoked Bwin's betting licence, which will result in more restrictive advertising. Even in the UK, if you have no local licence then advertising restrictions apply. We believe that the EU authorities are also starting to fight back, making it more difficult to gain new sign-ups.

## Conclusion

**Online poker – approaching maturity**

While the website has performed extremely well in 2006, we believe it is now approaching maturity. If new sign-up growth starts to slow, so will revenue. While H1 is likely to be good, we believe that long-term growth is vulnerable.

# Valuation

Our new forecasts by division are shown in Table 1.

**Table 1: Medium-term forecasts**

| YE Jan - US$m | 2002 | 2003 | 2004 | 2005 | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|---|
| Poker | | | | | | | |
| Average daily active players | 1297 | 17043 | 77094 | 129815 | 162269 | 186609 | 184743 |
| Average yield per player | 20.8 | 19.5 | 19.1 | 17.5 | 17.2 | 16.8 | 16.5 |
| Party gaming revenue | 9.8 | 121.3 | 537.5 | 830.4 | 1017.2 | 1146.4 | 1112.2 |
| Skins | 0.0 | 2.4 | 15.5 | 28.7 | 1.2 | 0.0 | 0.0 |
| Poker revenue | 9.8 | 123.7 | 553.0 | 859.1 | 1018.4 | 1146.4 | 1112.2 |
| Casino | | | | | | | |
| Average daily active players | 580 | 832 | 1797 | 7986 | 25000 | 28750 | 28463 |
| Average yield per player | 91 | 97 | 74 | 40.7 | 38.7 | 36.7 | 34.9 |
| Casino revenue | 19.2 | 29.4 | 48.5 | 118.6 | 352.8 | 385.5 | 362.5 |
| Other revenue | 1.1 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total revenue | 30.1 | 153.5 | 601.7 | 977.7 | 1371 | 1532 | 1475 |
| Less costs | | | | | | | |
| Distribution expenses | | | | | | | |
| Affiliate fees | -5.1 | -13.3 | -53.7 | -99.4 | -155.0 | -173.2 | -166.7 |
| Acquisition & retention | -3.3 | -10.6 | -37.6 | -100.1 | -165.0 | -184.3 | -177.5 |
| Chargebacks | -3.6 | -8.2 | -36.7 | -48.9 | -65.0 | -72.6 | -69.9 |
| Customer bonuses | -0.4 | -1.6 | -10.0 | -11.3 | -25.0 | -27.9 | -26.9 |
| Webhosting | -0.8 | -1.2 | -4.2 | -11.4 | -18.0 | -20.1 | -19.4 |
| Total distribution expenses | -13.2 | -34.9 | -142.2 | -271.1 | -428.0 | -478.1 | -460.3 |
| Trasaction fees | -3.3 | -9.8 | -29.3 | -46.2 | -70.0 | -78.2 | -75.3 |
| Staff costs | -1.6 | -8.3 | -18.6 | -38.4 | -70.0 | -73.5 | -77.2 |
| Emerging games | | | | | 3.0 | 8.0 | 8.8 |
| Unallocated | | | | | -2.0 | -2.0 | -2.2 |
| Other overheads | -5.6 | -10.2 | -20.6 | -38.3 | -44.0 | -46.2 | -48.5 |
| EBITDAR | 6.4 | 90.3 | 391.0 | 583.7 | 760.2 | 861.8 | 820.1 |
| Depreciation | -0.4 | -0.8 | -4.6 | -13.0 | -25.0 | -26.0 | -27.0 |
| EBITA | 6.0 | 89.5 | 386.4 | 570.7 | 735.2 | 835.8 | 793.1 |
| Share based payments | 0.0 | 0.0 | -3.2 | -65.4 | -60.0 | -40.0 | 0.0 |
| Amortisation | -0.2 | -0.3 | 0.0 | -4.3 | -25.0 | -25.0 | -25.0 |
| EBIT | 5.8 | 89.2 | 383.2 | 501.0 | 650.2 | 770.8 | 768.1 |

Source: UBS estimates

Our new EPS forecasts are derived from this as follows.

### Table 2: Medium-term profit and loss account

| YE Dec - US$m | 2002 | 2003 | 2004 | 2005E | 2006E | 2007E | 2008E |
|---|---|---|---|---|---|---|---|
| **Turnover** | 30.1 | 153.5 | 601.7 | 977.7 | 1,371.2 | 1,531.9 | 1,474.8 |
| **EBITDAR** | 6.4 | 90.3 | 391.0 | 583.7 | 760.2 | 861.8 | 820.1 |
| **EBITA** | 6.0 | 89.5 | 386.4 | 570.7 | 735.2 | 835.8 | 793.1 |
| **Interest** | 0.0 | 0.0 | -11.5 | -7.5 | 6.5 | 14.6 | 26.3 |
| **Profit before tax** | 6.0 | 89.5 | 374.9 | 563 | 742 | 850 | 819 |
| **Tax** | -1.1 | -5.6 | -21.6 | -31.7 | -44.5 | -51.0 | -49.2 |
| **Tax rate** | 18.2 | 6.3 | 5.8 | 5.6 | 6.0 | 6.0 | 6.0 |
| **Profit after tax** | 4.9 | 83.9 | 353.3 | 531.5 | 697.2 | 799.4 | 770.2 |
| **Exceptional** | 0.0 | 0.0 | 0.0 | -168.4 | 0.0 | 0.0 | 0.0 |
| **Tax on exceptionals** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Amortisation** | -0.2 | -0.3 | -3.2 | -69.7 | -85.0 | -65.0 | -25.0 |
| **Minority interests** | -0.3 | -6.6 | -1.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Dividends payable** | -13.2 | -9.0 | -22.8 | -200.0 | -348.6 | -399.7 | -385.1 |
| **Retained profit** | -8.8 | 68.0 | 325.6 | 93.4 | 263.6 | 334.7 | 360.1 |
| **Shares in issue** | 3,802.6 | 3,802.6 | 3,802.6 | 4,000.0 | 4,000.0 | 4,000.0 | 4,000.0 |
| **EPS (c)** | 0.1 | 2.0 | 9.2 | 13.3 | 17.4 | 20.0 | 19.3 |
| **EPS (p)** | 0.07 | 1.1 | 5.1 | 7.5 | 9.2 | 10.6 | 10.2 |
| **DPS ($)** | | | | 0.053 | 0.087 | 0.100 | 0.096 |

Source: UBS estimates

**DCF valuation based on 12.5% WACC**

We believe that growth can be sustained in 2006, will slow in 2007 and then we see declines in 2008 as customer sign-ups slow. Based on the above forecasts, we have a new DCF to model this decline. We maintain a 5% risk premium – high in reflection of regulatory risk – due to which we estimate WACC at 10.0%.

### Table 3: WACC - estimate

| ASSUMPTIONS | |
|---|---|
| **Risk-free rate** | 5.0% |
| **Beta** | 1.0 |
| **Market risk premium** | 5.0% |
| **Cost of equity** | 10.0% |
| **Cost of debt** | 5.5% |
| **Long-term growth** | -1.0% |
| **D/EV** | 4% |
| **E/EV** | 96% |
| **Tax rate** | 6.0% |
| **WACC** | 10.0% |

Source: UBS estimate

Our DCF is shown in Table 4.

### Table 4: Discounted cash flow

| CASH FLOWS | | 2006E | 2007E | 2008E | 2009E | 2010E | 2011E | 20012E | 2013E | 2014E | 2015E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **EBITA** | 0 | 735 | 836 | 793 | 752 | 711 | 697 | 683 | 670 | 656 | 643 |
| *<Growth>* | | | *14%* | *-5%* | *-5%* | *-5%* | *-2%* | *-2%* | *-2%* | *-2%* | *-2%* |
| **Depreciation** | | 25 | 26 | 27 | 28 | 29 | 32 | 35 | 39 | 42 | 45 |
| **Chg. in wkg cap.** | | (100) | 10 | 10 | 10 | 10 | 11 | 12 | 13 | 15 | 15 |
| **Other** | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| **Operating cash flow** | | 660 | 872 | 830 | 790 | 750 | 740 | 730 | 721 | 713 | 705 |
| **Taxes** | | (6) | (6) | (6) | (6) | (5) | (6) | (6) | (7) | (8) | (8) |
| **Capital expenditure** | | (60) | (65) | (69) | (75) | (80) | (88) | (97) | (107) | (117) | (121) |
| **Free cash flow** | | 595 | 801 | 755 | 709 | 665 | 646 | 627 | 608 | 588 | 576 |
| **Terminal Value** | | | | | | | | | | | 5182 |
| **Total Free c/f** | | 595 | 801 | 755 | 709 | 665 | 646 | 627 | 608 | 588 | 5757 |
| **Present Value** | 6106 | | | | | | | | | | |
| **PV of terminal value** | 1998 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5,182 |
| **Firm value** | 6106 | | | | | | | | | | |
| **Net (debt)/cash** | -347 | | | | | | | | | | |
| **Minority interest** | 0 | | | | | | | | | | |
| **Equity value** | 5758 | | | | | | | | | | |
| **Number of shares** | 4000 | | | | | | | | | | |
| **Value per share (c)** | 143.96 | | | | | | | | | | |
| **Value per share (p)** | 76 | | | | | | | | | | |

Source: UBS estimates

# Regulatory situation

In this section we consider three issues:

- The regulatory background
- Current trading
- Differing growth rates

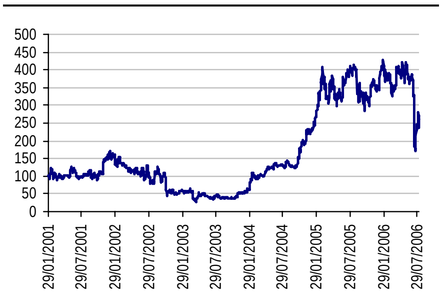
**Online gaming stocks weak in recent months**

The online gaming sector has endured a very tough share price performance over the last couple of months, mainly due to regulatory issues in the US. All the major operators have seen substantial share price declines, as shown in Charts 5 to 7 below. We do not believe that now is the time to get involved in the sector – especially given the ongoing nature of the US regulatory issues. While we are convinced that the US Senate will reject the Goodlatte and Leach Bill (see below), it is likely that the Department of Justice will keep the pressure up to make it as difficult as possible to find an alternative site and transfer funds. This will inevitably put pressure on growth rates.

**Chart 5: PartyGaming**

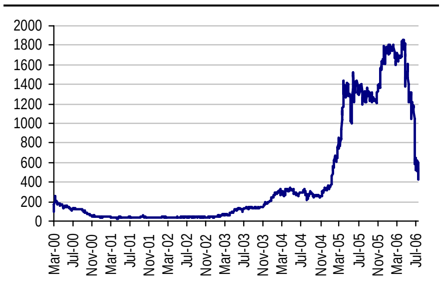

Source: Thomson Financial

**Chart 6: Sportingbet**




Source: Thomson Financial

**Chart 7: Betandwin**




Source: Thomson Financial

## Regulatory background

We believe there are three main issues concerning the regulatory situation:

- The Goodlatte/Leach Bill
- The closure of Betonsports website and arrest of its CEO – David Caruthers
- The announcement that Peter Dicks – non-executive chairman of Sportingbet had been detained in New York as he has been charged with gambling with a computer as part of an investigation by Louisiana authorities
- The imposing of stricter advertising restrictions by the Department of Justice

### The Goodlatte/Leach Bill

**Goodlatte/Leach bill passes the House of Representatives**

The US House of Representatives passed the Goodlatte/Leach Bill in July – the third time a bill aimed at stopping online gaming has been through the House. It now goes to the Senate, where we believe it will fail once again. The Bill – if enacted – would effectively update the Wire Act, a piece of legislation passed in 1960 and designed to restrict interstate betting over telephone lines. Specifically, the Act (formulated obviously before the internet, mobile phones etc.) 'prohibits the provision of bets or wagers on any sporting event or contest across state borders if a wire communication facility is involved'.

**Confused regulatory situation – Wire Act applies, but is out of date**

This wording has led to a highly confused situation in the US market. Given that the internet uses wire communication, it would appear that the Act covers the internet. However, proponents of online gambling believe the Act cannot apply to the internet as it pre-dates the latter's invention. Judge John Duval at the 5th Circuit Court of Appeals ruled in 2002 that the Act bans betting but not necessarily gaming. Yet the Department of Justice's opinion is that it covers betting of any kind. The subject is thus confused further by issues surrounding jurisdiction.

The Goodlatte/Leach Bill, if it becomes law, would effectively broaden the scope of the Wire Act to capture all types of gambling and all types of communication facilities, including the internet. However, the failure hitherto of attempts to regulate the industry or prohibit it has left existing operators exploiting the regulatory void.

**Case law suggest that transactions take place where the server is**

In the case of most gambling websites, the companies are operated by foreign individuals and incorporated legally overseas, with no physical presence of any kind in the US. In one court case – Yahoo! vs the French courts – it was ruled that internet transactions take place in the country where the server is located. If this is the case, the Wire Act becomes an irrelevance. The only way the US could stop gambling online would be to make it a criminal offence and prosecute the participants – which seems unlikely.

The approach taken by the US authorities so far is to make life awkward and difficult for gamblers wanting to participate. The Department of Justice has attacked the issue in two ways:

- Payment processing; and
- Advertising

**Payment processing already restricted**

Restrictions have already been put in place on payment processing, especially by credit and debit cards. The authorities are also clamping down on advertising; most internet service providers restrict online advertising on US-based PCs. The Travel Channel also stopped advertising online sites during its coverage of the World Poker Tour. However, this has not had a material impact on stopping the growth in betting so far. The situation has been likened to the prohibition of alcohol in the US in the 1920s – and is considered to be similarly ineffective.

The Goodlatte/Leach Bill would clear this up, and provide teeth by:

- Putting the onus on banks to stop the transfer of funds to gambling companies, including the use of credit cards;
- Allowing injunctions against the operators of online gaming companies;

- Helping the US Government to cooperate internationally on money laundering.

However, the Bill also includes so-called carve-outs for areas such as state lotteries, which makes for bad legislation. We believe the Bill will fail in the Senate for this reason, and due to time constraints ahead of the mid-term elections in November.

### WTO case

**US potentially in breach of the WTO**

Antigua and Barbuda brought a case against the US in 2003, claiming that US restrictions on online gambling breached the General Agreement on Trade in Services (GATS). Antigua alleged that the US Government crackdown on offshore gambling was hurting Antigua's internet industry, destroying jobs and reducing government revenue. In November 2004, the WTO found in favour of Antigua, suggesting that the US was violating international laws. The decision was appealed by the US, but in April 2005 the appellate body sided with the original judgement that the US had a general obligation to allow gambling across borders as part of a free trade treaty. Rather confusingly, both sides claimed victory, with the Office of the US Trade Representative insisting that the government needed to clarify 'one narrow issue'.

**Carve-outs confuse the Bill further**

The main issue facing the US is what is known as carve-outs. While online gaming is in most cases illegal, a number of states do allow online gaming on state lotteries, and some states on horseracing. These exceptions make it extremely difficult for the US to justify banning online gaming internationally.

**Stalemate likely to persist**

We believe that the current stalemate will persist, with the US authorities making it as difficult as possible for US citizens to bet online from the US. However, with the strong resolve of most of these gamblers, there is usually a way around most obstacles.

## Arrest of David Caruthers and Peter Dicks

The share prices had also been impacted by the arrest of Betonsports CEO - David Caruthers and Sportingbet's independent non-executive chairman – Peter Dicks. Both arrests appear to be unconnected – but continue to highlight the sensitivity of the subject in the US.

# Diffusion model: Modelling the fish tank

Understanding the dynamics of a poker site is extremely difficult. We believe that to find an analytic solution for rake, it would be necessary to consider differential equations (that are probably unsolvable), mathematical biology (but most theoretical work done by academics does not apply here), wave theory (in many dimensions), and above all, diffusion (Einstein won a Nobel prize for explaining Brownian motion). In other words, it is far beyond us.

**Modelling a fish tank is highly complex**

However, by resolving the problem to a few tractable areas, and making a few assumptions that we believe to be reasonable, based on discussions with hundreds of top poker players, we can get a long way.

**We have opted for a pragmatic approach**

In the creation of this report, we created several different models. The one we predominantly rely on is the diffusion model. However, we have also elected to include our analysis on an alternative predator-prey model because, while ultimately inferior, it is much easier to grasp and reaches similar conclusions.

We define two sorts of poker players:

- **Fish** – otherwise known as 'donkeys' or 'donators'. These players are net losers. They are either recreational players, or players who take the game seriously but have a lot to learn. They can either afford to lose (and know this), or, more commonly, they believe they are long-term winners but are, in fact, just presently unlucky. They rarely understand the level of thought that is put into the game by their seemingly lucky opponents.

- **Sharks** – essentially these are players who have become skilled. They are net winners and play the game for profit. Typically, they play four or more tables at a time to maximise earnings, and this can go up to 10 or more tables simultaneously in some cases. They have external aids, such as extensive player databases, recording hundreds of thousands of hands, and profiling player tendencies, and probably spend at least an hour a day reviewing their play in an intellectual way. Importantly, playing for 'fun' is not what appeals to these players and if they cannot make a profit (ie, there are not enough fish per shark), they are very unlikely to stick around.

Of course, this is overly simplistic. In reality, there is a continuous scale of abilities and goals; and in our model below, we have a range of skill levels from 0-12. We go through several steps below, each time making the model more sophisticated.

### Step one – real players

Consider a poker site that starts with zero players in time period zero, then adds 50 players every year for ever. Each player plays the same amount, and nobody ever leaves the site.

**Real players – a simple model based on no one leaving the site**

### Chart 8: Step one – the shaded area represents winning players

| T | | | | | | | | | | | | | | | | Winner | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tables | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 6.5 | 7 | | | | |
| | Chance of non-promotion | | 0% | 50% | 67% | 75% | 80% | 83% | 86% | 88% | 89% | 90% | 91% | 92% | | | | |
| | Chance of promotion | | 100% | 50% | 33% | 25% | 20% | 17% | 14% | 13% | 11% | 10% | 9% | 8% | | Break-Even | | Required skill |
| T | Skill Level ( / 12) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | Skill | Rake | to win |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 1 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0.0 | 0.5 | 0.5 |
| 2 | 50 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0.5 | 0.5 | 1.0 |
| 3 | 50 | 50 | 75 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0.8 | 0.5 | 1.3 |
| 4 | 50 | 50 | 88 | 54 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 1.1 | 0.5 | 1.6 |
| 5 | 50 | 50 | 94 | 80 | 24 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 1.3 | 0.5 | 1.8 |
| 6 | 50 | 50 | 97 | 100 | 45 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 1.5 | 0.5 | 2.0 |
| 7 | 50 | 50 | 98 | 115 | 67 | 17 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 1.7 | 0.5 | 2.2 |
| 8 | 50 | 50 | 99 | 126 | 89 | 31 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 1.9 | 0.5 | 2.4 |
| 9 | 50 | 50 | 100 | 134 | 108 | 47 | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | | 2.1 | 0.5 | 2.6 |
| 10 | 50 | 50 | 100 | 139 | 126 | 64 | 18 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | | 2.2 | 0.5 | 2.7 |
| 11 | 50 | 50 | 100 | 142 | 141 | 83 | 28 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | | 2.4 | 0.5 | 2.9 |
| 12 | 50 | 50 | 100 | 145 | 153 | 102 | 40 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | | 2.5 | 0.5 | 3.0 |
| 13 | 50 | 50 | 100 | 147 | 163 | 120 | 54 | 15 | 2 | 0 | 0 | 0 | 0 | 0 | | 2.7 | 0.5 | 3.2 |
| 14 | 50 | 50 | 100 | 148 | 171 | 136 | 69 | 21 | 4 | 1 | 0 | 0 | 0 | 0 | | 2.8 | 0.5 | 3.3 |
| 15 | 50 | 50 | 100 | 148 | 178 | 152 | 84 | 30 | 7 | 1 | 0 | 0 | 0 | 0 | | 2.9 | 0.5 | 3.4 |
| 16 | 50 | 50 | 100 | 149 | 183 | 166 | 101 | 40 | 10 | 2 | 0 | 0 | 0 | 0 | | 3.0 | 0.5 | 3.5 |
| 17 | 50 | 50 | 100 | 149 | 187 | 178 | 117 | 51 | 15 | 3 | 0 | 0 | 0 | 0 | | 3.2 | 0.5 | 3.7 |
| 18 | 50 | 50 | 100 | 150 | 190 | 189 | 133 | 63 | 20 | 4 | 1 | 0 | 0 | 0 | | 3.3 | 0.5 | 3.8 |
| 19 | 50 | 50 | 100 | 150 | 192 | 199 | 149 | 76 | 26 | 6 | 1 | 0 | 0 | 0 | | 3.4 | 0.5 | 3.9 |
| 20 | 50 | 50 | 100 | 150 | 194 | 207 | 164 | 90 | 34 | 9 | 2 | 0 | 0 | 0 | | 3.5 | 0.5 | 4.0 |

The skill required to be a winner increases as time passes

This '1' says that at time T = 9 (left column), there exists one player at skill level six and he plays four tables at a time (so generates 4x the rake). We estimate the chance of attaining level six is 17% for a level five player

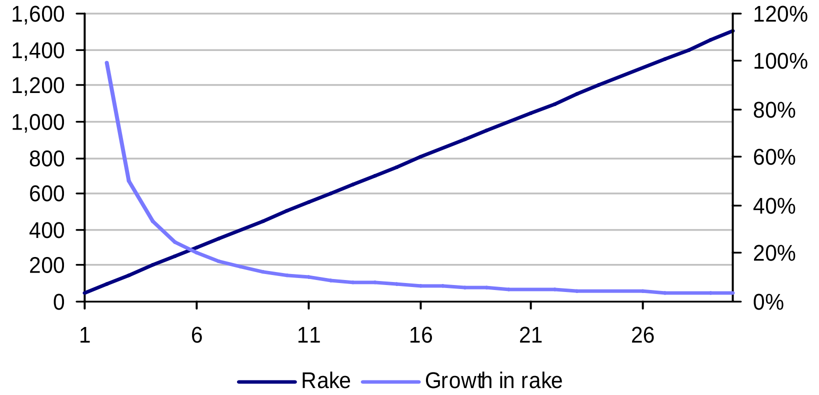
The skill required to win at T = 9 is 2.6. 6 > 2.6, so our circled player at skill six is shaded because he is a winner

Source: UBS

**This predicts that long-term growth remains on track**

This step in the model is nothing new. Long-term growth remains very positive (although getting smaller continually) and at no point, do revenues decline. The 'break-even' skill level is the calculated skill level required for a player to achieve break-even with respect to the other players on the site. It is the average skill per player (at this stage, it does not factor in that more skilful players are likely to play more tables). In a world with no rake, a player of break-even skill would be net even on the site. However, there is, of course, rake to consider. This is essentially a fixed rate for all players (in reality, the higher the stakes, the higher the rake, up to a point, but this is immaterial in this exercise) and we assign a nominal amount, ie, 0.5. Thus, in fact, in time period 12 above, a player of skill 2.5, although being net even with the other players, would end up losing because of the rake. As the model shows, it would take a player of skill 3.0 at time 12 to be effectively even with the players and the site's rake.

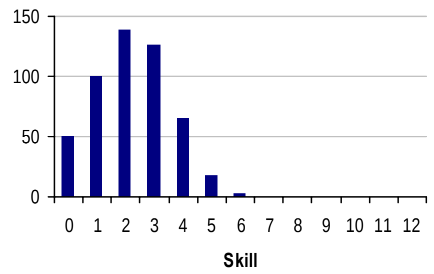
### Chart 9: Step one rake and growth in rake




Source: UBS

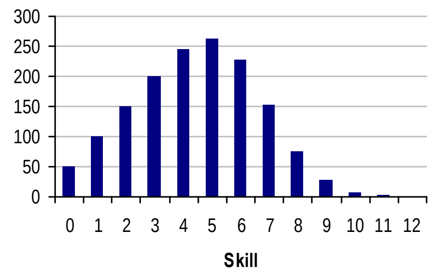
It is important to note both the increasing average skill of the site, and also the changing skew – we demonstrate this in the three charts below.

**Chart 10: Step one – players @ T=10**



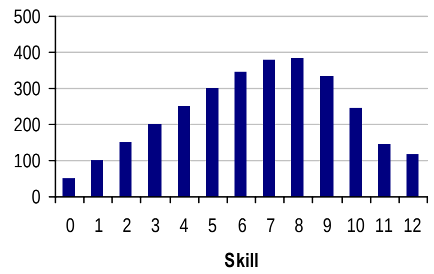

Source: UBS

**Chart 11: Step one – players @ T=30**




Source: UBS

**Chart 12: Step one – players @ T=60**




Source: UBS

## Step two – Nominal players

Step two is a simple advance from step one. Now the numbers in the table below represent 'effective players'. That is to say, if there was one level six player in step one, then because we assume a level six player plays four tables simultaneously, he really counts for four players. Thus, any numbers that were previously in the skill six column in step one are now multiplied by four in the table below (plus rounding). Naturally, this has the effect of making the games tougher (the advanced players play more tables but the beginners do not). Note that the required skill-to-win values on the right are higher than they were before for a given time period T.

**Step 2 assumes that the sharks play more tables (depending on their skill level) to satisfy a growing appetite for fish**

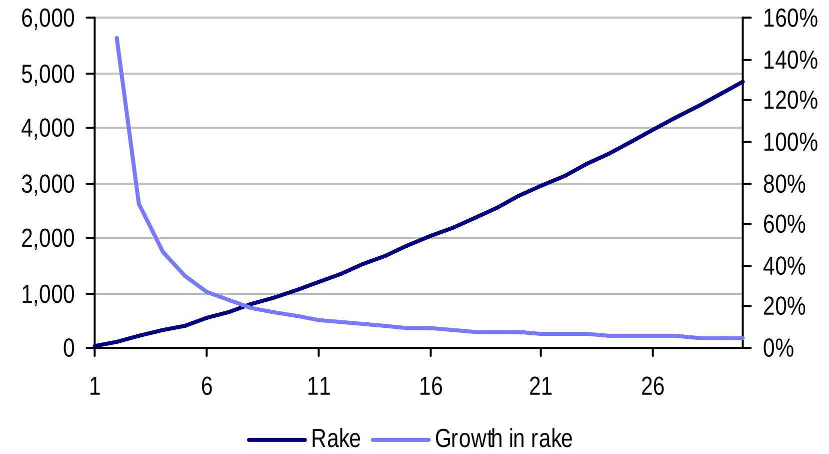
**Chart 13: Step two (nominal) = step one (real) + effect of increasing tables (inflation)**

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Tables** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** | **5** | **5.5** | **6** | **6.5** | **7** | Winner | | |
| | **Chance of non-promotion** | | 0% | 50% | 67% | 75% | 80% | 83% | 86% | 88% | 89% | 90% | 91% | 92% | | | |
| | **Chance of promotion** | | **100%** | **50%** | **33%** | **25%** | **20%** | **17%** | **14%** | **13%** | **11%** | **10%** | **9%** | **8%** | **Break-Even** | | **Required skill** |
| **T** | **Skill Level ( / 12)** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **Skill** | **Rake** | **to win** |
| **1** | | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.5 | 0.5 |
| **2** | | 50 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0.5 | 1.1 |
| **3** | | 50 | 113 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 0.5 | 1.5 |
| **4** | | 50 | 131 | 108 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.3 | 0.5 | 1.8 |
| **5** | | 50 | 141 | 160 | 61 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0.5 | 2.1 |
| **6** | | 50 | 145 | 200 | 112 | 23 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.8 | 0.5 | 2.3 |
| **7** | | 50 | 148 | 230 | 168 | 52 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.1 | 0.5 | 2.6 |
| **8** | | 50 | 149 | 252 | 222 | 92 | 18 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2.3 | 0.5 | 2.8 |
| **9** | | 50 | 149 | 267 | 271 | 140 | 36 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 2.5 | 0.5 | 3.0 |
| **10** | | 50 | 150 | 278 | 315 | 193 | 63 | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 2.7 | 0.5 | 3.2 |
| **11** | | 50 | 150 | 285 | 352 | 249 | 98 | 21 | 3 | 0 | 0 | 0 | 0 | 0 | 2.8 | 0.5 | 3.3 |
| **12** | | 50 | 150 | 290 | 383 | 305 | 139 | 37 | 6 | 1 | 0 | 0 | 0 | 0 | 3.0 | 0.5 | 3.5 |
| **13** | | 50 | 150 | 293 | 408 | 359 | 187 | 58 | 11 | 1 | 0 | 0 | 0 | 0 | 3.1 | 0.5 | 3.6 |
| **14** | | 50 | 150 | 295 | 428 | 409 | 240 | 86 | 19 | 3 | 0 | 0 | 0 | 0 | 3.3 | 0.5 | 3.8 |
| **15** | | 50 | 150 | 297 | 444 | 456 | 295 | 119 | 30 | 5 | 1 | 0 | 0 | 0 | 3.4 | 0.5 | 3.9 |
| **16** | | 50 | 150 | 298 | 457 | 498 | 352 | 158 | 46 | 9 | 1 | 0 | 0 | 0 | 3.6 | 0.5 | 4.1 |
| **17** | | 50 | 150 | 299 | 467 | 535 | 410 | 203 | 65 | 14 | 2 | 0 | 0 | 0 | 3.7 | 0.5 | 4.2 |
| **18** | | 50 | 150 | 299 | 474 | 568 | 466 | 252 | 90 | 22 | 4 | 0 | 0 | 0 | 3.8 | 0.5 | 4.3 |
| **19** | | 50 | 150 | 299 | 480 | 597 | 521 | 305 | 119 | 32 | 6 | 1 | 0 | 0 | 4.0 | 0.5 | 4.5 |
| **20** | | 50 | 150 | 300 | 485 | 622 | 574 | 361 | 153 | 45 | 9 | 1 | 0 | 0 | 4.1 | 0.5 | 4.6 |

Source: UBS

In the chart below, we again present the rake and growth in rake. The absolute rake numbers are higher because a player that plays two tables simultaneously (for example) will pay twice the rake.

### Chart 14: Step two rake and growth in rake




Source: UBS

## Step three – player retention

**Step 3 assumes players now leave the site**

Up until now, we have assumed that no player will ever leave the site. Obviously, this assumption is unrealistic, so we correct this by assuming that between each skill level, a player has a 10% chance of leaving the site, irrespective of win-rates, or the site, ie, they get bored or move on to another hobby/job for example. We show the real players (as per step one) in the model below, after a 90% retention level rate is applied.

### Chart 15: Step three – real players after a uniform 10% loss

| | **Tables** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** | **5** | **5.5** | **6** | **6.5** | **7** | Winner | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Chance of non-promotion** | | 0% | 50% | 67% | 75% | 80% | 83% | 86% | 88% | 89% | 90% | 91% | 92% | | | |
| | **Chance of promotion** | | **100%** | **50%** | **33%** | **25%** | **20%** | **17%** | **14%** | **13%** | **11%** | **10%** | **9%** | **8%** | **Break-Even** | | **Required skill** |
| **T** | **Skill Level ( / 12)** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **Skill** | **Rake** | **to win** |
| **1** | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.5 | 0.5 |
| **2** | 50 | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 1.0 |
| **3** | 50 | 50 | 70 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0.5 | 1.3 |
| **4** | 50 | 50 | 78 | 49 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.1 | 0.5 | 1.6 |
| **5** | 50 | 50 | 81 | 67 | 22 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.3 | 0.5 | 1.8 |
| **6** | 50 | 50 | 82 | 78 | 36 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 0.5 | 2.0 |
| **7** | 50 | 50 | 83 | 86 | 50 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 0.5 | 2.1 |
| **8** | 50 | 50 | 83 | 90 | 61 | 22 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.8 | 0.5 | 2.3 |
| **9** | 50 | 50 | 83 | 93 | 70 | 31 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.9 | 0.5 | 2.4 |
| **10** | 50 | 50 | 83 | 94 | 76 | 39 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 0.5 | 2.5 |
| **11** | 50 | 50 | 83 | 95 | 81 | 46 | 16 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2.1 | 0.5 | 2.6 |
| **12** | 50 | 50 | 83 | 95 | 84 | 53 | 21 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 2.2 | 0.5 | 2.7 |
| **13** | 50 | 50 | 83 | 96 | 87 | 58 | 26 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 2.3 | 0.5 | 2.8 |
| **14** | 50 | 50 | 83 | 96 | 88 | 62 | 31 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 2.4 | 0.5 | 2.9 |
| **15** | 50 | 50 | 83 | 96 | 89 | 66 | 35 | 13 | 3 | 1 | 0 | 0 | 0 | 0 | 2.5 | 0.5 | 3.0 |
| **16** | 50 | 50 | 83 | 96 | 90 | 68 | 39 | 15 | 4 | 1 | 0 | 0 | 0 | 0 | 2.6 | 0.5 | 3.1 |
| **17** | 50 | 50 | 83 | 96 | 91 | 70 | 42 | 18 | 5 | 1 | 0 | 0 | 0 | 0 | 2.6 | 0.5 | 3.1 |
| **18** | 50 | 50 | 83 | 96 | 91 | 72 | 45 | 21 | 7 | 2 | 0 | 0 | 0 | 0 | 2.7 | 0.5 | 3.2 |
| **19** | 50 | 50 | 83 | 96 | 91 | 73 | 47 | 23 | 8 | 2 | 0 | 0 | 0 | 0 | 2.7 | 0.5 | 3.2 |
| **20** | 50 | 50 | 83 | 96 | 91 | 74 | 49 | 25 | 10 | 3 | 1 | 0 | 0 | 0 | 2.8 | 0.5 | 3.3 |

Source: UBS

## Step four – the effect of toughening games

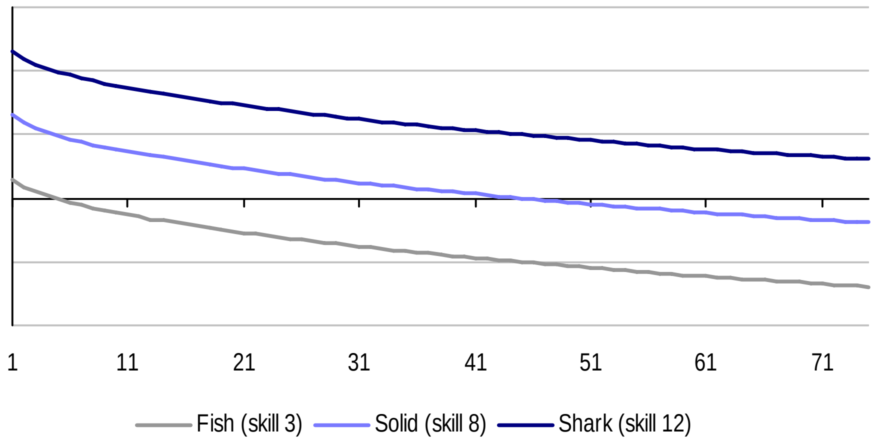
**Step 4: Good players learn more slowly than fish, so it takes more games (and rake) to win**

Now we are entering un-chartered territory. It appears to us that there is an additional negative effect to consider, which the market is not taking into account. Indeed, until recently we doubt many of the sites themselves took it into account either.

Given the assumptions that players never leave, and that the rate of new players joining is constant (or less), it is inevitable that poker games get tougher and tougher. This is because better players learn more slowly than new fish – all learning curves are concave. The proportion of players within x standard deviations from the break-even player will increase in time; effectively, the players-skill graph will truncate and be squashed together. The more skilful player will always have an edge over the player that joined two years later, but in time the edge will get smaller and smaller, as the newer player closes the gap. This is relevant because the rake does not change – whereas before, the good player may have made US$1,000/hour and paid US$100/hour to the house, in time the US$1,000/hour number will decrease, whereas the US$100/hour in rake will remain constant.

**As time goes by, the distribution of player abilities will truncate**

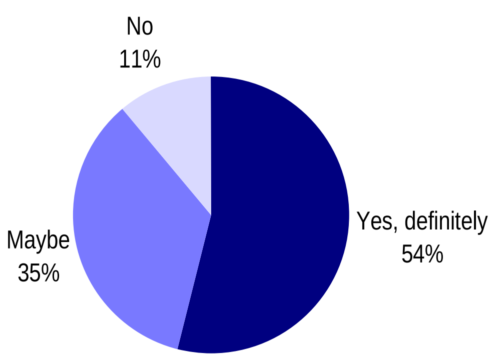
**Chart 16: Potential progression of win-rates (y-axis) against time period (x-axis)**




Source: UBS

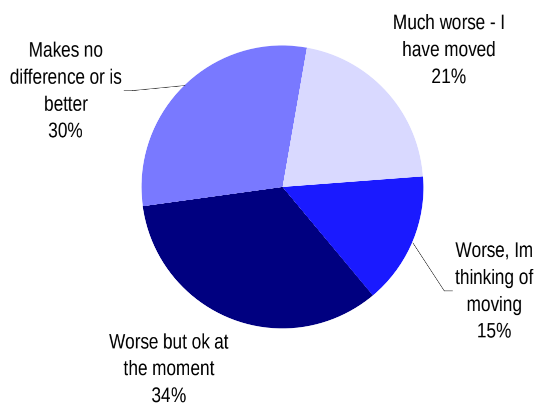
In a world of profiteering, we believe that sharks who were once winning comfortably will leave the site and look for greener pastures once they are not winning enough to justify their time. To back this view up, we polled a few thousand sharks online on two questions, as shown in the charts below.

**Chart 17: Are there less Party fish than last year?**




Source: UBS. Based on 223 responses.

**Chart 18: How much less attractive is Party to you now?**




Source: UBS. Based on 208 responses.

We need to find a way to model this, and elect to do so by assuming that at discrete intervals, defined to be when the required win rate breaks through an integer barrier, there is a loss of players according to how close to the break-even point they are.

For example: if previously, a skill of 4.9 was needed to be a winner in the game (after rake deductions), then, in our model, players of skill equal to five would be marginal winners, because 5 > 4.9. If then the games get tougher through the passage of time and the diffusion of players to higher skill levels, so that now a skill level of 5.1 is needed, then we estimate 50% of the players remaining (ie, not being promoted to level six) at level five will leave the site. In addition, we assume that 33% of the players at level four and six will leave the site. Also, 25% of the players at three and seven are considered to leave, and so on, in an inverse manner. This is because if level five was previously required to clear the bar, and now level six is needed, then the level six sharks will see their win-rates halved. Readers should remember we are doing this at discrete intervals to make it simpler – in reality, the effect would be a continuous one. We do our deductions from the *real* player total, but the exact times of the deductions are based on *nominal* player required win-rates. Below we show the real players around time period 24, before and after the process is applied.

**We model that as the required skill to be a winner increases, then those players who were once winning (but did not improve as fast as the rest) do not stick around to lose**

### Chart 19: Step four – real players after application of toughness-inspired exodus

| | **Tables** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** | **5** | **5.5** | **6** | **6.5** | **7** | Winner | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Chance of non-promotion** | | 0% | 50% | 67% | 75% | 80% | 83% | 86% | 88% | 89% | 90% | 91% | 92% | | | |
| | **Chance of promotion** | | **100%** | **50%** | **33%** | **25%** | **20%** | **17%** | **14%** | **13%** | **11%** | **10%** | **9%** | **8%** | **Break-Even** | | **Required skill** |
| **T** | **Skill Level ( / 12)** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **Skill** | **Rake** | **to win** |
| **20** | 50 | 50 | 100 | 150 | 194 | 207 | 164 | 90 | 34 | 9 | 2 | 0 | 0 | 0 | 3.5 | 0.5 | 4.0 |
| **21** | 50 | 50 | 100 | 150 | 195 | 214 | 178 | 105 | 43 | 12 | 2 | 0 | 0 | 0 | 3.6 | 0.5 | 4.1 |
| **22** | 50 | 50 | 100 | 150 | 197 | 220 | 191 | 119 | 52 | 16 | 4 | 1 | 0 | 0 | 3.7 | 0.5 | 4.2 |
| **23** | 50 | 50 | 100 | 150 | 197 | 225 | 203 | 134 | 63 | 21 | 5 | 1 | 0 | 0 | 3.8 | 0.5 | 4.3 |
| **24** | 50 | 50 | 100 | 135 | 165 | 173 | 133 | 112 | 61 | 23 | 6 | 1 | 0 | 0 | 3.7 | 0.5 | 4.2 |
| **25** | 50 | 50 | 100 | 140 | 169 | 180 | 146 | 118 | 69 | 28 | 8 | 2 | 0 | 0 | 3.8 | 0.5 | 4.3 |
| **26** | 50 | 50 | 100 | 143 | 173 | 186 | 157 | 125 | 77 | 33 | 10 | 2 | 0 | 0 | 3.9 | 0.5 | 4.4 |
| **27** | 50 | 50 | 100 | 146 | 178 | 192 | 168 | 134 | 85 | 39 | 13 | 3 | 1 | 0 | 4.0 | 0.5 | 4.5 |
| **28** | 50 | 50 | 100 | 147 | 182 | 198 | 179 | 143 | 94 | 46 | 16 | 4 | 1 | 0 | 4.1 | 0.5 | 4.6 |
| **29** | 50 | 50 | 100 | 148 | 185 | 204 | 189 | 152 | 103 | 52 | 20 | 5 | 1 | 0 | 4.1 | 0.5 | 4.6 |
| **30** | 50 | 50 | 100 | 149 | 188 | 210 | 198 | 162 | 111 | 59 | 23 | 7 | 2 | 0 | 4.2 | 0.5 | 4.7 |

Source: UBS

### Chart 20: Step four – real players before application of toughness-inspired exodus

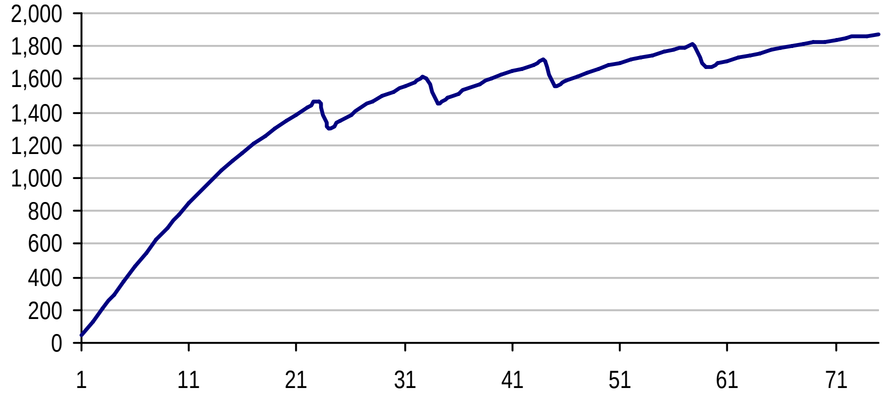
| | **Tables** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** | **5** | **5.5** | **6** | **6.5** | **7** | Winner | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Chance of non-promotion** | | 0% | 50% | 67% | 75% | 80% | 83% | 86% | 88% | 89% | 90% | 91% | 92% | | | |
| | **Chance of promotion** | | **100%** | **50%** | **33%** | **25%** | **20%** | **17%** | **14%** | **13%** | **11%** | **10%** | **9%** | **8%** | **Break-Even** | | **Required skill** |
| **T** | **Skill Level ( / 12)** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **Skill** | **Rake** | **to win** |
| **20** | 50 | 50 | 100 | 150 | 194 | 207 | 164 | 90 | 34 | 9 | 2 | 0 | 0 | 0 | 3.5 | 0.5 | 4.0 |
| **21** | 50 | 50 | 100 | 150 | 195 | 214 | 178 | 105 | 43 | 12 | 2 | 0 | 0 | 0 | 3.6 | 0.5 | 4.1 |
| **22** | 50 | 50 | 100 | 150 | 197 | 220 | 191 | 119 | 52 | 16 | 4 | 1 | 0 | 0 | 3.7 | 0.5 | 4.2 |
| **23** | 50 | 50 | 100 | 150 | 197 | 225 | 203 | 134 | 63 | 21 | 5 | 1 | 0 | 0 | 3.8 | 0.5 | 4.3 |
| **24** | 50 | 50 | 100 | 150 | 198 | 230 | 215 | 149 | 74 | 26 | 7 | 1 | 0 | 0 | 3.9 | 0.5 | 4.4 |
| **25** | 50 | 50 | 100 | 150 | 199 | 233 | 225 | 163 | 86 | 33 | 9 | 2 | 0 | 0 | 4.0 | 0.5 | 4.5 |
| **26** | 50 | 50 | 100 | 150 | 199 | 236 | 234 | 178 | 99 | 40 | 12 | 3 | 0 | 0 | 4.1 | 0.5 | 4.6 |
| **27** | 50 | 50 | 100 | 150 | 199 | 239 | 242 | 191 | 112 | 48 | 15 | 4 | 1 | 0 | 4.2 | 0.5 | 4.7 |
| **28** | 50 | 50 | 100 | 150 | 199 | 241 | 250 | 204 | 125 | 56 | 19 | 5 | 1 | 0 | 4.3 | 0.5 | 4.8 |
| **29** | 50 | 50 | 100 | 150 | 200 | 242 | 256 | 217 | 139 | 66 | 23 | 6 | 1 | 0 | 4.4 | 0.5 | 4.9 |
| **30** | 50 | 50 | 100 | 150 | 200 | 244 | 262 | 228 | 152 | 76 | 28 | 8 | 2 | 0 | 4.5 | 0.5 | 5.0 |

Source: UBS

### Putting steps one to four together

In the graph below, we show the effective rake, based on *nominal players*, after applying the effects of 90% *player retention*, and considering the effects of a *maturing player profile* on the win-rates in the game.

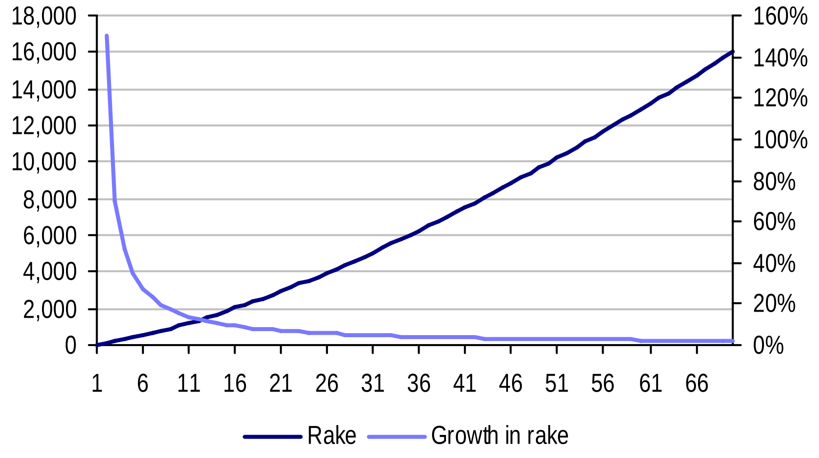
**Chart 21: Nominal rake progression in time (steps one to four inclusive)**




Source: UBS

For comparison, we show in the graph below the rake that one would have calculated using just step one and two.

**Chart 22: Nominal rake progression (step one and two)**




Source: UBS

**All this assumes constant numbers of new players**

However, there is one last vital thing to consider. All the analysis above has been under the assumption that there is a constant number of new players (50 in our model) added each year. Obviously, one would expect that if this number got bigger, then it would be good, and if it got smaller, then it would be detrimental to growth. However, it is the order of magnitude of such an importance that we believe is underestimated, and we demonstrate this in step five – the final step.

## Step five – the importance of fresh fish

**Step 5: Seeing what happens if less fish are added in a quarter than were added in the previous quarter**

As we alluded to at the start of this report, it is the derivative in the number of fresh fish that is important – not the absolute number. There are dire implications of a slowdown in the number of new fish, above the immediate lost rake.

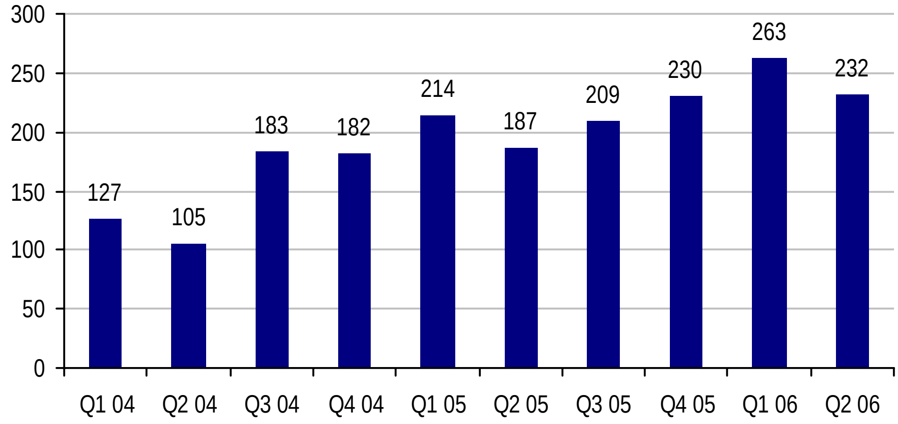
(1) Ten fish not caught in the Party net today equals 20 nominal players lost when they would have been expected to play two tables, equals 40 nominal players lost when they would have been expected to play four tables, and son on. In other words, bad news today multiplies up. The missed opportunity becomes more and more severe as time goes by.

(2) There is another immediate effect from making the games tougher: it amplifies step four. If there are not enough new fresh fish, the sharks' win-rate drops, thus more sharks get eaten by the house rake and leave the site.

**Growth rates are slowing**

It is the effect of (1) that partly explains Party's impressive growth in its fledgling stages. Early successes were multiplied up. The flip side is that, sooner or later, Party Poker is likely to add less fish in a quarter than in the previous quarter. If this becomes a long-term trend, then the effect will be hugely negative.

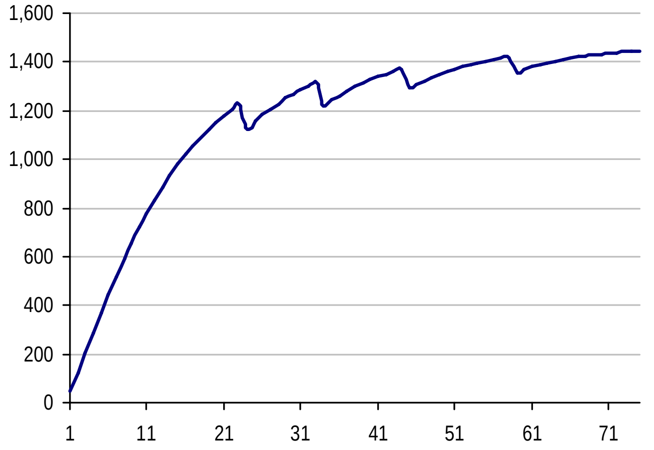
**Chart 23: New sign-ups (actual) at Party Poker (000s)**




Source: Party Gaming

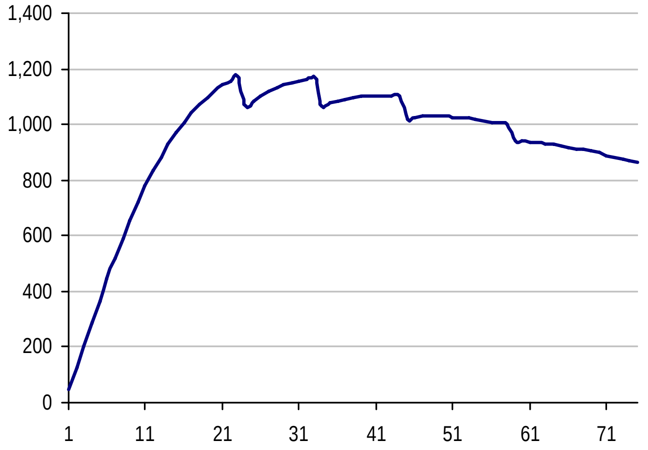
To demonstrate the importance of these numbers, let us examine what happens if we take the rake shown so far in chart 16 (steps one to four inclusive) and apply step five – declining numbers of new fish. We assume a 1% slowdown per time period. Since, based on intuition, we believe that five time periods roughly corresponds to a quarter, this equates to just more than a 5% slowdown in new players added per quarter.

**Chart 24: Rake – step one to four inclusive**




Source: UBS

**Chart 25: Rake – step one to five inclusive**




Source: UBS

**Revenue growth looks tough in the medium term**

Of course, so far Party has managed to avoid this fate, by adding more new fish each quarter than it did in the last (adjusting for seasonal differences). It has managed this recently by harvesting fish from Europe in place of the US, where it is already, after only a couple of years, becoming impossible to add increasing numbers of players. It is only a matter of time before the growth runs out in Europe too. We do not know exactly when this will happen, but when it does a revenue graph looking something like chart 20 will probably be the result. From then on, we cannot see how poker can recover to its highs because the player pool will be shark infested.

# How Party is making it worse for itself

### (1) Educating the fish

**Educating fish – harmful long term**

Essentially, any process or action that serves to improve the learning rate (in our model, the 'graduation chance' of the fish) is bad news, in our opinion. This is somewhat counter intuitive. For example, one could suggest the reasoning:

'*If a fish is taught how to play, then it won't lose its money as fast to the sharks. Therefore, it will be able to survive for longer, paying rake for longer.'*

**The best way to maintain revenue is to keep the client base as clueless as possible as to the skill involved in the game**

We believe that Party Gaming believed this to some extent in the past. However, we also believe this is flawed. While the fish itself would indeed pay more rake, resulting in a step-up in revenue per year, it would eventually become a shark and thus reduce the win-rates of other sharks, causing the games to be less attractive to them. The net effect, we believe, is detrimental to Party after a year or so. We believe the best way to maintain revenue is to keep the client base as clueless as possible as to the skill involved in the game. (Ironic then that given the current environment you would want everyone to understand it was skill based, so as not to get banned in the US.)

To that extent, the following Party-specific practices are unfortunate, in our opinion:

- **The introduction of beginners-only tables in early 2006**
- **The introduction of a beginner's tutorial system**
- **Offer of poker books for loyalty points redemption**

Furthermore, the emergence of a number of poker strategy forums to prominence, as well as widely available lessons, video demonstrations and apprenticeships from high stakes masters (none of which Party Gaming can do anything about), has not helped.

### (2) Allowing sharks to maximise profits

**Allowing sharks to play many tables also affects the growth rates**

The faster the sharks can win off the fish, the higher the fish:shark ratio has to be to maintain the system. To this extent, the following attributes of Party Poker are unfortunate, in our opinion:

- Allowing clients to play upwards of 10 tables simultaneously.
- Allowing real-time hand history downloads, which allow for real-time statistical aids (HUDs – heads up displays) on opponents during the game live. Other sites allow hand history download with a delay, which removes this advantage (which sharks employ and fish do not).

# Model 2: Predator-prey model

## Alternative model

We draw up a model in which we consider the development over time of fish and sharks. We assume that when a new fish enters the system, each year one of three things could happen to him:

**(1) The fish develops his game enough and next year is treated as a shark**

**(2) The fish gets eaten by a shark and goes bust (or 'busto' as it is affectionately known to regulars)**

**(3) Neither of the above, and the fish is still a living fish next year too**

- **Fish account**: In our model, we input the chance of fish graduation (a) as 10% a year. We estimate that the number of fish eaten by sharks (b) is equal to twice the number of sharks. Both of these are rather arbitrary numbers, but in fact the conclusions are not materially different from any other non-zero assumptions; higher numbers would just speed up the system.

- **Shark account**: In our model, the number of additional sharks each year is equal to the number of graduating fish. We also assume that if there are not enough fish for the sharks to eat properly (ie, at least two fish per shark), then enough sharks are eliminated, so that the ratio increases back to at least two to one.

- **Rake**: We model a nominal rake taken by the poker site equal to the number of fish plus twice the number of sharks (to reflect a higher intensity of play), and see how this develops over time.

On the next page, we present the first 10 time periods of the model. We arbitrarily assume that the number of new fish joining the site increases in the first few periods, then levels off.

## Chart 26: Predator-prey model

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inputs** | | | | | | | | | | |
| Chance of fish becoming shark per year | 10% | | | | | | | | | |
| Number of fish eaten per shark per year | 2 | | | | | | | | | |
| New fish per year | 10 | 20 | 40 | 80 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Year** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| **Fish Account** | | | | | | | | | | |
| Opening fish | 0 | 9 | 24 | 51 | 101 | 144 | 154 | 132 | 85 | 31 |
| + New fish | 10 | 20 | 40 | 80 | 100 | 100 | 100 | 100 | 100 | 100 |
| - Fish going bust | 0 | (2) | (7) | (19) | (41) | (73) | (107) | (137) | (151) | (92) |
| Fish alive at year end | 10 | 27 | 57 | 112 | 160 | 171 | 146 | 95 | 35 | 39 |
| - Fish graduating to sharks | (1) | (3) | (6) | (11) | (16) | (17) | (15) | (9) | (3) | (4) |
| **Closing fish** | **9** | **24** | **51** | **101** | **144** | **154** | **132** | **85** | **31** | **35** |
| **Shark Account** | | | | | | | | | | |
| Opening sharks | 0 | 1 | 4 | 9 | 21 | 37 | 54 | 68 | 75 | 46 |
| + Fish promoted to sharks | 1 | 3 | 6 | 11 | 16 | 17 | 15 | 9 | 3 | 4 |
| - Sharks dying because not enough fish | 0 | 0 | 0 | 0 | 0 | 0 | 0 | (3) | (33) | (31) |
| Closing sharks | 1 | 4 | 9 | 21 | 37 | 54 | 68 | 75 | 46 | 20 |
| Fish:Shark ratio (opening) | | 9.0 | 6.6 | 5.5 | 4.9 | 3.9 | 2.9 | 1.9 | 1.1 | 0.7 |
| Fish:Shark ratio (closing) | | 6.6 | 5.5 | 4.9 | 3.9 | 2.9 | 1.9 | 1.1 | 0.7 | 1.8 |
| Total players at close | 10 | 28 | 61 | 122 | 181 | 207 | 200 | 161 | 78 | 55 |
| **Nominal rake** | **11** | **32** | **70** | **142** | **217** | **261** | **268** | **236** | **124** | **74** |
| Growth in rake | | 188% | 121% | 104% | 52% | 20% | 3% | -12% | -48% | -40% |

Source: UBS estimates. The time periods are arbitrary.

The model above illustrates the problem that we believe Party Poker (and others) are already facing. That is that sharks eat the player pool, and, moreover, if a fish survives, it learns and becomes a shark sooner or later, and (in our model) goes on to relieve Party of two clients per year. Sooner or later, there will not be enough fish to go round, and as a result, a lot of clients will leave Party Poker. This is illustrated in the model in time periods 8, 9, and 10.

Below, we present some possible statements and discuss our thoughts on them:

- 'The sharks produce the most rake. Therefore, they are the best customers.'

**Flawed thinking**

This, we believe, is flawed thinking. The sharks only exist to profit off the fish, and depend on them. Where there are fish, there will be sharks, and where there are no fish, shark numbers will decline. It is the fish that in the end drive revenue growth, not the good players.

- 'Surely the sharks learn too, so that there is still a significant skill difference between the two groups, ie, newly graduated sharks are not going to be as good as experienced one, who will profit off them.'

**Qualified yes**

Yes, to an extent. However, as with all games of skill, the gradient of learning is steepest at the start, and then gets progressively shallower. With basic training and understanding, a poker player can substantially reduce his rate of losses against superior players.

- 'Surely, if the shark's winrate slows down in time, then they will simply play more (and thus generate more rake) to keep their absolute earnings up to scratch?'

**Maybe in the short term**

Perhaps in the short term. However, in the long term, this is clearly not a practical solution. We present evidence supporting this on the following pages. There is also an internal spiral to consider: if all the sharks play more and more, then the effective fish:shark ratio at the site worsens, thus requiring the sharks to play more, and so on. Finally, there is the variance issue. Nobody likes high-variance if low-variance (at the same rate of return) is possible. As the skill differential between two poker players gets smaller, not only does the net winrate of the more skilful player decrease, but both players also experience a higher variance of results. This is undesirable.

- 'How many new fish do Party have to find each year to avoid a decline in revenue (at some point)?'

This is a mathematical problem that ends up with an advanced non-homogeneous differential equation system, the general solution of which is far beyond the scope of this report.

**Revenue growth is proportional to growth in the growth rates of new fish**

Nevertheless, we can argue intuitively to make the important deductions. The poker industry is unique in that previously won revenues eventually cannibalise future revenues. Therefore, if we add, say, 100 new fish every year, then eventually a number of sharks will develop that will exactly keep the system in balance, and revenues constant. An analogy: given a fish tank with a set number of sharks, if a zookeeper adds a fixed number of small fish every day, the numbers of sharks in the tank will eventually settle down (via reproduction and starvation) to the number supported by the zookeeper's daily food offering. In order to grow the number of sharks, one would need to add more fish to the system. In other words, growth in revenues is proportional to growth in the growth of fish – a second differential.

**We believe that a long-term decline in revenues is inevitable**

The conclusion is that in order to avoid long-term growth being negative, Party Poker would have to add more fish to the system in year one than it added in year zero, and then more in year two than in year one, and so on. We believe this is impossible. Therefore, we conclude that long-term growth should be considered by the market to be zero at best.

## A brief introduction to the Lokta-Volterra model

The traditional Lokta-Volterra model is a well studied system of two ordinary differential equations. It has been used for decades as the starting point for the modelling of biological systems between a predator and its prey.

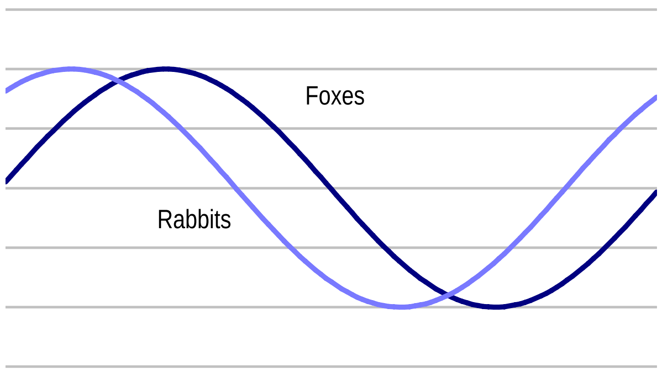
$$\frac{\partial r}{\partial t} = \alpha r - \beta fr \qquad (1) – \text{Prey equation}$$

$$\frac{\partial f}{\partial t} = \lambda fr - \gamma f \qquad (2) – \text{Predator equation}$$

In the system above, 'r' could represent rabbits, and 'f' could represent the number of foxes. The foxes eat the rabbits. Equation (1) says that the rate of change of rabbits is proportional to the number of rabbits in the population (as they reproduce) minus the number of encounters between rabbits and foxes. Equation (2) says that the rate of change of foxes is equal to the number of interactions between rabbits and foxes minus an exponential decay term (in the absence of food, the foxes will die). Each term has an associated constant. For example, $\beta$ could represent the chance of a rabbit being killed by a fox for each encounter.

Unfortunately, as is often the case with differential equations, an analytic solution is not possible. However, it is easy to graphically represent the solution, and for the above model, it would look something like this:

**Chart 27: Graphical representation of the Lokta-Volterra model**




Source: UBS

**The rabbit population leads the fox population. As rabbits become plentiful, the fox population grows fastest (far left of graph)**

Below, we make alterations to this model to consider how it could be applied to Party Poker, and other internet poker sites.

## Our suggested Party Poker shark-fish model

While the model above is useful to bear in mind, it needs to be completely adapted to meet our needs. We suggest the following system:

$$\frac{\partial f}{\partial t} = (\phi(t) - 2s) - \frac{1}{10}(\phi(t) - 2s) \qquad (1)$$

$$\frac{\partial s}{\partial t} = \frac{1}{10}(\phi(t) - 2s) - \min\{\frac{f}{2} - s, 0) \qquad (2)$$

**The UBS poker sharks 's' and fish 'f' differential equation model with respect to time 't'**

### Terms of the model

**Φ(t): The fish growth term**

**Φ(t):** The prey growth term in the Lokta-Volterra model – 'αr' – implied exponential growth, ie, the growth rate would be proportional to the number in the population. This does not apply to poker because fish (f) (in the poker sense) do not reproduce into more fish. In fact, Party finds new players through marketing and adds them to the site. Therefore, the number of new players joining can be considered largely independent of the number of fish already on the site, and instead depends on the time since site inception. We have a function Φ(t) for this: in each period 't', the number of new fish increases by Φ(t). For easy-analysis purposes, we will later consider this term to be constant, ie, setting Φ(t) = k, for some constant k.

**-2s: The fish being eaten by sharks term**

**-2s:** This term in the fish equation denotes that in every time period, the number of fish players being eaten by shark(s) is increased by two times the number of sharks present in the system. The more sharks there are, the more fish die. This is different from the Lokta-Volterra model, because we do not have this death term proportional to the product of predator and prey, just to the number of predators (sharks). The reason for this is because, unlike in nature, on an internet poker site, the sharks have a 100% chance of encountering prey (assuming they exist of course). In nature, this chance would vary according to the density of predators and prey in an enclosed space.

$$\frac{1}{10}(\phi(t) - 2s)$$

This term above is the fish graduation term. It says that one tenth of the fish that avoided being eaten learn enough to become sharks in the future. It appears in an equal and opposite way in the shark equation.

$$\min\{\frac{f}{2} - s, 0)$$

This last term is the shark death term. It is the most open to assumption risk, although it can be shown that almost any other expression will yield the same results, with varying severity. This term says that if the ratio of fish to sharks is greater than two, then no sharks die. If it is less than two, then enough sharks die, so that the ratio would increase to two. We have arbitrarily chosen two to be the necessary ratio, but any other number would serve the same purpose in the end.

This set of equations above fully describes the model we have presented in earlier pages.

### How many fish do they need to add to avoid revenue contraction?

To reinforce some of the layman evidence we presented earlier in the report, we present below a simple demonstration that **revenues must fall**, if our model is remotely close to being correct. (In fact, there is a **lot** of room for error for our conclusions to hold).

We start from equation (1) and (2) above. In order to make the system more tractable, we will consider that no shark can ever die – shark death is what provides the catalyst for revenues to plummet – and see what that leaves us with. Even with this apparent generosity, we can show that Party is in trouble.

$$\frac{\partial f}{\partial t} = (\phi(t) - 2s) - \frac{1}{10}(\phi(t) - 2s) \qquad (3)$$

$$\frac{\partial s}{\partial t} = \frac{1}{10}(\phi(t) - 2s) \qquad (4)$$

Substituting (4) into (3):

$$\frac{\partial f}{\partial t} = (\phi(t) - 2s) - \frac{\partial s}{\partial t} \qquad (5)$$

Re-arranging:

$$\frac{\partial f}{\partial t} + \frac{\partial s}{\partial t} = (\phi(t) - 2s) \qquad (6)$$

Equation (6) says that the growth in the number of total players is equal to the fish growth term minus the fish death term (twice the number of sharks).

Now, since we have assumed earlier that no shark can die, this is like saying:

$$S\ (t = k + 1) > s\ (t = k) \qquad (7)$$

To avoid a loss in the total number of players, $\frac{\partial f}{\partial t} + \frac{\partial s}{\partial t}$ must be positive.

So, $(\phi(t) - 2s)$ must be positive.

$$\text{Thus, } \phi(t) > 2s \quad \forall t \qquad (8)$$

By (7) and (8), this means that $\phi(t)$ must grow forever. This means that Party must add more fish in year one than it added in year zero, and so on. If, at any point, its fail to manage this we have a contradiction. In fact, on recent results, it has failed to do this now. Ultimately (without going into the possibilities that the population of the universe could grow faster than the growth of poker, thus allowing the equations to hold), this is practically impossible.

Thus, there is a contradiction. Thus, $\frac{\partial f}{\partial t} + \frac{\partial s}{\partial t} < 0$ for some time t

In other words, the number of players, and, therefore, revenues, should fall at some point in time, under this model.

## ■ PartyGaming

PartyGaming is the global market leader in the online poker industry with a market share for the six months to June 2005 of 54%. It also has an active online casino, accounting for just less than 10% of EBIT. The group is using its cash flows to invest in increased marketing spend to drive revenues.

## ■ Statement of Risk

Online gaming operates in a grey legal environment - especially in the US. If the authorities find a way of restricting this, Party Gaming is at great risk given that it generates around 80% of income from the region. The is also some sign that Europe is also trying to clamp down, this could impact growth too if successful.

We believe the poker model is driven by attracting weak players to the system. Any sign that there is a slowdown in annual growth of weak players could have a very material impact on trading.

## ■ Analyst Certification

Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about those securities or issuers; and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

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### UBS Investment Research: Global Equity Ratings Definitions and Allocations

| UBS rating | Definition | UBS rating | Definition | Rating category | Coverage[1] | IB services[2] |
|---|---|---|---|---|---|---|
| **Buy 1** | FSR is > 6% above the MRA, higher degree of predictability | **Buy 2** | FSR is > 6% above the MRA, lower degree of predictability | **Buy** | 48% | 34% |
| **Neutral 1** | FSR is between -6% and 6% of the MRA, higher degree of predictability | **Neutral 2** | FSR is between -6% and 6% of the MRA, lower degree of predictability | **Hold/Neutral** | 45% | 35% |
| **Reduce 1** | FSR is > 6% below the MRA, higher degree of predictability | **Reduce 2** | FSR is > 6% below the MRA, lower degree of predictability | **Sell** | 7% | 32% |

1: Percentage of companies under coverage globally within this rating category.

2: Percentage of companies within this rating category for which investment banking (IB) services were provided within the past 12 months.

Source: UBS; as of 30 June 2006.

**KEY DEFINITIONS**

**Forecast Stock Return (FSR)** is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months.
**Market Return Assumption (MRA)** is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium).
**Predictability Level** The predictability level indicates an analyst's conviction in the FSR. A predictability level of '1' means that the analyst's estimate of FSR is in the middle of a narrower, or smaller, range of possibilities. A predictability level of '2' means that the analyst's estimate of FSR is in the middle of a broader, or larger, range of possibilities.
**Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation.

**EXCEPTIONS AND SPECIAL CASES**

**US Closed-End Fund ratings and definitions are:** Buy: Higher stability of principal and higher stability of dividends; Neutral: Potential loss of principal, stability of dividend; Reduce: High potential for loss of principal and dividend risk.
**UK and European Investment Fund ratings and definitions are:** Buy: Positive on factors such as structure, management, performance record, discount; Neutral: Neutral on factors such as structure, management, performance record, discount; Reduce: Negative on factors such as structure, management, performance record, discount.
**Core Banding Exceptions (CBE):** Exceptions to the standard +/-6% bands may be granted by the Investment Review Committee (IRC). Factors considered by the IRC include the stock's volatility and the credit spread of the respective company's debt. As a result, stocks deemed to be very high or low risk may be subject to higher or lower bands as they relate to the rating. When such exceptions apply, they will be identified in the Companies Mentioned or Company Disclosure table in the relevant research piece.

### Companies mentioned

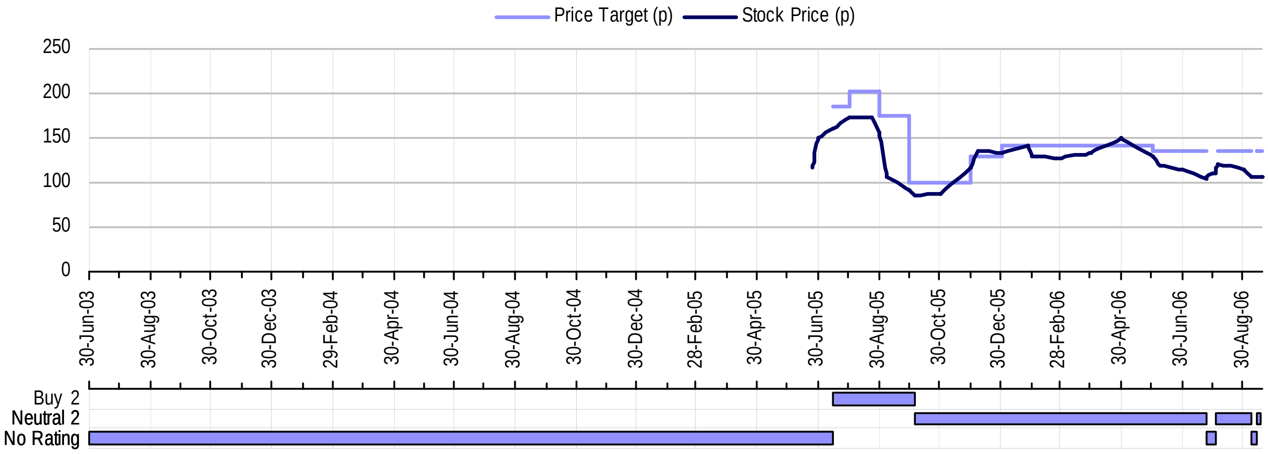
| Company Name | Reuters | Rating | Price | Price date/time |
|---|---|---|---|---|
| **bwin**[20] | BWIN.VI | Buy 2 (CBE) | €25.65 | 18 Sep 2006 23:39 BST |
| **PartyGaming**[20] | PRTY.L | Reduce 2 (CBE) | 107p | 18 Sep 2006 23:39 BST |
| **sportingbet**[20] | SBT.L | Neutral 2 (CBE) | 172p | 18 Sep 2006 23:39 BST |

Source: UBS. BST: British summer time.

20. Because UBS believes this security presents significantly higher-than-normal risk, its rating is deemed Buy if the FSR exceeds the MRA by 10% (compared with 6% under the normal rating system).

Unless otherwise indicated, please refer to the Valuation and Risk sections within the body of this report.

## PartyGaming (p)




Source: UBS; as of 18 September 2006.

Note: On September 9, 2006, UBS adopted new percentage band criteria for its rating system. (See 'UBS Investment Research: Global Equity Ratings Definitions and Allocations' table for details). Between October 13, 2003 and September 9, 2006 the percentage band criteria used in the rating system was 10%. Prior to October 13, 2003, the UBS ratings and their definitions were: Buy 1: Excess return potential >15%, smaller range around price target; Buy 2: Excess return potential >15%, larger range around price target; Neutral 1: Excess return potential between -15% and 15%, smaller range around price target; Neutral 2: Excess return potential between -15% and 15%, larger range around price target; Reduce 1: Excess return potential < -15%, smaller range around price target; Reduce 2: Excess return potential < -15%, larger range around price target. Excess return is defined as the difference between the FSR and the one-year local market interest rate.

## Global Disclaimer



UBS

# PartyGaming

| Income statement (US$m) | / | 12/02 | 12/03 | 12/04 | 12/05 | 12/06E | % ch | 12/07E | % ch | 12/08E | % ch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Revenue** | - | **30** | **154** | **602** | **978** | **1,371** | *40.2* | **1,532** | *11.7* | **1,475** | *-3.7* |
| Operating expenses (ex depn) | - | (24) | (63) | (211) | (394) | (612) | *55.3* | (676) | *10.5* | (661) | *-2.2* |
| **EBITDA (UBS)** | - | **6** | **90** | **391** | **584** | **759** | *30.1* | **856** | *12.7* | **813** | *-4.9* |
| Depreciation | - | (0) | (1) | (5) | (13) | (25) | *92.3* | (26) | *4.0* | (27) | *3.8* |
| **Operating income (EBIT, UBS)** | - | **6** | **90** | **386** | **571** | **734** | *28.7* | **830** | *13.0* | **786** | *-5.2* |
| Other income and associates | - | (0) | (0) | (3) | (70) | (85) | *22.0* | (65) | *-23.5* | (25) | *-61.5* |
| Net interest | - | 0 | 0 | (12) | (8) | 6 | | 15 | *124.8* | 26 | *80.4* |
| Abnormal items (pre-tax) | - | 0 | 0 | 0 | (168) | 0 | | 0 | | 0 | |
| **Profit before tax** | - | **6** | **89** | **372** | **325** | **656** | *101.7* | **779** | *18.9* | **788** | *1.1* |
| Tax | - | (1) | (6) | (22) | (32) | (45) | *40.4* | (51) | *14.7* | (49) | *-3.6* |
| **Profit after tax** | - | **5** | **84** | **350** | **293** | **611** | *108.3* | **728** | *19.2* | **739** | *1.4* |
| Abnormal items (post-tax) | - | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | |
| Minorities / pref dividends | 0 | (0) | (7) | (2) | 0 | 0 | | 0 | | 0 | |
| **Net income (local GAAP)** | - | **4** | **77** | **348** | **293** | **611** | *108.3* | **728** | *19.2* | **739** | *1.4* |
| **Net income (UBS)** | - | **5** | **77** | **352** | **532** | **696** | *31.0* | **793** | *14.0* | **764** | *-3.8* |
| *Tax rate (%)* | - | *19* | *6* | *6* | *10* | *7* | *-30.4* | *7* | *-3.5* | *6* | *-4.7* |
| *Pre-abnormal tax rate (%)* | - | *18* | *6* | *6* | *6* | *6* | *6.7* | *6* | *0.6* | *6* | *0.1* |

| Per share (US$) | / | 12/02 | 12/03 | 12/04 | 12/05 | 12/06E | % ch | 12/07E | % ch | 12/08E | % ch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EPS (local GAAP) | - | 0.00 | 0.02 | 0.09 | 0.07 | 0.15 | *108.3* | 0.18 | *19.2* | 0.00 | |
| EPS (UBS) | - | 0.00 | 0.02 | 0.09 | 0.13 | 0.17 | *31.0* | 0.20 | *14.0* | 0.00 | |
| Net DPS | - | 0.00 | 0.00 | 0.00 | 0.05 | 0.09 | *66.0* | 0.10 | *14.7* | 0.10 | *-3.6* |
| Cash EPS | - | 0.00 | 0.02 | 0.09 | 0.14 | 0.18 | *32.5* | 0.20 | *13.6* | 0.00 | |
| BVPS | - | 0.00 | 0.02 | (0.10) | 0.05 | 0.12 | *130.8* | 0.27 | *120.1* | 0.00 | |

| Balance sheet (US$m) | / | 12/02 | 12/03 | 12/04 | 12/05 | 12/06E | % ch | 12/07E | % ch | 12/08E | % ch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Net tangible fixed assets | - | 0 | 0 | 8 | 5 | 65 | *1304.* | 128 | *98.3* | 195 | *52.6* |
| Net intangible fixed assets | - | 1 | 6 | 13 | 24 | 24 | *0.0* | 24 | *0.0* | 24 | *0.0* |
| Net working capital | - | (2) | (5) | (75) | (19) | 81 | | 71 | *-12.3* | 61 | *-14.1* |
| Other liabilities | - | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | |
| **Operating invested capital** | - | **(1)** | **1** | **(54)** | **10** | **170** | *1684.* | **223** | *31.6* | **280** | *25.7* |
| Investments / other assets | - | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | |
| **Total capital employed** | - | **(1)** | **1** | **(54)** | **10** | **170** | *1684.* | **223** | *31.6* | **280** | *25.7* |
| Shareholders' equity | - | 5 | 75 | (405) | 211 | 487 | *130.8* | 1,073 | *120.1* | 1,537 | *43.2* |
| Minority interests | - | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | |
| **Total equity** | - | **5** | **75** | **(405)** | **211** | **487** | *130.8* | **1,073** | *120.1* | **1,537** | *43.2* |
| Net debt/(cash) | - | (6) | (75) | 351 | (202) | (318) | *57.6* | (850) | *167.4* | (1,256) | *47.8* |
| Debt deemed provisions | - | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | |
| **Total capital employed** | - | **(1)** | **1** | **(54)** | **10** | **170** | *1684.* | **223** | *31.6* | **280** | *25.7* |

| Cash flow (US$m) | / | 12/02 | 12/03 | 12/04 | 12/05 | 12/06E | % ch | 12/07E | % ch | 12/08E | % ch |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operating income (EBIT, UBS) | - | 6 | 90 | 386 | 571 | 734 | *28.7* | 830 | *13.0* | 786 | *-5.2* |
| Depreciation | - | 0 | 1 | 5 | 13 | 25 | *92.3* | 26 | *4.0* | 27 | *3.8* |
| Net change in working capital | - | 0 | (4) | 38 | 206 | (100) | | 10 | | 10 | *0.0* |
| Other (operating) | - | 0 | 0 | 0 | 5 | 0 | | 0 | | 0 | |
| **Operating cash flow** | - | **7** | **86** | **429** | **795** | **659** | *-17.0* | **866** | *31.3* | **823** | *-4.9* |
| Net interest received / (paid) | - | 0 | 0 | (10) | 1 | 6 | *441.3* | 15 | *124.8* | 26 | *80.4* |
| Dividends paid | - | (3) | (8) | (343) | (8) | (320) | *3850.* | (349) | *8.9* | (400) | *14.7* |
| Tax paid | - | 0 | 0 | 0 | (2) | (6) | *139.7* | (6) | *13.7* | (6) | *-5.1* |
| Capital expenditure | - | (1) | (6) | (12) | (37) | (60) | *63.0* | (65) | *7.5* | (69) | *7.5* |
| Net acquisitions / disposals | - | 0 | (0) | (489) | (31) | (250) | *701.3* | 0 | | 0 | |
| Other | - | - | 0 | (0) | 0 | 0 | | 0 | | 0 | |
| Share issues | - | 0 | (3) | (1) | 0 | 0 | | 0 | | 0 | |
| **Cash flow (inc)/dec in net debt** | - | **4** | **69** | **(425)** | **717** | **30** | *-95.8* | **461** | *1426.* | **375** | *-18.7* |
| FX / non cash items | - | - | 0 | (0) | (165) | 86 | | 71 | *-17.4* | 32 | *-55.5* |
| **Balance sheet (inc)/dec in net debt** | - | **-** | **69** | **(425)** | **552** | **116** | *-79.0* | **532** | *357.8* | **406** | *-23.6* |
| Core EBITDA | - | 6 | 90 | 391 | 584 | 759 | *30.1* | 856 | *12.7* | 813 | *-4.9* |
| Maintenance capital expenditure | - | (0) | (1) | (5) | (13) | (25) | *92.3* | (26) | *4.0* | (27) | *3.8* |
| Maintenance net working capital | - | 0 | 0 | 0 | 0 | 0 | | 0 | | 0 | |
| **Operating free cash flow, pre-tax** | - | **6** | **90** | **386** | **571** | **734** | *28.7* | **830** | *13.0* | **786** | *-5.2* |

*Source: Company accounts, Thomson Financial, UBS estimates. (UBS) valuations are stated before goodwill, exceptionals and other special items. Note: For some companies, the data represents an extract of the full company accounts.*

# Global Equity Research

United Kingdom

Casinos

| | |
|---|---|
| Rating | Reduce 2* |
| Price target | 75p/US$1.41 |

# PartyGaming

## Company profile

PartyGaming is the global market leader in the online poker industry with a market share for the six months to June 2005 of 54%. It also has an active online casino, accounting for just less than 10% of EBIT. The group is using its cash flows to invest in increased marketing spend to drive revenues.

| Valuation (x) | 5Yr Avg | 12/04 | 12/05 | 12/06E | 12/07E | 12/08E |
|---|---|---|---|---|---|---|
| P/E (local GAAP) | - | - | 29.9 | 13.1 | 11.0 | 0.0 |
| P/E (UBS) | - | - | 16.5 | 11.5 | 10.1 | 0.0 |
| P/CEPS | - | - | 16.1 | 11.1 | 9.8 | 0.0 |
| Net dividend yield (%) | - | - | 2.4 | 4.3 | 5.0 | 4.8 |
| P/BV | - | - | 41.6 | 16.5 | 7.5 | 0.0 |
| EV/revenue (core) | - | - | 9.1 | 5.7 | 4.9 | 5.0 |
| EV/EBITDA (core) | - | - | 15.2 | 10.2 | 8.7 | 9.2 |
| EV/EBIT (core) | - | - | 15.5 | 10.6 | 9.0 | 9.5 |
| EV/OpFCF (core) | - | - | 15.5 | 10.6 | 9.0 | 9.5 |
| EV/op. invested capital | - | - | NM | NM | NM | NM |

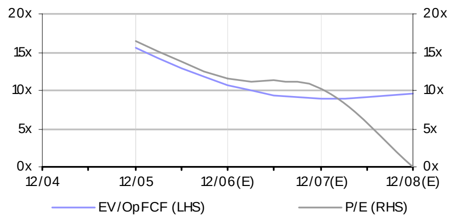
| Enterprise value (US$m) | 12/04 | 12/05 | 12/06E | 12/07E | 12/08E |
|---|---|---|---|---|---|
| Average market cap | - | 8,777 | 8,030 | 8,030 | 8,030 |
| + minority interests | 19 | 0 | 0 | 0 | 0 |
| + average net debt (cash) | 138 | 74 | (260) | (584) | (584) |
| + pension obligations and other | 0 | 0 | 0 | 0 | 0 |
| - non-core asset value | 0 | 0 | 0 | 0 | 0 |
| Core enterprise value | - | 8,851 | 7,770 | 7,446 | 7,446 |

| Growth (%) | 5Yr Avg | 12/04 | 12/05 | 12/06E | 12/07E | 12/08E |
|---|---|---|---|---|---|---|
| Revenue | - | NM | 62.5 | 40.2 | 11.7 | -3.7 |
| EBITDA (UBS) | - | NM | 49.3 | 30.1 | 12.7 | -4.9 |
| EBIT (UBS) | - | NM | 47.7 | 28.7 | 13.0 | -5.2 |
| EPS (UBS) | - | NM | 43.7 | 31.0 | 14.0 | - |
| Cash EPS | - | NM | 45.3 | 32.5 | 13.6 | - |
| DPS Net | - | - | - | 66.0 | 14.7 | -3.6 |
| BVPS | - | - | - | 130.8 | 120.1 | - |

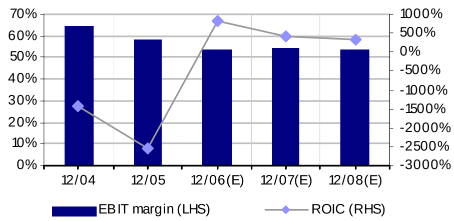
| Margins (%) | 5Yr Avg | 12/04 | 12/05 | 12/06E | 12/07E | 12/08E |
|---|---|---|---|---|---|---|
| EBITDA / revenue | - | 65.0 | 59.7 | 55.4 | 55.9 | 55.2 |
| EBIT / revenue | - | 64.2 | 58.4 | 53.5 | 54.2 | 53.3 |
| Net profit (UBS) / revenue | - | 58.4 | 54.4 | 50.8 | 51.8 | 51.8 |
| **Return on capital (%)** | | | | | | |
| EBIT ROIC (UBS) | - | NM | NM | NM | NM | NM |
| ROIC post tax | - | NM | NM | NM | NM | NM |
| Net ROE | - | NM | NM | NM | NM | 58.5 |
| **Coverage ratios (x)** | | | | | | |
| EBIT / net interest | - | NM | NM | - | - | - |
| Dividend cover (UBS EPS) | - | - | 2.5 | 2.0 | 2.0 | - |
| Div. payout ratio (%, UBS EPS) | - | - | 39.5 | 50.1 | 50.4 | - |
| Net debt / EBITDA | - | 0.9 | NM | NM | NM | NM |
| **Efficiency ratios (x)** | | | | | | |
| Revenue / op. invested capital | - | NM | NM | 15.3 | 7.8 | 5.9 |
| Revenue / fixed assets | - | NM | NM | 23.5 | 12.7 | 7.9 |
| Revenue / net working capital | - | NM | NM | 44.1 | 20.1 | 22.3 |
| **Investment ratios (x)** | | | | | | |
| OpFCF / EBIT | - | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Capex / revenue (%) | - | 2.0 | 3.8 | 4.4 | 4.2 | 4.7 |
| Capex / depreciation | - | 2.6 | 2.8 | 2.4 | 2.5 | 2.6 |
| **Capital structure (%)** | | | | | | |
| Net debt / total equity | - | - | -95.5 | -65.2 | -79.2 | -81.8 |
| Net debt / (net debt + equity) | - | NM | NM | NM | NM | NM |
| Net debt (core) / EV | - | - | 0.8 | -3.3 | -7.8 | -7.8 |

*Source: Company accounts, Thomson Financial, UBS estimates. (UBS) valuations are stated before goodwill, exceptionals and other special items. Valuations: based on an average share price that year, (E): based on a share price of 106.75p on 18 Sep 2006 23:39 BST; Market cap (E) may include forecast share issues/buybacks.*

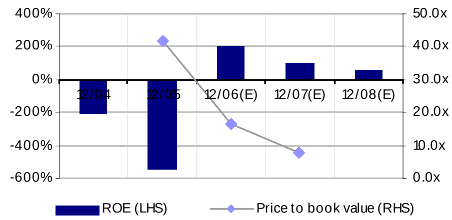
## Value (EV/OpFCF & P/E)



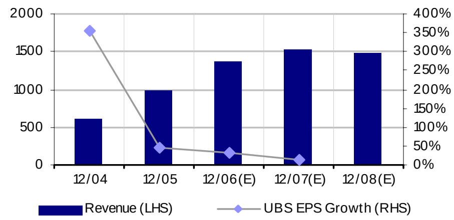

## Profitability




## ROE v Price to book value




## Growth (UBS EPS)




*Exception to core rating bands; See page 33


**Julian Easthope**
Analyst
julian.easthope@ubs.com
+44-20-7568 1964

**Mark Elliott**
Associate Analyst
mark.elliott@ubs.com
+44-20-756 82571