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Telecom operators

Reviving the fixed line

- Triple-play slows mobile substitution and pushes broadband market consolidation
- A “light content” strategy can boost growth and create value
- Telcos have the opportunity to drive the invention of the TV of the future, in partnership with media and tech companies
- However, individual country scenarios will show huge differences

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Executive summary

This eighth edition of the annual Exane BNP Paribas-Arthur D. Little joint report on telecom operators focuses on the move by operators into content. In preparing the report, we have conducted 95 interviews with 83 companies in the telecoms-media-technology (TMT) arena operating in 17 countries. We draw three principal conclusions:

– First, triple-play works. It slows line losses and pushes for in-country consolidation, and hence can strongly improve the revenue outlook and value of fixed networks.

– Second, although content can generate substantial additional revenues, operators should not compete head-to-head with premium TV operators and invest as much as they do in premium content as – in a world where technology and regulation may prevent cross-subsidisation of content by access – the returns on TV are likely to be negative. Instead, and in order to avoid commoditisation, operators should base their strategy on "light premium" content, requiring an investment of only 15–25% of those of a premium TV operator, and on innovative services. They have the opportunity to drive the development of the TV of the future through partnerships with all other players: local content producers, global internet players, hardware manufacturers, etc.

– Third, there is no single telecom-media scenario for Europe, as penetration, market share, etc. vary vastly by country. This will lead to very different opportunities and risks for different kinds of players in different countries.

Triple-play works

European fixed-line revenues have been under pressure for years and incumbents' revenues have declined by an average of 2–3% a year: growth in ARPU stemming from broadband adoption has been more than offset by the high rate of line losses (5.7% a year since 2005) as a result of fixed-mobile substitution (c.20% of households are mobile-only) and broadband competition.

These trends have no reason to abate by themselves. First, mobile broadband can compete with fixed broadband, at least in the countries where fixed penetration is still low, so it can renew fixed-line losses and put pressure on fixed ARPU. Second, there are now fewer broadband competitors than in the past (i.e. incumbents, large unbundlers and cable operators, plus BSkyB in the UK), but the remaining ones can bundle broadband and telephone with pay-TV. Consequently they pose a more serious and longer lasting competitive threat.

Most European telecom operators have launched triple-play services, with two positive consequences:

1) It gives customers a good reason to keep their fixed-line connection. The launch of triple-play has enabled incumbents to considerably slow or even stop line losses, notably in Portugal, Sweden and Austria;

2) It forces local consolidation of fixed broadband markets. The French example shows that this is followed by stabilised market share and a turnaround in ARPU.

Such improvements can considerably slow the decline (and even enable a return to growth) in fixed-line revenues. This creates huge value for the remaining operators, in particular incumbents, as valuations are very sensitive to key assumptions such as long-term penetration, broadband market share and ARPU:

– halving the rate of line losses from 5% to 2.5% (over 2008–15) can increase an incumbent operator's valuation by 27%;

– a DCF approach points to valuations at 3x current year EBITDA, assuming the market share falls to 25% and ARPU to EUR30, and to 6x EBITDA assuming a market share of 50% and ARPU of EUR55. These are all credible assumptions, close to current levels in selected countries.

Content: a tempting revenue opportunity…

The content revenue opportunity is neither irrelevant to telecom operators nor "game changing". By 2015, we estimate that the combined revenues from pay-TV, video-on-demand and advertising could potentially amount to the equivalent of 7% of incumbents' 2008e revenues, or EUR2.7 per fixed line per month. As the table below shows, this could increase their 2008–15e top-line CAGR by 1%.

Figure 1: Summary of the media revenue opportunity for fixed incumbents*

	Pay-TV	VoD	Advertising	Total
Revenue opportunity by 2015e (EURm)	2,564	863	451	3,877
EUR per month per 2008 fixed line	1.8	0.6	0.3	2.7
Opportunity as % of 2008e revenue (%)	4.8	1.6	0.8	7.2
Impact on 2008–2015e revenue CAGR (%)	0.7	0.2	0.1	1.0

** In Germany, France, UK, Italy, Spain, Netherlands, Belgium, Portugal and Austria*

Source: Arthur D. Little, Exane BNP Paribas estimates

Pay-TV accounts for more than half of this revenue opportunity and it is the most tangible part. Our model assumes: 1) increasing pay-TV penetration in Europe (gains of 5–25% by 2015 depending on the country); 2) incumbent operators grabbing 10–30% market share on pay-TV depending on the country; and 3) pay-TV ARPU of EUR10–15/month for these players, assuming no investment, or only a small one, in content.

Video-on-demand is a promising but very crowded market, contested by all access players and many internet, IT hardware and media groups. Telecom operators may have a role to play in local and interactive advertising (a way to subsidise services and content), but our revenue estimates for both video-on-demand and advertising are low.

…but paying up for premium content is not the solution

Investing in high premium content to compete head-to-head with premium TV operators is a risky strategy for telecom operators. We show that a "high premium" content strategy, entailing investments at a comparable level to those of premium TV operators has a negative financial risk/reward for operators. This is due to the high barrier to entry presented by content costs spent by existing pay-TV players (up to EUR2.0bn per year per country). Such costs cannot be amortised on a telco's TV customer base. A "light premium" content approach requiring only 15-25% of the content investment of a premium TV operator, offers a more balanced financial risk/reward for incumbent operators, while it still enables them to grab indirect benefits such as fewer line losses and a rationalisation of the broadband market, as alternative carriers cannot afford such a strategy.

Figure 2: Summary of the relative costs and benefits of different content strategies

Strategy	Cost	Direct benefits	Indirect benefits	Overall ranking
High premium content	---	ARPU +++	Lower fixed line losses + Lower churn + Market rationalisation +	-
Light premium content	-	ARPU ++	Lower fixed line losses + Lower churn + Market rationalisation +	+
Resale	=	ARPU +	Lower fixed line losses + Lower churn + Market rationalisation =	=

Source: Arthur D. Little, Exane BNP Paribas estimates

To improve the economics of a premium content strategy, some operators are tempted to adopt a "closed" model whereby they subsidise content with access. However, such a model will not last very long, in our view, as many forces will favour "open" models:

– The arrival of IPTV platforms fragments the pay-TV market, so content providers are willing to distribute their content on as many platforms as possible rather than to favour exclusive content deals with one operator.

– Companies from other parts of the value chain are partnering actively to develop attractive, easy-to-use internet-based television services for the TV screen, e.g., hardware groups (TV and digital video recorder manufacturers, gaming companies), content owners/TV channels and internet players. These will bypass the operators' "closed" services built around their proprietary boxes.

– In many countries including the UK, France, the Netherlands and the US, regulation is pushing in the direction of net neutrality.

So what can operators do?

They can take the lead in the development of the TV of the future: easy to use innovative content-related services aimed at enhancing the customer's experience, such as HDTV, catch-up TV, etc.

Operators can develop such enhanced TV services internally, or through appropriate partnerships with other players along the telecom-media-technology value chain: 1) existing pay-TV packages; 2) local content groups/TV channels, bypassing to some extent the pay-TV packages and creating a differentiation versus the global content served by internet and hardware leaders; 3) Internet players seeking to get content on the customers' TV sets by all means; 4) software and hardware companies bringing their development capabilities; and 5) and even gaming groups, using the gaming console in lieu of a set-top box for specific market segments.

Operators are partners of choice for all these players, as they bring unique assets to the bargaining table: access networks, the boxes, billing relationships and distribution networks – in short, access to the customer.

Such a proactive partnership approach, which is shared by many operators that we have met, will also allow operators to fend off potential commoditisation threats. The current economic environment gives operators more time to organise themselves, because, in our view, the recession will hinder the advertising-funded internet leaders and the cyclical hardware manufacturers in rolling out their development plans.

A myriad of local differences

Will European markets become as penetrated and as profitable as the US triple-play market, with triple-play revenue per household of more than EUR70 per month versus EUR50 currently in Europe? Or, will the move of the market to triple-play lead to deteriorating revenue trends for some incumbents? Opportunities and risks are very different in each country – the growth potential in pay-TV and the competitive landscapes are varied and can change in many ways: new entrants, consolidation.

The countries where opportunities strongly outweigh risks for incumbents over the long term are, in our view, Portugal, Austria and Italy; on the other hand, we see below-average upside for incumbents in Belgium, Germany and the UK.

Figure 3: What scenario for which market?

	Triple-play risk/reward	Main risk	Consolidation?	Revenue conclusion	Comments
Portugal	+	n/a	Limited	+	Good visibility
Austria	+	Mobile broadband	Cable-mobile?	=/+	Capex required
Italy	+	Sky into triple-play	Limited	=/+	Capex needed; acceleration in IPTV uncertain
Spain	+	n/a	Digital+ acquisition?	=	Upside but not in the short term
Netherlands	=	n/a	Cable-mobile?	=	Good visibility
France	=	Indirect impact from 4th licence	Possible if 4th licence	-/+	Depending on 4th licence and M&A
UK	=	BSkyB leveraging premium content	Fixed-fixed	-/+	Need capex in any case
Germany	=	Cable into triple-play	Fixed-fixed	-/=	Depending on speed of consolidation (slow for now)
Belgium	-	TV offer from KPN or Mobistar?	No	-/=	Good short term visibility

Source: Arthur D. Little, Exane BNP Paribas estimates

Arthur D. Little – Exane BNP Paribas report, eighth edition

To tackle the strategic issue of content for telecom operators, this report focuses on the fixed telecom market. As such, the mobile market is not specifically addressed in this report, unlike in our report "In the eye of the telecom-media storm" published on 15 February 2008. We have split them into two categories: our on-target projections and topics on which we were over- or under-optimistic.

On-target projections

"More and more factors are pushing telecom operators to pursue size both locally and at the pan-European level. (…) Global size is becoming a significant issue": the moves by Deutsche Telekom on OTE and France Telecom on TeliaSonera in Spring 2008 completely validated our analysis.

"Now that mobile broadband is ready, more and more devices will be connected anytime, anywhere, through wireless networks: laptops, PDAs, music players, etc.": 2008 was clearly the year when mobile data took off, both in terms of adoption and usage, thanks to the huge success of the iPhone 3G and HSDPA USB sticks/dongles.

"The home market may become limited to households interested in a high-end TV experience (…) provided by fixed players": 2008 has shown that fixed broadband was most negatively impacted by mobile broadband in countries where triple-play is limited (e.g. Austria, the UK), while in countries with strong triple-play (e.g. France), mobile broadband remains a complement rather than a competitor to fixed broadband. Also, Portugal is a good example of fixed operators defending themselves through triple-play.

"Wireless technology will not bring the same performance at the same cost as fixed networks – especially when the latter move to fibre": now that mobile broadband is well developed in several countries, this has become apparent.

What we had over- or underestimated

We forecasted that the mobile broadband growth would lead to re-accelerating revenues for the European mobile sector, above the ~2% growth rate of 2007: in fact, mobile broadband growth was more than offset by the accelerating decline in mobile voice revenues – due notably to regulation and the macro-economic situation. At the end of 2008, the growth rate of European mobile service revenues had slowed to ~0%.

"Telecom operators face rising pressure in the value chain": we expected an "ongoing fight for content", which was more low key than expected with only one operator (France Telecom) paying up for premium content in 2008. We also expected a "tightening grip" of internet giants and systems manufacturers: in fact, at the end of 2008, the economic crisis started to lead to a relative strengthening of the position of telecom operators in the value chain, as they are less negatively impacted by the recession than others.

What remains to be proven

"Mobile devices will use fixed infrastructure through WiFi and Femtocells (…). Mobile broadband will be a driver of fixed-mobile integration": the iPhone and laptops are clearly using WiFi to complement 3G/HSDPA connectivity, but Femtocells have not yet come of commercial age; there have not been many new fixed-mobile M&A operations in 2008.

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Telecom operators

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Media and Internet

De Agostini Editore SpA, Edipresse (Switzerland), Europacorp, Google France, Gruner + Jahr, Holtzbrinck Ventures, Indivirtual, Lagardere Active, Le Temps, Media Broadcast GmbH, Microsoft (MSN), Nova TV CZ, PagesJaunes, RTL, Seznam CZ, Tamedia, tn.cz, ORS (Austria), VRT NL

Systems

Alcatel Lucent, Alcatel Lucent Portugal, Cisco Portugal, Ericsson, Gemalto, ip.Access, Italtel, Microsoft, Nokia, Nokia Siemens Networks, Novabase, SGC Telecom, Sony Ericsson, Unicorn CZ

Regulators

Ofcom (UK), Optus (Australia), PTS (Sweden)

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Triple-play: a positive reality in a gloomy world

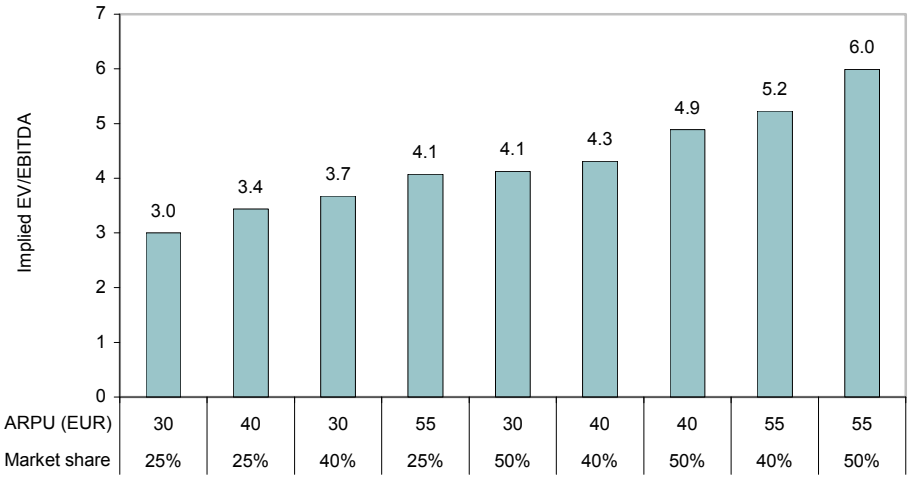
European fixed-line revenues have been under pressure for many years. Incumbents' revenues are declining by an average of 2–3% per annum, as ARPU growth resulting from broadband adoption is more than offset by line losses (almost 6% pa in the past three years), driven by fixed-mobile substitution (c.20% of households are mobile-only) and broadband competition (unbundling of the local loop, cable operators).

If operators did nothing, these trends would not abate. Indeed, as shown by the extreme example of the Austrian market, mobile broadband can compete with fixed broadband to some extent – hence it can lead to reaccelerating fixed line losses and pressure on fixed ARPU. Moreover, the remaining fixed broadband competitors, i.e. incumbents, large unbundlers and cable operators (plus BSkyB in the UK), are less numerous than basic ISPs used to be, but they can bundle broadband and telephone with pay-TV, and therefore pose a more serious and longer lasting competitive threat.

Most European telecom operators have now reacted and launched their own triple-play services – with two important, proven consequences. First, it forces local consolidation of fixed broadband markets. The French example shows that this is followed by stabilised market share and a turnaround in ARPU. Second, it gives a good reason for customers to keep their fixed line instead of becoming mobile-only. In several countries, the launch of triple-play has enabled the incumbent to considerably slow or even stop line losses. This is the case notably in Portugal, Austria and Sweden.

Such improvements can enable fixed revenues to return to growth, and so bring huge value. The sensitivity of an operator's valuation to its long-term (2015) broadband retail market share or ARPU is high: the DCF points to 3x this year's EBITDA assuming the market share falls to 25% and ARPU to EUR30, but rises to 6x assuming a market share of 50% and ARPU of EUR55 (these are all credible figures, close to current levels in selected countries). We also show that halving the pace of line losses from -5% to -2.5% (over 2008–2015) can increase an operator's valuation by 27%.

Figure 4: Sensitivity analysis of DCF valuation of an incumbent operator depending on long-term broadband retail market share and ARPU (2015e)



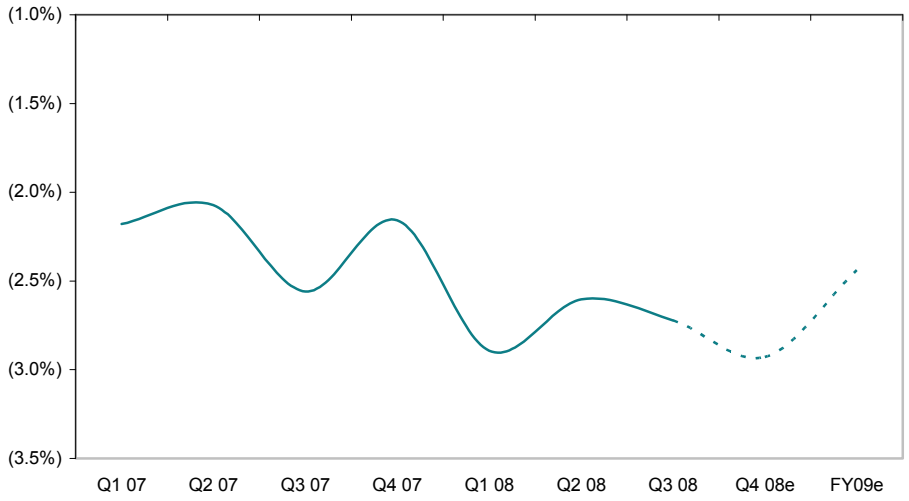
Source: Arthur D. Little, Exane BNP Paribas estimates

Further risks of line losses due to fixed-mobile substitution and broadband competition

European mobile revenues are progressively slowing to a halt (0.7% growth in Q3 2008, 0.2% growth expected in 2009), owing to increasing maturity, renewed regulatory price cuts, ongoing competition, and to a lesser extent the recessionary environment.

At the same time, European fixed-line revenues remain under pressure. Aggregate revenues of fixed incumbents are continuing to decline by an average of 2–3% each year – as shown in the figure below.

Figure 5: Yoy trend in European domestic fixed-line revenues*

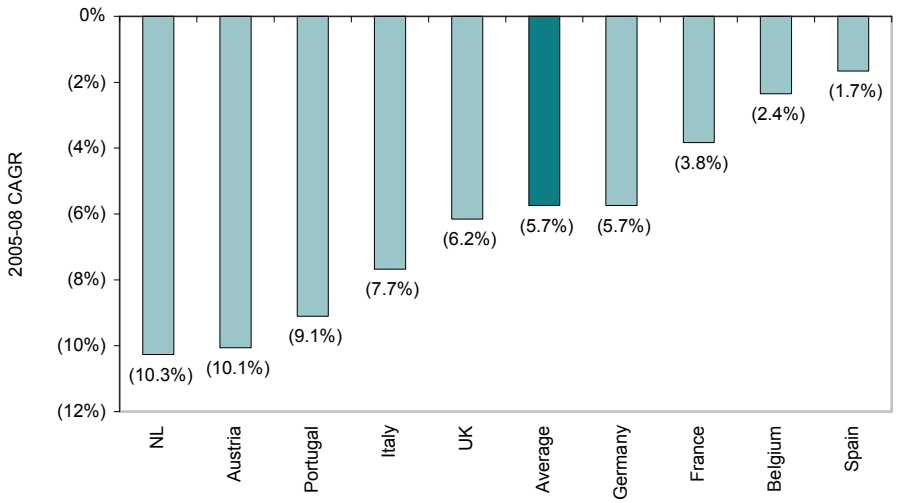


** Based on operators listed in the figure below*

Source: Arthur D. Little, Exane BNP Paribas estimates

The driver of this negative revenue trend at incumbents is ongoing line losses: in the past three years, incumbents' fixed lines have shrunk by 5.7% pa and this was only partially offset by the ARPU growth generated by the migration to broadband.

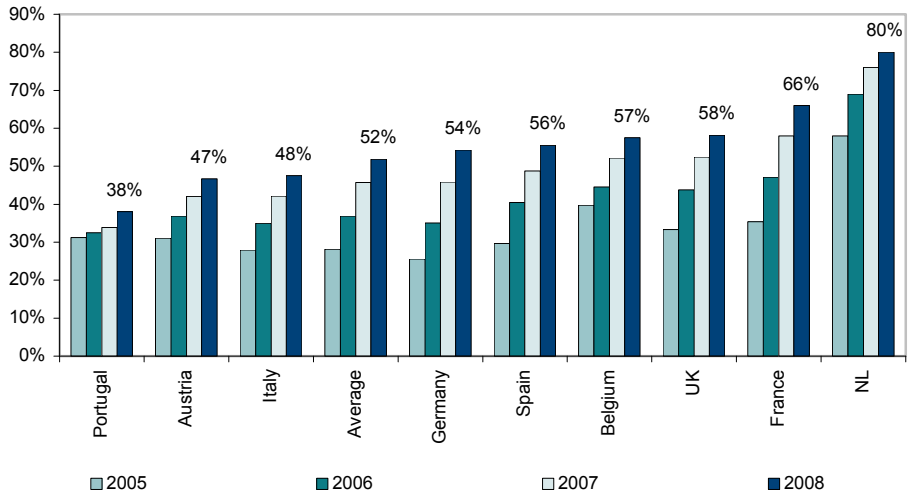
Figure 6: Incumbents' domestic fixed-line CAGR, 2005–2008



Source: Arthur D. Little, Exane BNP Paribas estimates

As shown in the chart below, broadband penetration grew by c.8% pa end-2005 to the end-2008, now reaching 52% of households. This move to broadband is positive for ARPU, since a customer with broadband spends more than a customer with just PSTN.

Figure 7: Evolution of fixed broadband penetration (% of households, 2005-2008)

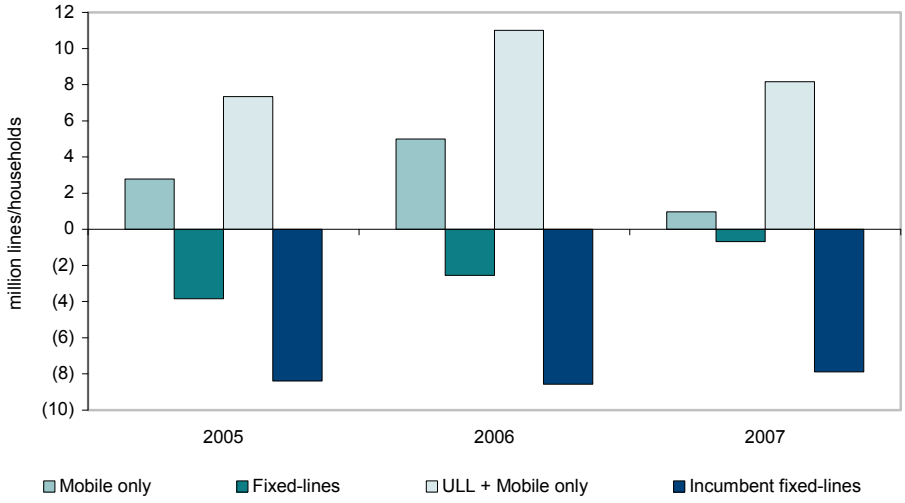


Source: Arthur D. Little, Exane BNP Paribas estimates

So why are incumbents losing lines? Because of two main factors.

First, fewer people are keeping their fixed line. The share of households deciding that a mobile phone is sufficient reached 20% at the end of 2007 (2008 data not available at this stage), an increase of 6% compared at the end of 2004. Will the pace of migration to mobile only slow, or will it accelerate? While it can be argued that fixed-mobile substitution on voice is reaching a plateau in many countries, a new form of substitution is coming up: the rise of mobile broadband could convince more customers to drop their fixed lines, at least in some specific countries.

Figure 8: The two drivers of line losses: fixed-mobile substitution & broadband competition



Source: Arthur D. Little, Exane BNP Paribas estimates

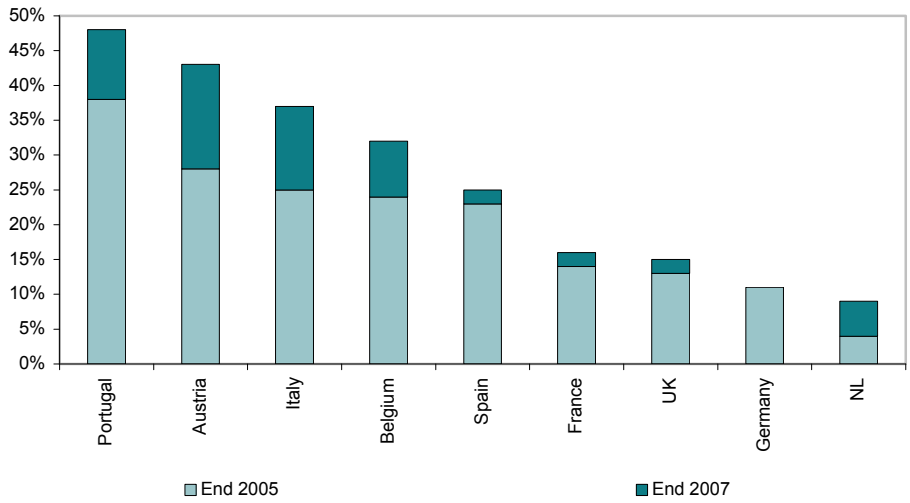
Second, of those customers keeping a fixed line, more and more choose to move from the incumbent to competitive providers and, as a result, the market share of incumbents on fixed lines is shrinking. Will broadband competition abate and incumbents' market shares stabilise? We believe that the demise of cheap alternative ADSL ISPs does not necessarily mean a smoother ride for incumbents. Indeed, the initial competitive pressure from low-cost ADSL providers is quickly being replaced by competitive pressure from more solid players, including the remaining alternative carriers, cable and satellite operators, all providing triple-play.

Mobile broadband could give a new boost to fixed-mobile substitution

In the past few years, fixed-mobile substitution has accounted for one third of incumbents' fixed-line losses in large European countries, on average, with an estimated 6% of the households dropping their fixed-line to become mobile-only in the period from end-2004 to end-2007.

As shown in the chart below, there are very different situations in each country: fixed-mobile substitution is rapid and high (above 30%) in Portugal, Austria, Italy and Belgium, but slow and limited (below 15%) in France, the UK and Germany.

Figure 9: Share of mobile-only households in a selection of European countries



Source: European Commission annual Eurobarometer reports, Arthur D. Little, Exane BNP Paribas estimates

This trend has historically been driven by the increasing penetration and usage of mobile phones for voice communications – a trend which is now slowing given the maturing mobile voice market.

However, 2008 was "year one" of mobile broadband, with two very successful products: the iPhone 3G and 3G/HSDPA-enabled USB sticks ("dongles"). While the iPhone is giving hope to operators that data usage on mobile handsets can increase, many operators highlight that dongles can push fixed-mobile substitution one step further as they enable broadband internet access for PCs without the need for a fixed line. This potential for further fixed-mobile substitution was in particular highlighted by operators in Austria (unsurprisingly, as mobile broadband has already taken a 39% market share of broadband in Austria), the UK, Germany, Sweden, Portugal and also Czech Republic.

The rollout of 3G/HSDPA mobile networks and the drop in the cost of dongles enables operators to offer mobile broadband access at prices that appeal to the mass market.

As shown in the table below (which compares prices of local incumbent operators), mobile operators in some countries have launched very aggressive mobile broadband offers, which are sometimes cheaper than fixed broadband offers. This is the case in Austria, but prices are also particularly low in Sweden and the UK.

Figure 10: Comparison of a selection of mobile broadband offers in Europe*

Country	Operator	Download speed (Mbit/s)	Traffic allowance	Price (EUR/month)
Austria	mobilkom	7.2	Unlimited	14.9
Sweden	Telia	7.2	Unlimited	21.6
UK	Vodafone	7.2	5 GB	26.3
Germany	T-mobile	7.2	Unlimited	40.0
Italy	TIM	7.2	400 hours	40.0
Portugal	TMN	7.2	6 GB	44.5
Spain	MoviStar	3.0	Unlimited	45.3
France	Orange	7.2	1 GB	50.0
Norway	Telenor	7.2	Unlimited	61.3

** For comparison purposes, we have listed only the offers from local incumbent operators. In many cases, other local operators have cheaper offers (e.g. in Austria, the cheapest offer starts at EUR9/month and the first twelve months are free).*

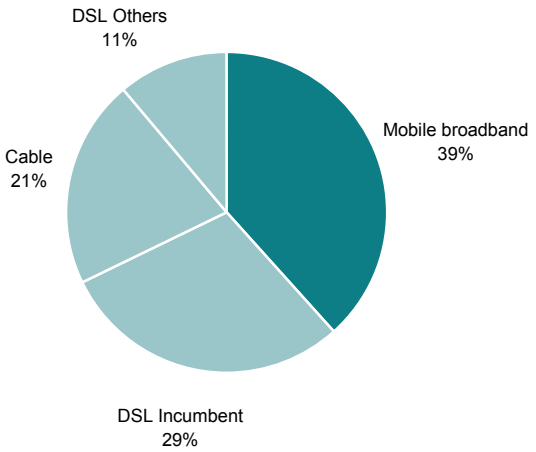
Source: Arthur D. Little, Exane BNP Paribas estimates

There are many limitations to mobile broadband, which is far behind fixed broadband in terms of speed, reliability and capacity. However, customers in some market segments are attracted by the price and ease of use of mobile broadband – which of course also brings mobility – and these customers do not see the quality and speed of fixed broadband as "must haves".

Mobile broadband can therefore put pressure on certain segments of the fixed broadband market, and hence on the market share of fixed operators in the broadband market and on the entry-level pricing point of fixed broadband.

The chart and table below highlight that mobile broadband penetration is developing quickly in those markets where pricing is low and mobile operators push mobile broadband, notably Austria (13% population penetration at year-end 2008, representing 39% of total broadband connections), Spain, Portugal and the UK.

Figure 11: Mobile broadband market share in Austria (year-end 2008)



Source: Arthur D. Little, Exane BNP Paribas estimates

In these countries, the pace of adoption of mobile broadband ranges between 1.5% and 5% of the population in a year. This remains below the pace of adoption of fixed broadband (5-10% of the households per year) but it nevertheless confirms that mobile broadband can, in some cases, get a significant share of the overall broadband market, and thus can contribute to further line losses for fixed operators.

Figure 12: Penetration of mobile broadband

% of population	2006	2007	2008e
Austria	2.6	7.5	13.1
Norway	0.8	1.8	6.0
Portugal	n/a	n/a	4.5
Spain	0.0	1.4	3.4
UK	0.0	0.0	1.7
France	0.0	0.0	0.4

Source: Arthur D. Little, Exane BNP Paribas estimates

Beyond Austria, there are a few countries where mobile broadband represents a threat to fixed broadband. The UK is one of them, as well as Ireland, Sweden, Eastern European countries and Portugal (although in Portugal, mobile broadband is now increasingly bundled with fixed broadband).

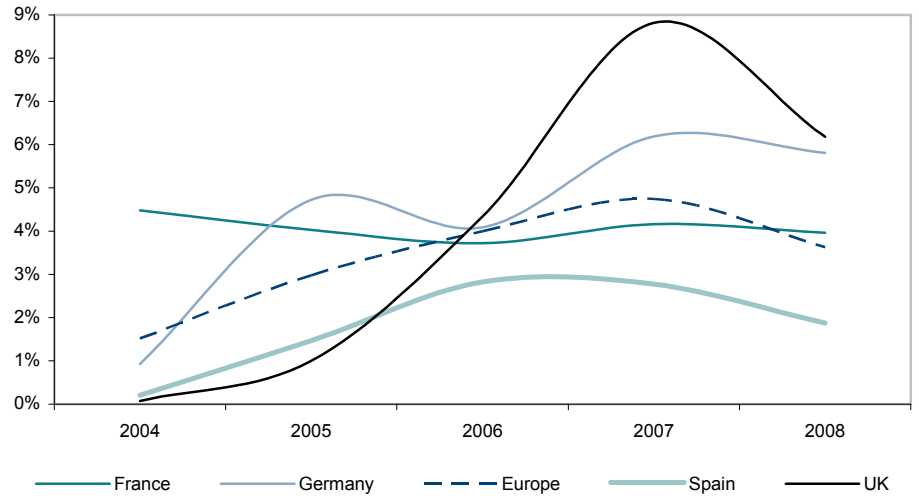
The criteria are in our view 1) the existence of aggressive mobile-only players, which have a strong interest in pushing mobile broadband and have nothing to lose in cannibalising fixed broadband, and 2) the lack of differentiation of fixed broadband offers versus mobile broadband: limited speed, no triple-play.

However, the window of opportunity for mobile broadband may not last long, as: 1) continued strong growth of mobile broadband traffic will put increasing pressure on mobile operators' networks: they will need to invest in costly network upgrades to make sure that the quality of service remains good; and 2) fixed operators are likely to respond: in the UK, BT has announced the rollout of a fibre network; in Portugal, Portugal Telecom has successfully launched triple-play.

Broadband competition: fewer players, but serious ones

Between end-2005 and end-2008, the share of unbundled lines in Europe grew from 5% to 18%, increasing by more than c.4% pa. This pace accelerated every year between 2004 and 2007, but it slowed in 2008.

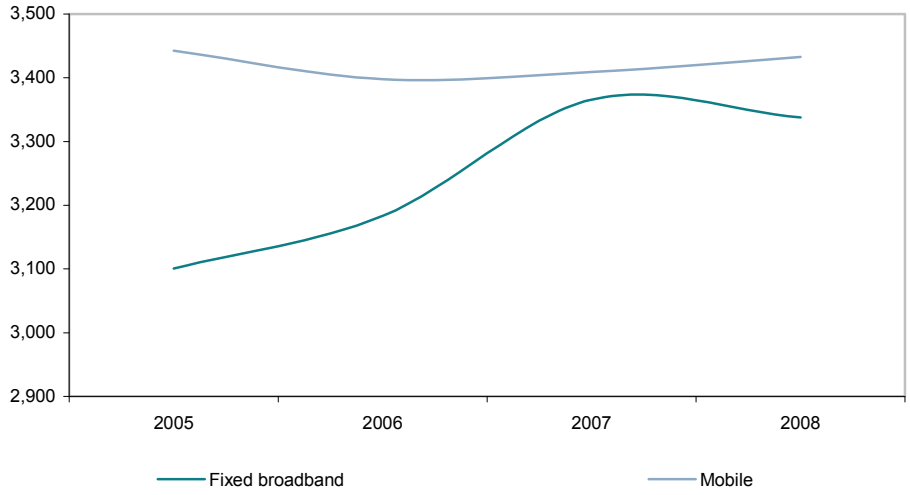
Figure 13: Added penetration yoy of unbundling in Europe and a few countries



Source: Arthur D. Little, Exane BNP Paribas estimates

This slowdown can be linked to the consolidation of the fixed broadband markets which took place in 2007, with the number of alternative ISPs dropping, notably in France, Spain, the UK, Belgium and the Netherlands – a trend that has led to a rise in the average HHI of fixed broadband markets in 2007.

Figure 14: Average HHI of fixed and mobile markets in Europe



Source: Arthur D. Little, Exane BNP Paribas estimates

Does it mean that we have reached a peak in terms of competitive pressure on fixed broadband markets? We believe that this is not the case: the game is only changing in nature, from a situation where a lot of small ISPs compete on broadband to a situation with a handful of solid players competing for triple-play customers.

These solid players include not only the remaining alternative carriers, the strongest ones, but also cable operators and, in the UK, a satellite operator – and most of them are now bundling telecom services (telephone and broadband) with content offerings.

In some countries, the pay-TV players have already captured a bigger share of the broadband market than the local telecom incumbent. This is notably the case:

– In the UK, Virgin Media and BSkyB together account for a third of the broadband lines compared to 26% for BT. In particular, BSkyB has captured 11% of the market in three years;

Figure 15: BSkyB offer in the UK

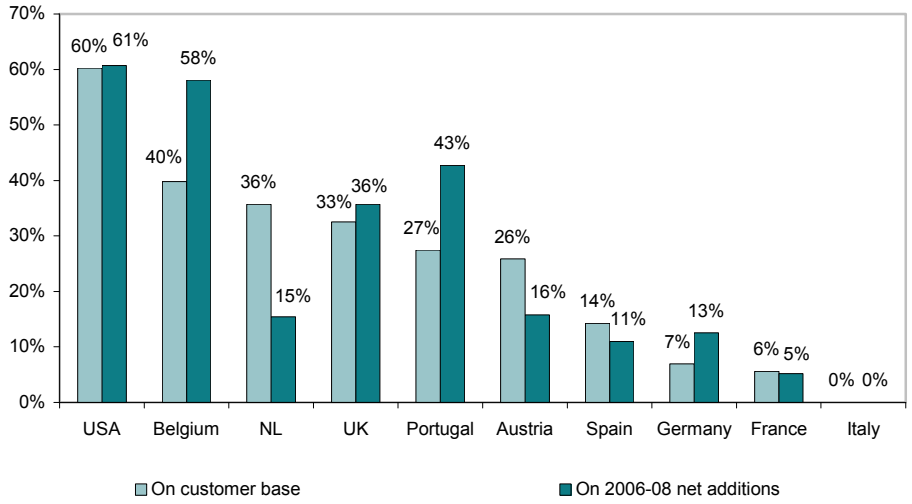
Source: BSkyB

– In Belgium, cable operators have a 48% market share (on residential broadband lines). However, focusing in particular on Flanders, the main region of operation of Telenet, the market share of this cable operator is well above that of Belgacom, the incumbent.

– Another important example is that of the USA, where cable operators have captured 60% market share on broadband versus 40% for the telecom incumbents (mostly Verizon and AT&T).

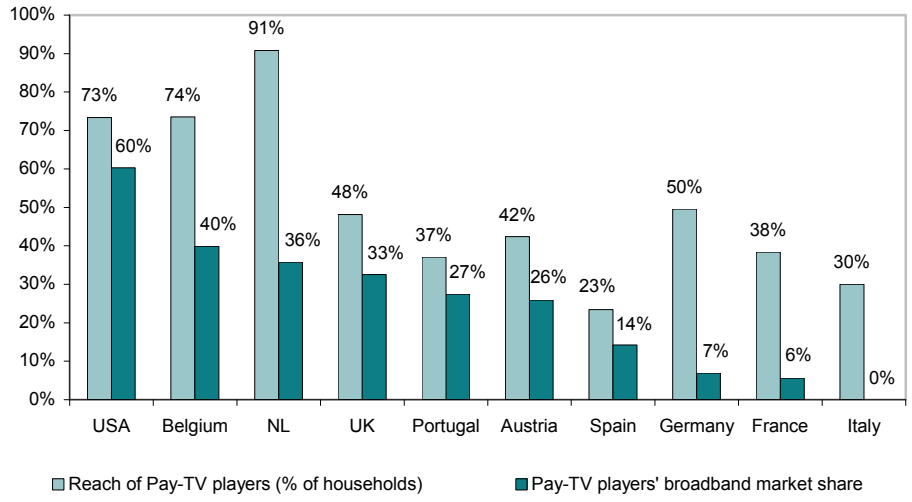
As shown in the chart below, cable operators (and in the UK, BSkyB) have been gaining market share in broadband in many countries, with the notable exceptions of France, Spain, Austria and the Netherlands. For telecom operators, the risk that pay-TV players continue to gain significant market share on broadband in the coming years is real.

Figure 16: Pay-TV players' broadband market share (FY08e) – cable & satellite



Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 17: Pay-TV players' reach in population and their broadband market share



Source: Arthur D. Little, Exane BNP Paribas estimates

If a pay-TV player (for instance a cable operator) reaches 50% of the population in its region of operation, it can in theory cross-sell broadband and telephony to this share of the population, so its potential target market share of broadband is 50%. As such, in each country, the "size" of this risk depends on the following (see chart above).

- The reach of the pay-TV players. The countries where cable and satellite operators reach the largest part of the population are the Netherlands, Belgium, Germany and the UK, while the countries with the lowest reach are Spain, Italy and Portugal;
- Their existing broadband market shares. In Portugal, Spain, the UK and Austria, pay-TV players have already got a large share of their potential target market on broadband, while in Italy, France, Germany, Belgium and the Netherlands pay-TV players (either cable or satellite) have lower market shares on broadband.

Based on these two metrics, Germany, and to a lesser extent France, look to be the two countries in Europe where there is a theoretical risk that cable operators and satellite-based players will win broadband market share in the coming years.

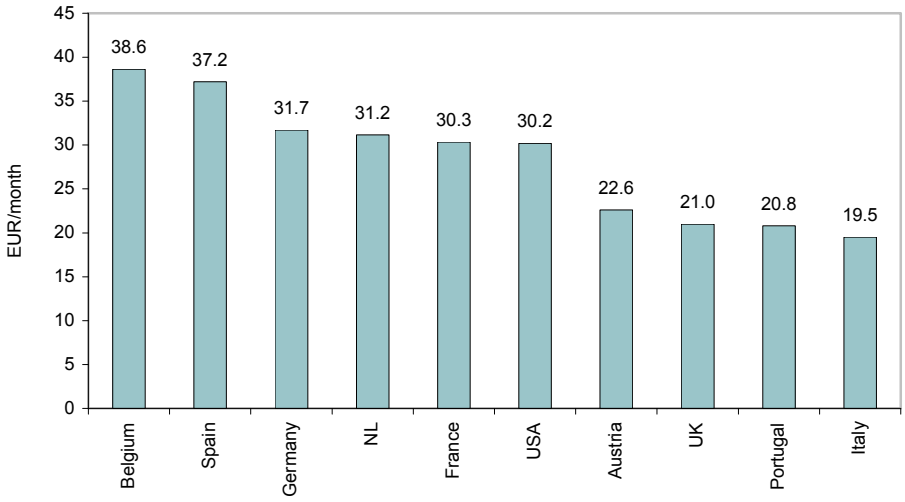
- In Germany, the threat is coming from cable operators, which have started gaining market share as the triple-play offers they have launched in the past few quarters are particularly aggressive. Of course, the extent and speed of their inroads in broadband will depend on how widely and quickly they upgrade their cable networks.
- In France, the cable operator Numericable is theoretically well positioned thanks to its 100Mbit/s offers based on fibre but it has a stretched balance-sheet, which limits its ability to aggressively attract customers. Due to commitments taken by its owner Vivendi vis-à-vis Vodafone, the satellite-based pay-TV player Canal+ cannot launch its own triple-play bundles (Vivendi's telecom activities are regrouped in SFR, owned 56% by Vivendi and 44% by Vodafone). Canal+ is also subject to regulatory constraints.
- In the UK, there is still market share upside for BSkyB and Virgin Media on broadband, but it is now more limited as shown in the chart above.
- In Italy, Sky Italy has been seeking to purchase a broadband player for a while, with current discussions about the acquisition of Tiscali and evaluating other opportunities.
- In Spain, Ono already has more broadband customers than TV subscribers, so there is no significant risk that it will acquire further market share on broadband by leveraging on its pay-TV customer base. On the other hand, Sogecable, the leading satellite pay-TV operator has never shown direct interest in the broadband market and its recent partnerships with telecom operators (Telefónica, Orange) for packaging double-play offers with its pay-TV service have attracted limited market interest.

Finally, in reality, the opportunity only exists if the broadband market can actually be entered with an attractive offer for the customer at an attractive price: the lower the current broadband ARPU in a given country the more difficult for a cable or satellite newcomer to gain customers.

As shown in the chart below, Portugal, Italy, Austria and the UK are markets with low broadband ARPU, while Belgium and Spain, and to a less extent Germany, have higher-than-average broadband ARPU (but as we have seen, Ono already has a high market share).

All in all, we believe that Germany is the country where telecom operators are at the biggest risk of losing broadband market share to cable or satellite players – although we believe that this will be mostly at the expense of alternative carriers.

Figure 18: Estimated broadband ARPU in a selection of countries, 2008*



** Weighted averages based on broadband revenues as reported by incumbents (definitions may differ), broadband ARPU as reported by cable operators, and broadband revenues reported by listed alternative carriers. This ARPU normally excludes telephony revenues, but some alternative carriers sell only double-play or triple-play bundles so splitting their revenues between telephony and broadband does not reflect any reality.*

Source: Arthur D. Little, Exane BNP Paribas estimates

Operators' triple-play response: it works – and adds huge value

In most European markets, telecom operators have launched triple-play offers i.e. they are selling bundles which include television in addition to their telephone and broadband services. The rise of IPTV has been highlighted by operators we have talked to, as a "2008 phenomenon" notably in Germany, Portugal and Sweden – while IPTV was launched earlier in France, Spain and Belgium.

Leaving aside (at this stage) the question of the potential content revenues associated with triple-play and the profitability thereof for telecom operators (see page 55–65), we believe that there is now ample evidence that a triple-play strategy brings two large benefits to fixed operators:

– First, triple-play provides customers with a good reason to keep their fixed line instead of moving to mobile-only;

– Second, triple-play comes with significant fixed costs so it cannot be developed properly by subscale alternative ISPs. Hence it forces local consolidation of fixed broadband markets. This has already happened in the French market: broadband market shares have stabilised and ARPU has started to grow again.

Slower fixed-mobile substitution and/or a rationalised broadband market have already led to strong improvements in line losses for incumbent operators in several countries: losses more than halved at Portugal Telecom in H2 08 compared to the year before, halved at TeliaSonera, and virtually stopped at Telekom Austria during Q4 08.

The impact of such improvements in line losses is huge for the value of a fixed line business: halving the pace of line losses (from a CAGR of -5% to -2.4% over 2008–2015) at a typical fixed incumbent boosts its DCF valuation by as much as 27%.

Operators' foray into triple-play is for real

As shown below, the price range for an entry-level triple-play service in Europe is EUR30–42/month depending on the country, a much lower level than in the USA.

The table below lists the providers of triple-play in European countries and in the USA, and shows the cheapest pricing point that can be found in each country for a triple-play offer – and compares it with the cheapest double-play offer.

The price difference between double-play and triple-play ranges from zero in France (where customers get access to several hundreds of basic TV channels for free, included in the EUR30/month bundle) and EUR17/month in Germany and Italy (to be compared with EUR26 in the USA).

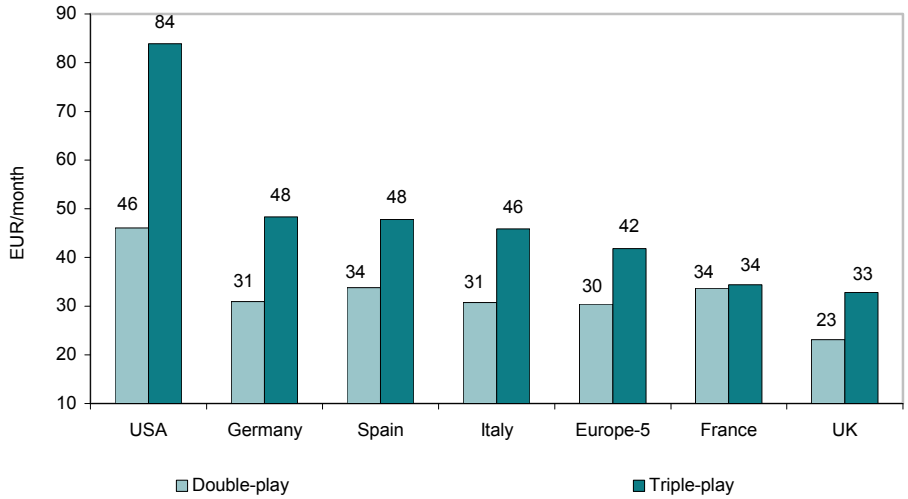
Figure 19: Triple-play providers, cheapest double-play and triple-play prices

Country	Cheapest 2-Play offer (EUR/month)	Cheapest 3-Play offer (EUR/month)	Providers having launched a triple-play offer
UK	18.7	29.7	BSkyB, Virgin Media, BT
France	29.9	29.9	Orange, SFR, Iliad, Numericable
Spain	28.0	35.0	Telefónica, Orange, Ono, Jazztel
Germany	19.9	36.8	Deutsche Tel., Arcor, KDG, Unity Media, United Internet
Italy	25.0	42.0	Telecom Italia, Fastweb, Wind
USA	39.2	65.2	AT&T, Verizon, Comcast, Cablevision, etc.

Source: Arthur D. Little, Exane BNP Paribas estimates

The chart below shows the mathematical average (rather than the cheapest price) of respectively double-play and triple-play monthly fees in the same countries.

Figure 20: Mathematical average prices of entry-level double-play and triple-play packages



Source: Arthur D. Little, Exane BNP Paribas estimates

Operators are also proposing a variety of technical add-ons including the provision of a digital video recorder (DVR), catch-up TV services, high definition television (HDTV) or the ability to watch the content on several TV sets simultaneously (multi-screen) – see pages 76–77.

Finally, many operators have launched complementary satellite-based triple-play services. ADSL-based or fibre-based IPTV cannot cover 100% of the population, so operators such as France Telecom, Portugal Telecom, Swisscom, Fastweb or TPSA (as well as AT&T in the USA) enable their customers outside their wire-line IPTV coverage to access their TV service through a satellite dish (while telephone and broadband continues to come through the telephone line).

Slowing the line losses: four impressive examples

The most important potential impact of launching a TV product is in our view the ability to slow the decline in fixed lines.

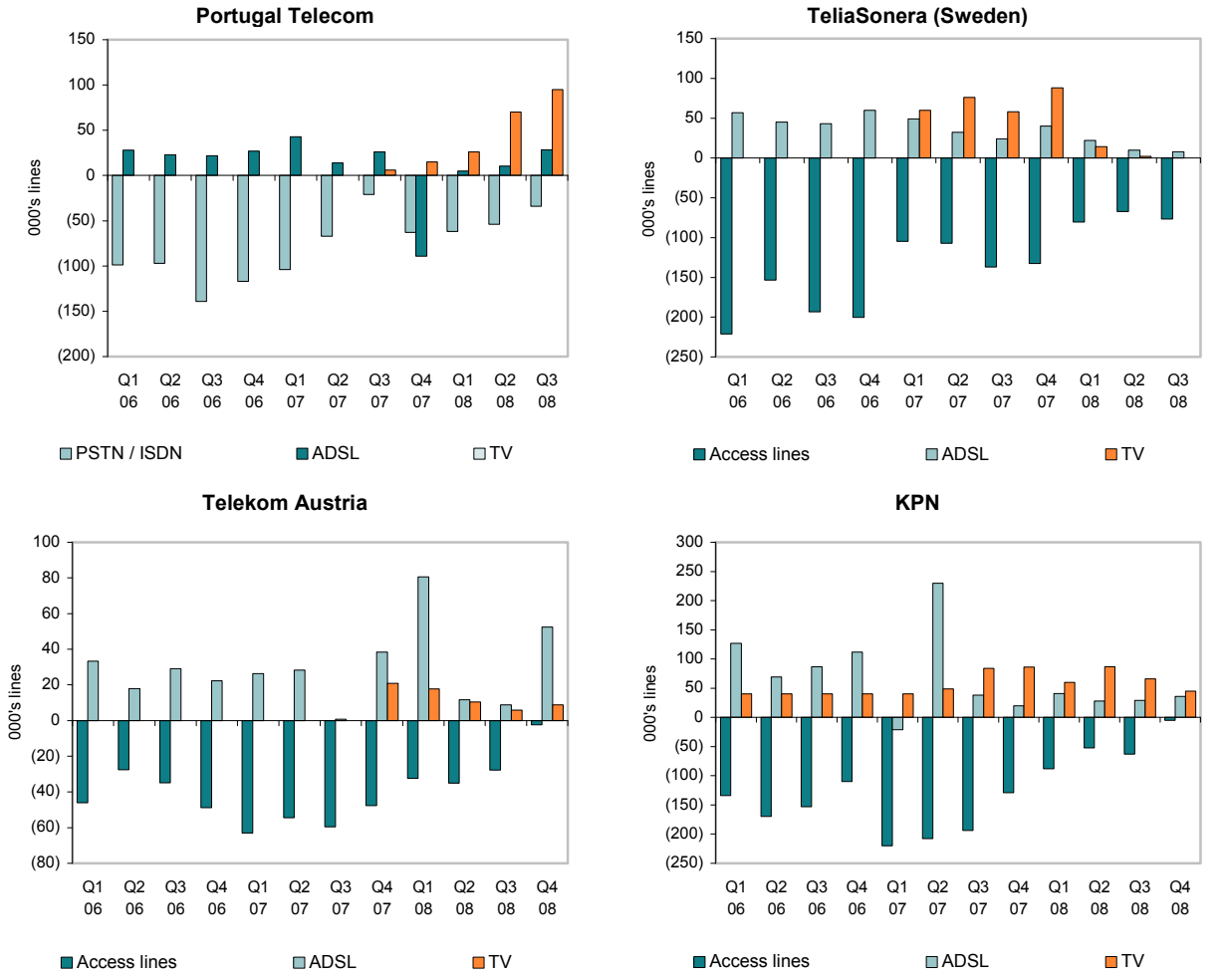
Fixed-mobile substitution is a key driver of fixed line losses. As long as an operator only offers telephone and broadband, the risk is that more and more customers become mobile-only. Having only a mobile is obviously sufficient for voice usage and broadband can increasingly be provided over mobile networks – but mobile does not compete anymore when the fixed operators have launched triple-play.

Many operators that we have talked to see triple-play as an opportunity for them to become a key provider of the "connected home", or, as described by some, a utility as indispensable as water and electricity. They expect customers to become strongly reliant on their service, thereby easing the pace of line losses.

In the figure below, we show four examples of incumbent operators which have launched TV services with a significant impact on their line losses.

– Portugal Telecom is the most striking, with TV net additions accelerating throughout 2008, clearly leading to a slowdown in line losses (the pace of line losses more than halved between 2007 and 2008) and an improvement in broadband net additions. Portuguese companies we have talked to have all highlighted the radical change in the market since the launch of Portugal Telecom's triple-play product called Meo.

Figure 21: Examples of the impact of the launch of a TV product on line losses and broadband net additions



Source: Arthur D. Little, Exane BNP Paribas estimates

– Telekom Austria has also managed to slow the number of line losses thanks to its bundled products including TV – which were at very low prices during 2008. For the 2008–2009 Christmas campaign, the operator was selling triple-play from EUR24.90/month (versus EUR19.90 for double-play); Telekom Austria also pushed another form of triple-play (broadband, fixed voice, mobile voice). As shown in the chart above, these initiatives resulted in a pace of line losses which was halved between 2007 and 2008.

– TeliaSonera has been very aggressive with TV throughout 2007 (TV was given away for free to its triple-play customers for twelve months), and this has led to a significant slowdown of line losses: almost halved in 2007 compared to 2006 and further reduced in 2008. Swedish operators we have talked to say that "triple-play is becoming a must-have" at least on some segments of the market.

– Finally, KPN's increasing pace of TV additions (including both its Digitenne DTT product and its IPTV product) has, in our view, contributed (with other factors such as market consolidation) to the significant slowdown in line losses, which more than halved between 2007 and 2008, and almost stopped in Q4 08.

What is at stake is the number of customers that will keep a fixed-line in the long run, and this will be driven by the long term penetration of fixed broadband.

As can be seen in the table below, for a typical incumbent with a market share of 40% on broadband, increasing the target penetration of fixed broadband from 70% to 85% (by 2015) corresponds to halving the pace of line losses in the coming seven years, from -5% per year to -2.4%.

This move alone has a huge positive impact – even excluding any impact on the incumbent's broadband market share or on ARPU – on the incumbent's outlook and valuation: it increases the DCF valuation by 27% (from -16% to +6% versus our core scenario), i.e. 3.7x the current year's EBITDA to 4.6x.

Figure 22: Sensitivity of the valuation & revenue trend of a typical fixed incumbent to its long-term broadband market share and ARPU

Impact on DCF

		2015e BB market share of incumbent					
		25%	**30%**	**35%**	**40%**	**45%**	**50%**
2015e BB penetration	**65%**	(41%)	(35%)	(29%)	(24%)	(18%)	(12%)
	70%	(35%)	(29%)	(22%)	(16%)	(10%)	(4%)
	75%	(28%)	(22%)	(15%)	(9%)	(2%)	4%
	80%	(22%)	(15%)	(8%)	(1%)	5%	12%
	85%	(16%)	(9%)	(1%)	6%	13%	20%
	90%	(9%)	(2%)	6%	13%	21%	29%

EV/EBITDA

		2015e BB market share of incumbent					
		25%	**30%**	**35%**	**40%**	**45%**	**50%**
2015e BB penetration	**65%**	2.6	2.9	3.1	3.4	3.6	3.9
	70%	2.9	3.2	3.4	3.7	4.0	4.2
	75%	3.2	3.5	3.7	4.0	4.3	4.6
	80%	3.4	3.7	4.0	4.3	4.6	4.9
	85%	3.7	4.0	4.3	4.6	5.0	5.3
	90%	4.0	4.3	4.6	4.9	5.3	5.6

CAGR incumbent's # of lines

		2015e BB market share of incumbent					
		25%	**30%**	**35%**	**40%**	**45%**	**50%**
2015e BB penetration	**65%**	(7.6%)	(7.1%)	(6.5%)	(6.0%)	(5.5%)	(5.0%)
	70%	(6.6%)	(6.1%)	(5.5%)	(5.0%)	(4.5%)	(4.0%)
	75%	(5.7%)	(5.2%)	(4.6%)	(4.1%)	(3.6%)	(3.1%)
	80%	(4.8%)	(4.3%)	(3.7%)	(3.2%)	(2.7%)	(2.2%)
	85%	(4.0%)	(3.4%)	(2.9%)	(2.4%)	(1.8%)	(1.3%)
	90%	(3.2%)	(2.7%)	(2.1%)	(1.6%)	(1.0%)	(0.5%)

Source: Arthur D. Little, Exane BNP Paribas estimates

The table below shows the DCF model we have used for these calculations.

Figure 23: Fixed incumbent flex model and DCF – Base case assumptions

KPIs	2008e	2009e	2010e	2011e	2012e	2013e	2014e	2015e	CAGR (%)
PSTN penetration (%)	85	81	75	70	66	61	57	53	
Broadband penetration (%)	67	72	75	77	79	80	80	81	
PSTN lines	22,641	21,643	20,300	19,100	18,050	16,993	16,098	14,900	(5.8)
Broadband lines	17,624	19,161	20,164	21,034	21,720	22,139	22,558	22,977	3.9
Incumbent lines	**22,756**	**22,263**	**21,449**	**20,704**	**19,982**	**19,567**	**19,485**	**19,150**	**(2.4)**
PSTN lines	20,742	19,658	18,279	17,048	15,970	14,901	13,990	12,832	(6.6)
Broadband subscriptions	8,298	8,979	9,403	9,761	10,030	10,174	10,315	10,455	3.4
of which with PSTN line	6,285	6,373	6,233	6,106	6,018	5,508	4,820	4,137	(5.8)
of which without PSTN line	2,014	2,605	3,170	3,655	4,012	4,666	5,495	6,317	17.7
Incumbent market share									
PSTN lines (%)	92	91	90	89	88	88	87	86	(0.9)
Broadband subscriptions (%)	47	47	47	46	46	46	46	46	(0.5)
Average									
PSTN	21,736	20,200	18,968	17,664	16,509	15,435	14,446	13,411	(6.7)
Broadband	7,797	8,638	9,191	9,582	9,896	10,102	10,244	10,385	4.2
ARPU (EUR/month)									
PSTN & Others	23.8	23.3	22.9	22.9	23.2	23.7	24.0	24.4	0.3
Blended broadband ARPU	33.8	34.9	36.0	37.1	38.2	39.3	40.4	41.5	3.0
EURm									
Telephone & Others	6,220	5,652	5,214	4,861	4,604	4,388	4,168	3,919	(6.4)
Broadband & IPTV	3,159	3,615	3,968	4,265	4,536	4,765	4,969	5,175	7.3
Total consumer services	**9,379**	**9,267**	**9,183**	**9,125**	**9,140**	**9,153**	**9,137**	**9,094**	**(0.4)**
Carrier services & Others	8,692	8,713	8,686	8,578	8,419	8,286	8,185	8,155	(0.9)
Total revenues	**18,070**	**17,980**	**17,868**	**17,703**	**17,560**	**17,439**	**17,322**	**17,248**	**(0.7)**
Opex	(11,640)	(11,683)	(11,673)	(11,623)	(11,540)	(11,465)	(11,369)	(11,288)	(0.4)
Fixed*	(8,207)	(8,223)	(8,222)	(8,152)	(8,044)	(7,952)	(7,879)	(7,809)	(0.7)
Variable*	(3,433)	(3,460)	(3,450)	(3,471)	(3,496)	(3,513)	(3,490)	(3,480)	0.2
EBITDA	**6,430**	**6,297**	**6,196**	**6,080**	**6,020**	**5,974**	**5,953**	**5,960**	**(1.1)**
D&A	(1,900)	(1,950)	(2,050)	(2,150)	(2,200)	(2,200)	(2,200)	(1,900)	0.0
EBIT	4,530	4,347	4,146	3,930	3,820	3,774	3,753	4,060	(1.6)
Tax on EBIT	(1,560)	(1,497)	(1,427)	(1,353)	(1,315)	(1,299)	(1,292)	(1,398)	(1.6)
Capex*	(2,320)	(2,340)	(2,690)	(2,690)	(2,690)	(2,690)	(2,300)	(1,950)	(2.5)
OpFCF	**4,110**	**3,957**	**3,506**	**3,390**	**3,330**	**3,284**	**3,653**	**4,010**	**(0.4)**
Post-tax OpFCF	2,551	2,460	2,078	2,037	2,015	1,985	2,361	2,612	0.3
EBITDA margin (%)	**35.6**	**35.0**	**34.7**	**34.3**	**34.3**	**34.3**	**34.4**	**34.6**	
Capex/sales (%)	(12.8)	(13.0)	(15.1)	(15.2)	(15.3)	(15.4)	(13.3)	(11.3)	
DCF (%)		100	92	85	78	72	67	61	57
WACC (%)	8.5	2,460	1,916	1,732	1,580	1,435	1,574	1,606	17,521
Growth (%)	0.0								
Exit multiple	11.8								
	EV	**29,823**							
	EV/EBITDA	4.7							

** When "flexing" the model, we have assumed that commercial costs, interconnect, costs of goods sold and content costs are variable and vary with revenues, and that personnel, network maintenance costs and capex are fixed*

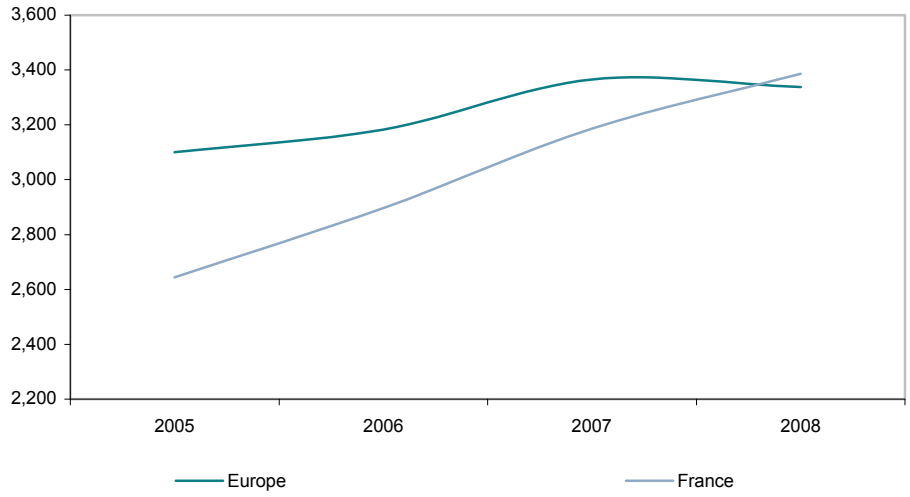
Source: Arthur D. Little, Exane BNP Paribas estimates

Triple-play can stabilise a broadband market: the French example

The other key threat that we have identified for telecom operators is the loss of market share in the broadband market. In markets where there are still numerous ISPs (the most extreme examples being the UK and Germany), we believe that the move of larger players to triple-play should lead to market consolidation – as has been the case notably in France. Market consolidation means more stable market share and less pricing pressure, hence the ability for remaining operators to stabilise and grow ARPU.

The French example is quite striking. As shown in the chart below, the market concentration index (HHI) has increased in the past four years from c.2600 (in 2005) to c.3400 (in 2008), i.e. from a level significantly below the European average to slightly above the European average. This was driven notably by the acquisitions of Neuf Telecom (first Cegetel, then AOL and Club Internet), SFR's acquisition of Tele2 and Iliad's acquisition of Alice (Telecom Italia France).

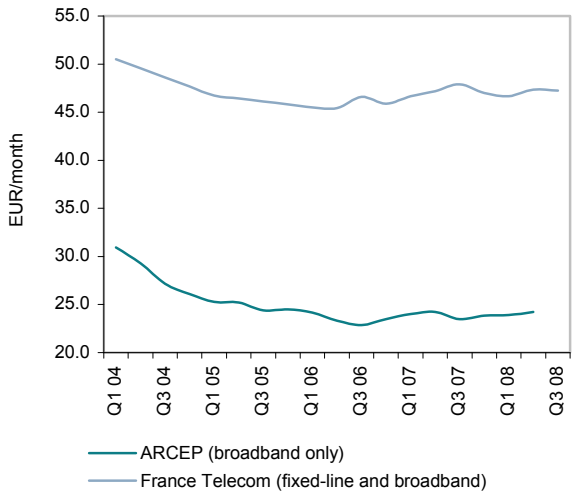
Figure 24: HHI in the French fixed market versus European average



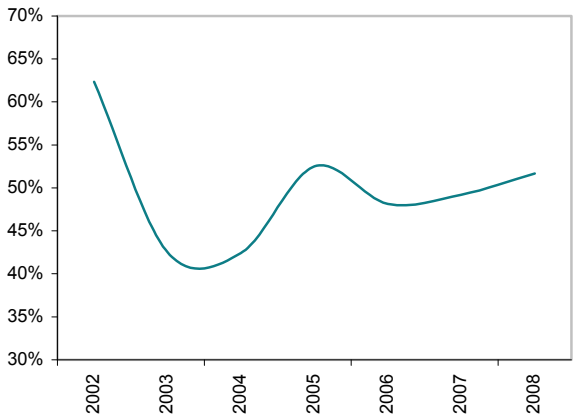
Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 25: ARPU and market share in the French broadband market

ARPU in the French broadband market



Incumbent's market share on broadband net additions



Source: Arthur D. Little, Exane BNP Paribas estimates

Since the end of 2006, the market has stabilised, as can be seen in the two charts above: ARPU has bottomed-out both at the market level (as calculated using broadband revenues and customer numbers released by the regulator ARCEP) and for the incumbent; the incumbent's market share of broadband net additions has stopped oscillating and has been steady at around 50% since 2007.

Such trends add significant value. As can be seen in the table below, a 5% difference in long-term broadband market share adds 5–8% to the valuation of a typical incumbent operator (depending on the long-term broadband ARPU), and EUR5/month of additional ARPU adds 5–9% (depending on the long-term market share).

The table below summarises our sensitivity analysis depending on these two key assumptions, broadband market share and broadband ARPU in the long term (2015):

- In a bear case on market share (25%) and ARPU (EUR30), fixed-line revenues can be expected to decline by more than 3% pa and the DCF valuation points to 3.0x this year's EBITDA;
- In a bull case on market share (50%) and ARPU (EUR55), fixed-line revenues would grow by more than 1% pa and the DCF valuation points to 6.0x EBITDA.

Figure 26: Sensitivity of the valuation & revenue trend of a typical fixed incumbent to its long-term broadband market share and ARPU

Impact on DCF		2015e BB market share of incumbent					
		25%	30%	35%	40%	45%	50%
2015e BB ARPU EUR/month	30	(38%)	(34%)	(29%)	(24%)	(19%)	(14%)
	35	(33%)	(28%)	(22%)	(17%)	(11%)	(5%)
	40	(28%)	(22%)	(16%)	(9%)	(3%)	3%
	45	(23%)	(16%)	(9%)	(2%)	5%	12%
	50	(18%)	(11%)	(3%)	5%	13%	21%
	55	(13%)	(5%)	4%	12%	21%	29%

EV/EBITDA		2015e BB market share of incumbent					
		25%	30%	35%	40%	45%	50%
2015e BB ARPU EUR/month	30	3.0	3.2	3.5	3.7	3.9	4.1
	35	3.2	3.5	3.7	4.0	4.3	4.5
	40	3.4	3.7	4.0	4.3	4.6	4.9
	45	3.7	4.0	4.3	4.6	4.9	5.3
	50	3.9	4.2	4.6	4.9	5.3	5.6
	55	4.1	4.5	4.8	5.2	5.6	6.0

Revenue CAGR		2015e BB market share of incumbent					
		25%	30%	35%	40%	45%	50%
2015e BB ARPU EUR/month	30	(3.3%)	(3.0%)	(2.6%)	(2.3%)	(1.9%)	(1.6%)
	35	(3.0%)	(2.6%)	(2.2%)	(1.8%)	(1.4%)	(1.0%)
	40	(2.6%)	(2.2%)	(1.7%)	(1.3%)	(0.9%)	(0.4%)
	45	(2.3%)	(1.8%)	(1.3%)	(0.8%)	(0.4%)	0.1%
	50	(2.0%)	(1.4%)	(0.9%)	(0.4%)	0.1%	0.6%
	55	(1.7%)	(1.1%)	(0.5%)	0.1%	0.6%	1.1%

Source: Arthur D. Little, Exane BNP Paribas estimates

Fibre: keeping fixed access up to speed

At this stage, fibre plans in Europe have remained relatively low key for now in Europe, contrary to other regions in the world (US, Japan, Korea). However, we see a growing number of reasons for European operators to move ahead – in particular the exponential growth of video-related traffic, the governments' "stimulus plans" and, in some cases, the threat from mobile broadband.

FTTC/VDSL investments can lead to good returns, but given the limited premium that operators are able to charge customers for fibre-based services compared to DSL-based offers, FTTH does not appear profitable on a "stand alone" basis: operators need to get subsidies and/or to negotiate indirect revenues such as wholesale fees from the providers of the most video-hungry applications (e.g. YouTube, BBC iPlayer). Paradoxically, large-scale alternative carriers are in a better position than incumbents as FTTH returns will be boosted by opex savings (unbundling fees).

The many reasons to move to fibre

From competition, revenue or cost-motivation to politics, there are many reasons why operators around the world have started to replace their existing copper lines by fibre networks – and we expect these reasons to get stronger and stronger in the coming years, leading to more announcements and investments:

- In some countries, fibre is the only way for operators to increase bandwidth proposed to customers, because ADSL can provide speeds of more than 10Mbit/s only if the quality of the copper lines is good and where they are not too long. In particular, the US telcos AT&T and Verizon have started fibre rollout earlier than many others because local telephone lines are longer in the US than in many other countries;
- Another key reason is defence against competitive pressure, notably from cable operators, who can upgrade the speed they offer customers of up to 100Mbit/s at a relatively low cost through a combination of limited fibre investment and of new box technologies (DOCSIS 3.0). In the US, the threat from cable operators (which have gained 60% market share in broadband) has also been a key reason for AT&T and Verizon to move to fibre. Competitive pressure from cable is also a key driver for incumbents' decisions in Belgium, the Netherlands and Switzerland, and to a certain extent in Germany. Regarding France, France Telecom was motivated to move to fibre by the announcements of the largest unbundler, Iliad, that it was going to move to fibre;
- Operators hope that the new services enabled by fibre, such as very high speed internet (download and upload), multi-screen high-definition TV, and one day 3D television, will generate higher ARPU;
- In some cases, the investment required is actually low. This is the case of fibre to the curb (FTTC) technology (less than EUR300 per line) as it does not involve rolling out fibre to the home for each customer, but only to a mid-point in the network. This is also the case for FTTH (fibre to the home) in places where operators can use sewers (e.g. in Paris);
- Operators also plan to use the fibre transition to reduce operating costs, on two fronts: 1) the ability to free-up buildings that are currently used for local exchanges, in order to sell them (as in the case of KPN); and 2) expectations that a fibre network will require less maintenance work than current copper/DSL networks (Verizon has said that its FTTH network generates 80% less outside plant network problems than its copper network);
- Finally, in many cases, governments and local authorities are involved in fostering the rollout of a fibre network, with the target of improving the competitiveness of a country or of a region. This is notably the case in Japan and Korea, but also in Europe (Netherlands, Sweden, etc.).

Three new elements will be adding pressure on operators in the coming years:

– First, many operators we have talked to have highlighted the "massive growth" in content consumption over the internet, with video as the key driver thanks to applications such as YouTube or BBC's iPlayer. Also, social networking means that customers are uploading more and more content to the web – hence each broadband customer uses an increasing capacity, both downstream and upstream. This will require further upgrades of access networks;

– Second, as we have seen, in some countries, mobile broadband is a significant threat to fixed broadband (e.g. Austria, the UK or Sweden). Fixed operators need to differentiate their offering from mobile operators – and fibre brings this difference;

– Lastly, given the recession that started in 2008, notably, in the US and Europe, "economic stimulus plans" are been designed by governments. In many countries, governments plan direct or indirect aids to investment in broadband networks. This is notably the case in the US, but also in Germany and Portugal, and it is also being discussed in France and the UK – although in the UK, the government seems to favour not intervening in operators' investment decisions.

Many operators we have talked to have highlighted the need for such rollout, notably in Sweden, France and Portugal. On the other hand, companies in some countries take a more cautious approach, for instance in Belgium (operators saying that the already rolled-out FTTC/VDSL network should be enough for now) and Spain (highlighting that operators are much less interested than the government in this issue).

Fibre capex update

Rolling out fibre is a long and costly task. In the table below, we show a selection of investment plans that have been announced by operators in the past few years. The biggest plan is that of NTT in Japan: EUR33bn for 47m FTTH lines.

In Europe, the largest plan in terms of numbers of lines is Deutsche Telekom's, but this is based on FTTC/VDSL technology which costs much less than FTTH. FTTH is being deployed in France (by France Telecom, Iliad, SFR), Spain (Telefónica), Switzerland (Swisscom), Portugal (Sonaecom; Portugal Telecom is preparing its own plan) and the UK (BT Group). The level of capex involved depends first and foremost on the technology: FTTC/VDSL costs around EUR250 per line, while FTTH costs around EUR1000 per line. Rolling out FTTC/VDSL in a large country (such as Germany), targeting 50% of the population, could cost EUR4–5bn. However, rolling out a full FTTH network in a large country (such as France), even though it would probably only target 30–40% of the population, could cost at least EUR10bn.

Figure 27: Selection of fibre rollout plans around the world and in Europe

Country	Operator	Technology	Target lines (m)	Target customers (m)	by	years	Capex (EURbn)	EUR/home passed	EUR/ customer	Capex per year (EURbn)	Customers YE 2008 (m)
Japan	NTT	FTTH GPON	47.0	n/a	2010	4	32.6	693	n/a	8.15	12.1
Korea	Korea Tel.	FTTH	12.0	n/a	2010	n/a	0.75	n/a	n/a	0.54	4.6
USA	Verizon	FTTH GPON	18.0	7.0	2010	6	14.1	782	2,011	2.35	2.5
USA	AT&T	FTTC VDSL	18.0	n/a	2009	4	4.4	247	n/a	1.11	1.0
Germany	Deutsche Tel.	FTTC VDSL	10.5	n/a	2008	4	2.5	238	n/a	0.63	n/a
Netherlands	KPN	FTTC VDSL	0.8	n/a	2009	3	0.2	300	n/a	0.08	0.08
Belgium	Belgacom	FTTC VDSL	3.6	n/a	2010	4	0.27	294	n/a	0.07	n/a
France	Iliad	FTTH P2P	4.0	0.67	2012	5	1.0	250	1,493	0.20	n/a
France	France Tel.	FTTH GPON	1.0	0.25	2009	2	0.27	270	1,080	0.14	0.02
Spain	Telefónica	FTTH	3.6	n/a	2010	4	1.0	278	n/a	0.25	n/a
Switzerland	Swisscom	FTTH	2.5	n/a	2008	6	1.86	743	n/a	0.31	n/a
Portugal	Sonaecom	FTTH	1.0	n/a	2011	3	0.24	240	n/a	0.08	n/a
UK	BT Group	FTTH / FTTC	10.0	n/a	2012	4	1.65	165	n/a	0.41	0.0

Source: Arthur D. Little, Exane BNP Paribas estimates

Can such capex lead to decent returns?

There are three key parameters to assess the return on invested capital of a fibre rollout plan: (i) the capex per line of course, (ii) the incremental ARPU generated by a customer migrating to fibre and the margin on this incremental ARPU, and (iii) the opex savings enabled by the move to fibre.

As we have seen, the capex per line can be assumed to be around EUR1000 for FTTH and EUR250 for FTTC/VDSL. Regarding the incremental ARPU, we expect it to be low in the short term, but it could be significant over the long term:

– At this stage, commercial fibre offers which have been launched are rarely at a large premium to existing ADSL offers. As can be seen in the table below, the premium is around EUR7–15/month in several countries; it is zero in the case of Iliad and SFR in France; and it is even negative for AT&T which is strongly pushing customer migration;

Figure 28: Pricing of fibre-based triple-play versus ADSL-based triple-play offers (EUR/month)

Country	Operator	3-Play / ADSL	3-Play on Fibre	Delta
France	France Telecom	42.9	57.8	14.9
	Iliad	29.9	29.9	0.0
	SFR	29.9	29.9	0.0
	Numericable	34.9	36.9	2.0
UK	Virgin Media	n/a	33.0	n/a
Spain	Telefónica	64.4	71.4	7.0
	Ono	49.5	65.0	15.5
Germany	Deutsche Telekom	50.0	60.0	10.0
USA	AT&T	73.3	65.2	(8.1)
	Verizon	95.9	102.9	7.0

Source: Arthur D. Little, Exane BNP Paribas estimates

– Longer term, we expect broadband markets to consolidate and fibre rollout is one of the elements which cause such a consolidation, as it will squeeze subscale ISPs out of the market. If and when this happens, we expect remaining players to have more pricing power and to be able to progressively increase ARPU.

In the table below, we have optimistically assumed incremental ARPU of EUR10/month, but with a conservative gross margin of 50% on this increment as we assume that it corresponds to additional sales of content.

Figure 29: Estimating the return on invested capital for an incumbent and an alternative carrier

	Alternative carrier			Incumbent		
EUR/month	ADSL	Fibre	Increment	ADSL	Fibre	Increment
ARPU	40.0	50.0	10.0	40.0	50.0	10.0
ULL cost	(9.2)	0.0	9.2	0.0	0.0	0.0
Other direct cost	(5.8)	(10.8)	(5.0)	(15.0)	(20.0)	(5.0)
Gross profit	25.0	39.2	14.2	25.0	30.0	5.0
Gross margin (%)	63	78		63	60	
Gross profit, EUR/year	300	470	170	300	360	60
Capex, EUR/line	0	1,000	1,000	0	1,000	1,000
Gross ROCE post-tax (%)			**11**			**4**

Source: Arthur D. Little, Exane BNP Paribas estimates

Regarding opex savings, they will be immediate for an alternative carrier currently operating from unbundling of the local loop, as the operators will save the unbundling fee for each customer migrating to its own fibre network. This represents a large saving of about EUR9/month per line i.e. a boost of the gross margin by at least 20%. Of course, only large scale alternative carriers (such as Iliad in France or Sonaecom in Portugal) can afford a fibre rollout, given the fixed costs linked to such a project.

For incumbent operators, there is no such immediate saving (but more long term opex reductions linked to the simplification and modernisation of the network) so we have not taken any opex benefit in our simple calculation.

The tables show that:

– The post-tax return reaches 11% for an alternative carrier assuming incremental ARPU of EUR10, and even assuming no incremental ARPU, the ROCE is 7%. As such, the project can create value. However, for alternative carriers, the move to fibre is a very capital intensive one hence it requires critical size and visibility on the long term market and regulatory outlook. As such, in France, Iliad and SFR will be investing in fibre, but in Italy, Fastweb has stopped its residential fibre rollout, awaiting further clarification from the regulator regarding access to Telecom Italia's network;

– For an incumbent, the post-tax ROCE is good (8–16% with ARPU uplift of EUR5-10) assuming an FTTC/VDSL capex of EUR250. However, it is poor (4%) assuming a FTTH like capex of EUR1000, even assuming incremental ARPU of EUR10.

As such, we would expect operators to look either for a more significant ARPU uplift (difficult) or for alternative ways to finance their fibre network, including (i) subsidies from governments or local authorities and (ii) a new business model with the providers of the most capacity-hungry applications such as video (e.g. with Google for YouTube or BBC for iPlayer) where these companies would pay wholesale fees to be able to serve video content to the customers connected with fibre.

Figure 30: Return as a function of the incremental ARPU and capex per line*

1. Incumbent

		ARPU increment (EUR/month)			
		0	5	10	15
Capex (EUR/line)	250	0%	8%	16%	24%
	500	0%	4%	8%	12%
	750	0%	3%	5%	8%
	1,000	0%	2%	4%	6%
	1,250	0%	2%	3%	5%
	1,500	0%	1%	3%	4%
	1,750	0%	1%	2%	3%
	2,000	0%	1%	2%	3%

2. Alternative carrier

		ARPU increment (EUR/month)			
		0	5	10	15
Capex (EUR/line)	250	30%	38%	46%	54%
	500	15%	19%	23%	27%
	750	10%	13%	15%	18%
	1,000	7%	9%	11%	13%
	1,250	6%	8%	9%	11%
	1,500	5%	6%	8%	9%
	1,750	4%	5%	7%	8%
	2,000	4%	5%	6%	7%

** For simplicity, this calculation assumes that there is no incremental fixed opex involved in the rollout of fibre, so the EBITDA is zero if the incremental ARPU is zero.*

Source: Arthur D. Little, Exane BNP Paribas estimates

The regulatory debate is less 'hot' than it seems

The debate on regulation of FTTx is reportedly "hot" at the European level and in many countries.

It is clear that European regulators are unlikely to let incumbents rebuild monopoly situations through the rollout of fibre. In September 2008, the European Commission published a draft recommendation on regulated access to Next Generation Access (NGA) networks.

On expected return on capital, the EC took a balance stance: "the return that is allowed ex ante on equity capital to finance NGA networks should strike a balance between providing adequate incentives for companies to invest (…) while at the same time promoting efficiency and sustainable competition and maximising consumer benefits (…). In order to achieve this balance, regulated returns should compensate companies for the relevant risks they face when making the investment." However, the EC is also trying to impose price regulation on wholesale bit-stream services based on fibre rather than only on access to dark fibre or to ducts – and this stance is more than that taken by most national regulators.

Indeed, at the national level, most incumbents have successfully argued that regulation needs to protect their investments and to enable them to make returns commensurate with the risk they are taking. This is notably the case in the Netherlands (the detailed FTTC/VDSL regulation is in favour of the incumbent KPN), Spain (Telefónica is not required to provide wholesale access for products above 30Mbit/s), but also France (the regulator does not demand wholesale access to France Telecom's fibre products but has required access to its existing ducts and operators will share the in-building fibre) as well as in the UK (the regulator has established the principle of a decent return for BT).

Overall we believe that the regulatory risk on fibre is more limited than it seems – and the uncertainty lies much more in the customers' willingness to pay more for a richer set of services and in the governments' willingness to support operators' investments.

2. Content: a tempting revenue opportunity

The revenue opportunity for telecom operators in media is neither irrelevant nor game-changing for telecom operators. Including potential pay-TV revenues, video-on-demand and advertising, the revenue opportunity could reach the equivalent of 7% of fixed incumbents' corresponding 2008e revenues, or almost EUR2.7 per line per month (see table below).

These figures are not huge, but they can still increase operators' 2008–2015e top-line CAGR by 1% and this is significant as the current rate of decline is around 2.5% per year.

Figure 31: Summary of the media revenue opportunity for fixed incumbents*

	Pay-TV	VoD	Advertising	Total
Revenue opportunity by 2015e (EURm)	2,564	863	451	3,877
EUR per month per 2008 fixed line	1.8	0.6	0.3	2.7
Opportunity as % of 2008e revenue	4.8	1.6	0.8	7.2
Impact on 2008–2015e revenue CAGR (%)	0.7	0.2	0.1	1.0

** In Germany, France, UK, Italy, Spain, Netherlands, Belgium, Portugal and Austria*

Source: Arthur D. Little, Exane BNP Paribas estimates

These estimates are consistent with those quoted by companies we have talked to: content monetisation (through customer revenues or advertising) currently represents less than 3% of virtually all fixed operators' revenues, but several operators expect content to account for 5% of their revenues in a few years time (notably in Germany, Portugal, Spain and France) and some have even quoted a figure of 10% in five years.

On our estimates, pay-TV will account for more than half of the revenue opportunity for telecom operators and is the most tangible part of the equation. Our forecasts are based on: 1) increasing pay-TV penetration in Europe: 5-25% penetration gains by 2015, depending on the country, with the most potential in Spain and Italy; 2) incumbent operators grabbing 10-30% market share on pay-TV: higher potential share where cable is weak; and 3) a pay-TV ARPU of EUR10–15/month for these players, which assumes no investment in content (or only a small one), in a business model resembling that of a cable operator rather than that of a satellite platform.

Media consumption is changing fast: the channel fragmentation, "delinearisation" of content, explosion of web2.0 services and user-generated content, multi-access on different screens: TV, PC and mobile, willingness of customers to be "always on". This often represents a threat for traditional media players but is a clear opportunity for telecom operators, with potential revenues in video-on-demand, advertising and other associated services.

Video-on-demand is a promising market, but a very crowded one. Even assuming that VoD would grab 30% of the movie market and that a typical incumbent operator could grab a 30% chunk of the VoD market (despite the competition from many internet, IT hardware and media groups, as well as other access players such as cable operators), the revenue opportunity is only a third of that promised by pay-TV.

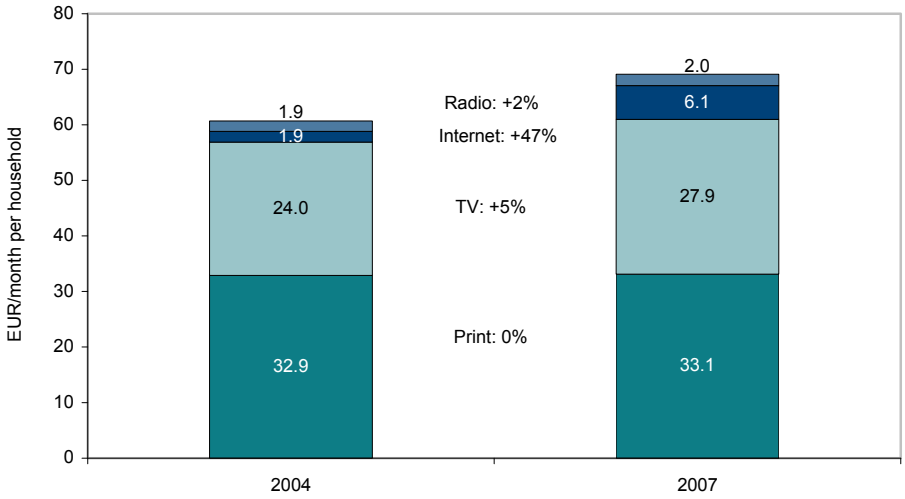
The advertising opportunity is smaller and more speculative. General online advertising is locked by internet leaders, in particular Google. Telecom operators may have a role to play in local advertising. Our revenue estimate, even though it is based on an aggressive benchmark with Comcast, is not a large figure by any means.

Media markets: major shift to internet and new consumption patterns

On a per-household basis, the sum of print, TV, internet and radio comes to revenues of EUR72/month on average in the five largest European markets studied. In this market, the two segments of which telecom operators want to get a share, i.e. television and internet, represent EUR28 and EUR6 respectively (TV includes pay-TV & advertising; internet revenues mainly mean advertising). These figures compare with EUR40/month per household for fixed telecom services (telephone and broadband).

The media market has been growing by 4–5% per year in recent years in Europe, with traditional media such as print and radio virtually flat. This means all the growth is generated by the internet and television.

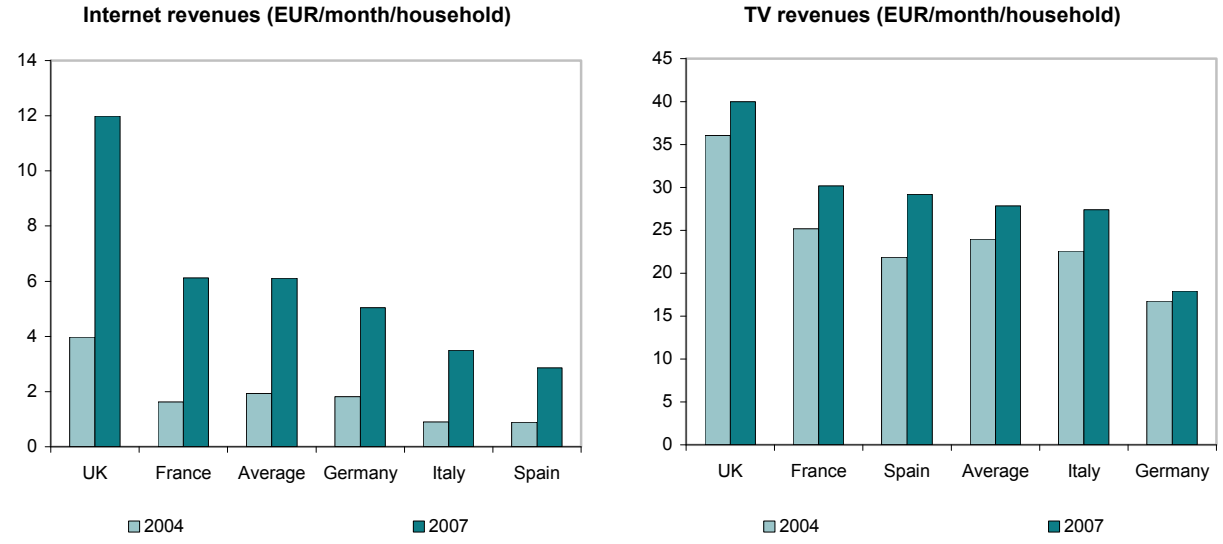
Figure 32: Size of key media markets, 2004–2007, in EUR/month/household (five largest European countries*) including customer-paid and advertising revenues



** Germany, France, UK, Italy, Spain*

Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 33: Change in internet and TV revenues in five large European markets



Source: Arthur D. Little, Exane BNP Paribas estimates

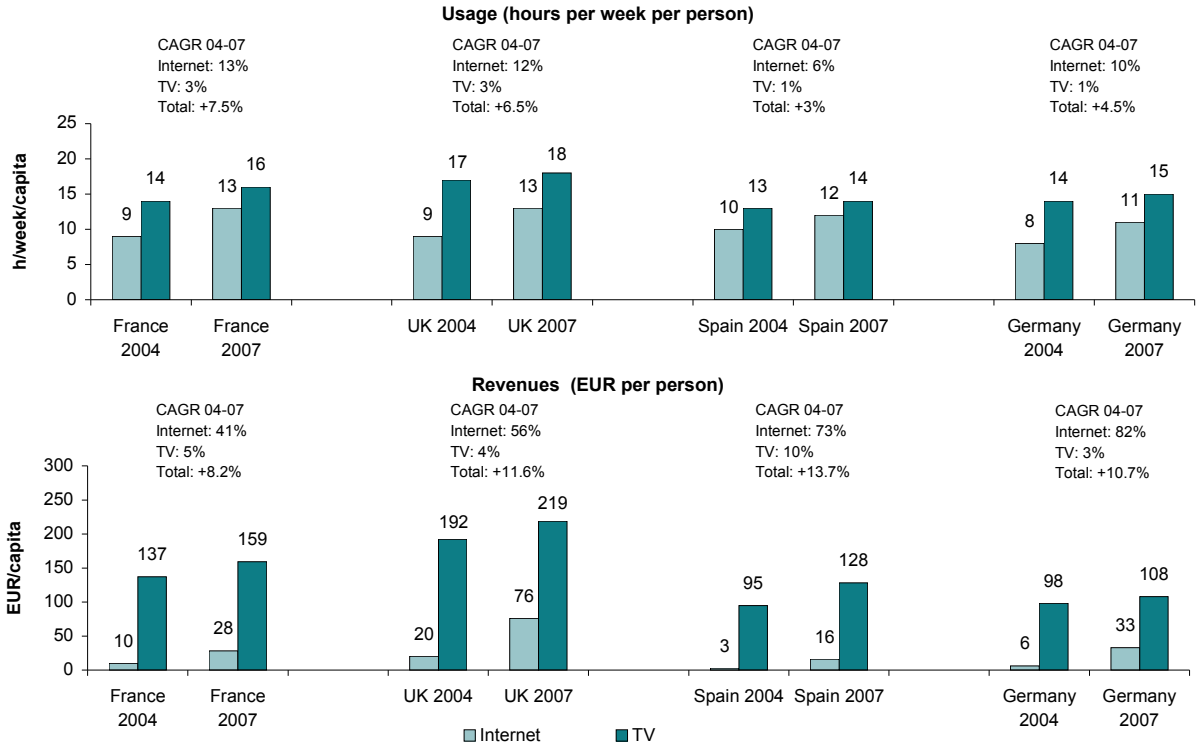
As shown in the graphs above, there are large discrepancies from country to country: Internet revenues are EUR12/month per household in the UK, but only EUR3 in Spain, while television represents EUR40/month in the UK versus EUR18 in Germany.

The growth in internet and television revenues is driven by increased usage (for TV and internet) and an increased monetisation of this usage (for internet):

– Weekly television usage has grown by c.1% per year in Germany and Spain, but by 3–4% per year in the UK and France, while the weekly usage of internet has grown by between 5% and 15% per year depending on the country. Media usage is being stimulated by penetration growth, i.e. increasing penetration of pay-TV and broadband internet and by increasing usage per user;

– The second chart below shows that the growth in internet revenues is much faster than the growth in internet usage. The monetisation of internet usage is still low compared to the monetisation of TV usage for instance, but it is growing faster, mostly through advertising (in addition to revenues derived by operators from access to the internet).

Figure 34: Change in TV and internet usage and revenues in four large European countries



Source: Arthur D. Little, Exane BNP Paribas estimates

In terms of usage, we see a profound shift as internet usage grows, cannibalising traditional media. Most companies in the sector expect stabilisation of the overall consumption of media, but with some major shifts within that: they see a decline in linear TV consumption and more customers using on-demand content. This includes online PC content (video on websites, now genuinely available thanks to the fast internet speeds available in most European countries), content stored on customers' own digital video recorders (e.g. TiVo in the USA) and pay-TV operators' services (catch-up TV, video-on-demand, etc.).

Interestingly, this trend was highlighted most by companies in the UK, one of the most advanced markets in terms of internet usage, but also in Sweden, France and Portugal. Against that, a number of German, Austrian and Belgian companies we talked to downplayed the extent and/or the speed of this change.

The impact of this trend differs depending on the media segment:

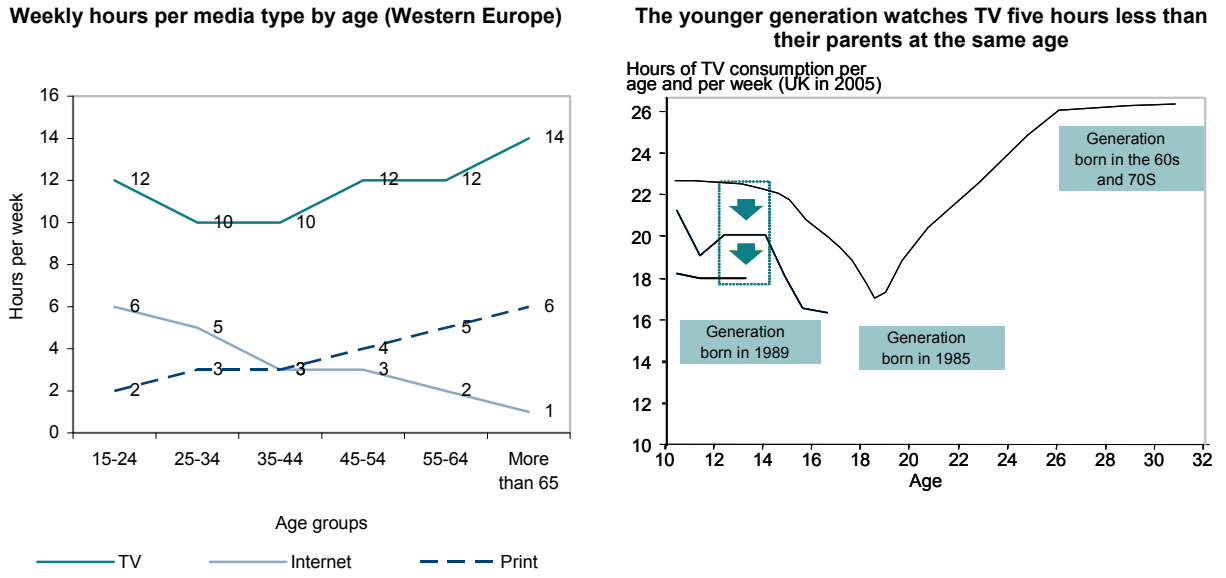
– For access to news, despite increasingly widespread internet usage, a recent CREDOC study reported that, in France, 64% of the population think TV is the best medium to follow the news compared to 13% for radio, 11% for newspaper and only 10% the internet. On the other hand, a recent Pew Research Center report highlighted that to the question "where do you get most of your national and international news?", 70% of Americans still said television (down from 74% in 2007). However, 40% said internet (and even 59% of the Americans younger than 30) versus 24% a year ago, while only 35% said newspapers;

– For music, the level of piracy is very high and has led to strong cannibalisation of CD sales in the past few years (see Figure 52). For instance, in France, the CREDOC report shows that 20% of 18+ year-olds and 56% of 12–17 year-olds have already downloaded music online (including illegally);

– High rates of film piracy are also emerging. In France, 500,000 cinema tickets are sold per day and there are an estimated 450,000 illegal movie downloads per day, according to some sources. According to the CREDOC study, 14% of adults (32% of teenagers) have already downloaded movies, while DVD sales have decreased by 5% in value in 2008.

Finally, almost all the industry players we talked to highlighted the huge growth in web2.0 services and user-generated content, with a clear generation gap emerging. Services such as Facebook are mostly used by 10–29 year-olds. For them, it has led to drastic changes in media consumption: they spend more time on user-generated content than on professionally produced content and spend less time watching TV than using their PC.

Figure 35: A clear generation gap in terms of TV and internet usage



Source: Arthur D. Little, Exane BNP Paribas estimates

This trend also has an impact on telecom operators: 1) positive: social networking sites have in some cases become a motive for subscribing to a broadband package or 3G mobile phone; 2) negative: social networking means that customers are uploading more and more content to the web, utilizing greater network capacity, in particular upstream. The result may be a need for further investment.

Pay-TV: the largest revenue opportunity in content

We estimate the pay-TV revenue opportunity available to telecom operators at around EUR2.6bn for nine large European countries (Germany, France, UK, Spain, Italy, the Netherlands, Belgium, Portugal and Austria) by 2015. NB: We define pay-TV as including all subscription-based TV offers, i.e. both low-priced cable or IPTV services and premium channels and packages. This revenue opportunity represents a "boost" to incumbents' fixed-line revenue growth of 0.7% per year over the period and is equivalent to incremental revenue of EUR1.8 per month per fixed line by 2015. This is based on the following analysis:

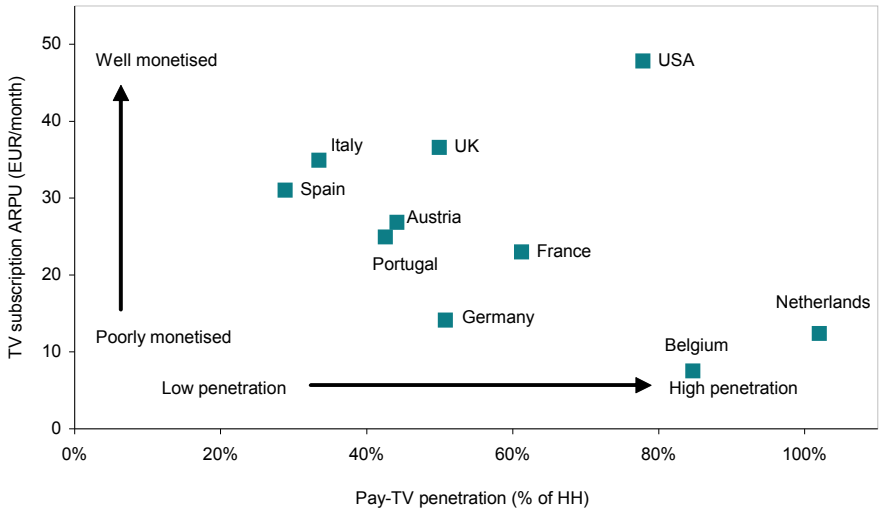
– Growth potential of pay-TV **penetration**. There is still room for growth in pay-TV penetration in Europe. We expect pay-TV penetration to rise by 5–25% by 2015, depending on the country. Italy and Spain are currently well below average (below 35%) suggesting higher-than-average growth potential, while the high penetration in Belgium and the Netherlands suggests very low growth potential;

– The ability of telecom operators to gain **market share** in the pay-TV market. On average, incumbent operators have a 46% broadband market share; the most advanced incumbents already have 15% market share of the pay-TV market; in light of this, we believe that a 20–30% market share is realistic in the long run, except in some highly penetrated markets;

– **ARPU**: it will depend on two factors: 1) the price points that customers are used to paying for pay-TV in each country (the European average for pay-TV is EUR24 but with large local differences: EUR37 in the UK versus EUR12 in the Netherlands), and 2) the type of content/service that each telecom operator will develop ("high premium" content; "light premium" content; "resale"). Based on our profitability analysis (see pages 55–65), we believe that telecom operators can only afford the "light premium" and "resale" strategies, so ARPU should remain at the low end (EUR10–15/month).

The opportunities come in different forms in different countries: in Portugal, Italy, Spain, Austria or even France, telecom operators can play the role of relatively weak or absent cable operators, with a high potential in terms of number of customers; in Belgium and the Netherlands, cable penetration is already high but monetisation is low, so the market is certainly more difficult for telecom operators; finally, telcos in the UK face a difficult pay-TV market, already well penetrated and highly monetised.

Figure 36: Analysis of the pay-TV market opportunity in selected markets*



** In Belgium, the NL and Germany, penetration includes households that pay low fees for access to cable TV, but it does not include free-to-air satellite (which is particularly developed in Germany: 16m households).*

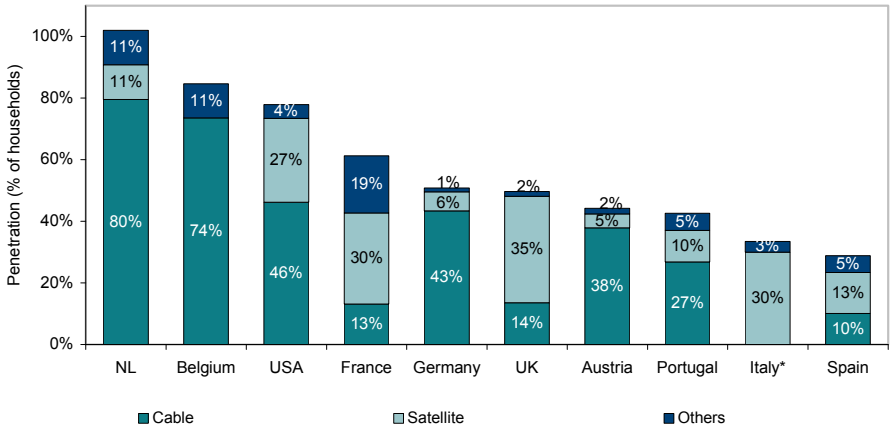
Source: Arthur D. Little, Exane BNP Paribas estimates

IPTV can boost pay-TV penetration in "low cable" countries

As shown in the chart above, pay-TV penetration varies widely between countries: from below 35% in Italy and Spain to 85% in Belgium and 100% in the Netherlands.

These figures include all pay-TV providers, i.e., cable, satellite and IPTV, plus terrestrial pay-TV where it exists. They do not include multi-channel satellite viewers that do not pay a subscription to a pay-TV provider (e.g. in Germany). The large differences between countries primarily reflect the different levels of cable development, with Italy and Spain having respectively zero and low cable penetration on the one hand, and Belgium and the Netherlands with very high cable penetration on the other. France and the UK show average levels of pay-TV penetration with relatively low cable penetration, thanks to the high development of satellite-based pay-TV. France also has high IPTV penetration.

Figure 37: Penetration of pay-TV split between cable and satellite, by country



** For Italy, we have included the pay-DTT customers in the "satellite" category*

Source: Arthur D. Little, Exane BNP Paribas estimates

We believe that in the countries where cable penetration is low, such as Italy and Spain, the roll-out of IPTV offers by telecom operators is an opportunity to increase pay-TV penetration substantially – with telecom operators replacing cable operators.

However, the penetration potential also depends on other factors, in particular customers' appetite for pay-TV, which differs from one country to the next due to several factors, among them cultural, but also technical aspects such as the structure and penetration of free-to-air TV. The table below shows the number of TV channels available to customers from each type of TV platform: analogue terrestrial (which is bound to be switched off in the next few years), free digital terrestrial television (DTT), pay DTT, satellite and cable. In particular the availability of a large number of free channels on satellite or DTT can hinder further growth in pay-TV penetration.

Figure 38: Number of channels available by type of TV platform

	ATT	Free DTT	Pay DTT	D.Sat Basic	D.Sat Prem	Cable	Total
UK	5	39	7	31	79	160	416
France	7	18	11	77	32	220	244
Germany	13	21	0	8	25	40	93
Italy	9	33	2	60	19	0	205
Spain	5	21	0	20	46	100	108
Europe average	**8**	**26**	**4**	**39**	**40**	**104**	**213**
USA	6	18	0	46	139	275	440

Source: Ofcom

In the UK, Ofcom figures show that, in the past few years, most of the growth in "multi-channel households" has come from free DTT: this product, called Freeview, has grown from 1.2m households at the end of 2002 to almost 10m at the end of 2007, i.e., a 33% penetration rate. However, the current strong net additions from BSkyB show that the two products may actually be complementary.

In France too, free DTT has grown strongly (22% of the population in 2007 versus 10% in 2006), but so has IPTV, while cable and satellite have remained roughly stable and analogue terrestrial television has declined (72% in 2007 versus 77% in 2006).

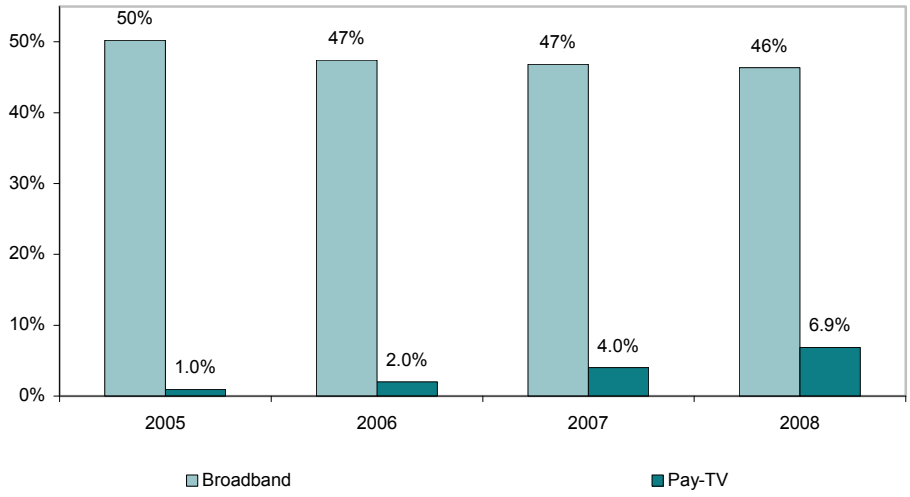
Lastly, another limiting factor is that the younger generations are spending less and less time watching traditional linear TV, so we would not assume that pay-TV penetration can rise to the same levels as observed in countries where pay-TV boomed 20 years ago such as the USA. This was highlighted by some of the companies we talked to – and some even said that traditional "pay-TV has no future" due to the trend towards non-linear video consumption. We do not share this negative view, as we believe that, thanks to its technological capabilities, IPTV can enrich traditional TV with interactive services, user-generated content and non-linear usage – hence can enable to build services that are attractive even for the new generations of users.

As such, we expect the average penetration of pay-TV to rise in Europe. The largest growth potential is in Italy and Spain – when the current economic crisis is behind us, which may take several years. We would expect that by 2015, pay-TV penetration could reach 70-75% in France, the UK and Germany, and around 50% in Italy and 40% in Spain (assuming the approval by the Spanish government of pay-DTT).

Market share potential: 10–30% by 2015 depending on the country

On average, incumbents' broadband market share is as high as 46% in the large European countries – and this figure has been stable for the past three years. In the same period, operators' market share of the pay-TV market has grown from virtually zero in 2005 to almost 7% at the end of 2008.

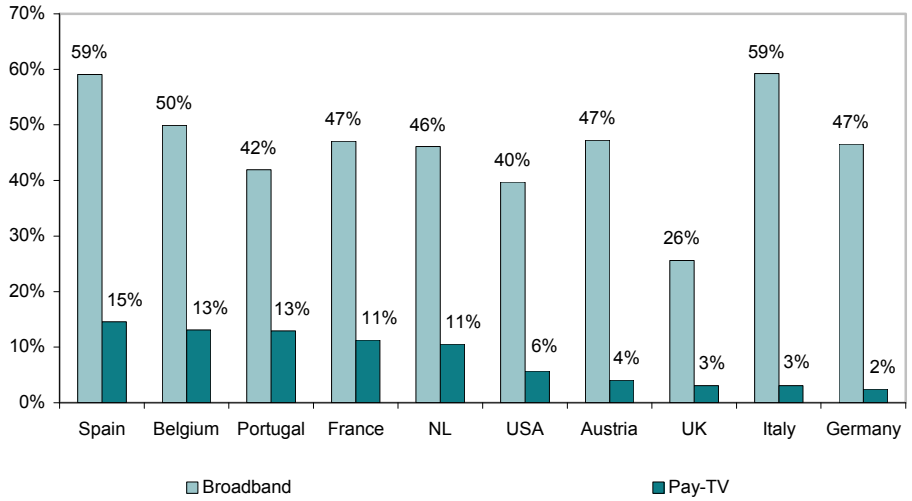
Figure 39: Incumbents' broadband and pay-TV (resale) market shares (in number of subscribers)



Source: Arthur D. Little, Exane BNP Paribas estimates

The most advanced country in Europe in terms of the incumbent's pay-TV market share is Spain (15%, reflecting a low level of pay-TV penetration and the incumbent's high broadband market share), while Germany is the least advanced, reflecting a pay-TV market that new entrants have a difficult time entering as the penetration rate is high and customers already have access to several dozen TV channels for a very low price through cable or for free via satellite.

Figure 40: Local incumbents' market share of pay-TV users (resale*) compared with their share of the broadband market



** These figures include some double-counting as some customers are included in both the customer base of a cable or IPTV operator and the customer base of a pay-TV package (e.g., in France, a customer with Canal+ on Free is counted as a Canal+ customer and a Free customer)*

Source: Arthur D. Little, Exane BNP Paribas estimates

We believe that, by 2015, telecom operators could capture an average market share of pay-TV in Europe of circa 20%.

On the one hand, it will be more difficult in countries where cable or satellite penetration is already high, such as Germany, or in countries where the incumbent is starting with a low broadband market share, like the UK. Several German companies have highlighted that Germany is and will remain a "cable" market, and that triple-play is more an opportunity for cable operators than for telecom operators. For these countries, we would expect a long-term pay-TV market share of 10–15% for incumbent telecom operators. In principle, Belgium would also rank in this category but Belgacom has the advantage of a high broadband market share in the southern part of the country and can leverage this to provide a competitive digital TV offer.

On the other hand, it should be easier in less mature markets like Portugal, Spain and Italy – where incumbents are starting with a strong market share is broadband – or in markets where a strong incumbent can undercut a dominant satellite-based pay-TV player, e.g., France. In these countries, we could see market shares of 25–30%.

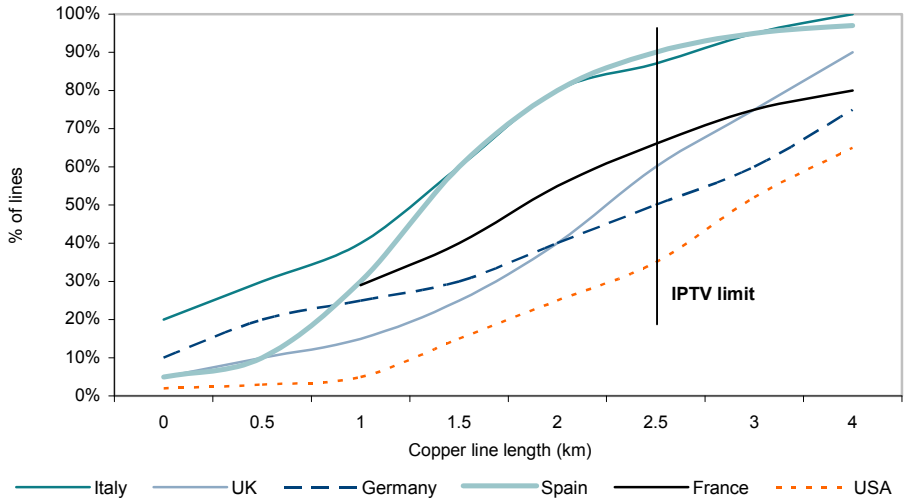
Compared with existing pay-TV operators, telecom operators have the opportunity to differentiate themselves by pushing innovative "non-linear" TV services, including catch-up TV, video-on-demand, etc. If cable and satellite operators are slow to make such offers, this could create a window for IPTV players.

However telecom operators face several challenges when entering the IPTV market.

– The planned IPTV networks are complex, and delivering the right quality of service to a mass customer base remains relatively unexplored. Telecom operators launching IPTV have to manage complex server farms, complex home equipment (boxes), etc.

– Not all copper lines can offer enough good-quality bandwidth even for standard definition video, let alone HDTV. The bandwidth necessary for good quality television is 4Mbit/s (in MPEG2) and this speed is available with ADSL2+ technology only on the local copper lines, which are less than 2.5km long. As can be seen in the chart below, operators are not equal in this respect, with only 30% of lines short enough in the USA versus more than 85% in Spain and Italy.

Figure 41: Length of copper lines in different countries



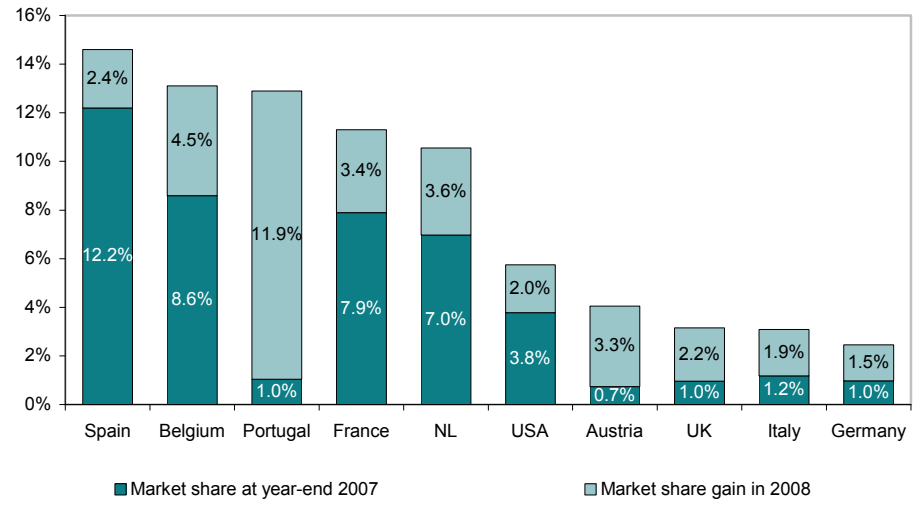
Source: Arthur D. Little, Exane BNP Paribas estimates

To bypass this problem, telecom operators including France Telecom, Portugal Telecom, Telecom Italia, Swisscom and TPSA are adding to their ADSL coverage with satellite. In places where IPTV cannot be distributed through the copper line, the operator feeds its TV signals through a satellite dish. The result is a triple-play offer that is actually a double-play via ADSL complemented by TV via satellite. This increases the reach of the offer to 100% of the broadband customer base, at a cost which is very affordable for any incumbent;

– The type of content offered will be essential for telcos' products to succeed. It will not be easy to secure/procure varied and compelling content, or even content similar to existing pay-TV offers. Each operator has to find the right positioning: in countries with a very established pay-TV operator controlling a lot of premium content (e.g. the UK or France), the opportunity may be in the lower-end segment of the market, a strategy that we would call "light premium"; on the other hand, in countries where all customers currently pay a low monthly fee for many non-premium channels (e.g. Germany), opportunities for telecom operators may be more difficult to find. They may lie in a superior customer experience enabled by advanced services such as high-definition TV, video-on-demand, digital video recorder capabilities, time-shifting, etc.;

– Finally, even if an IPTV operator has a large reach and is well positioned, consumer inertia, when it comes to adopting new offers, should not be underestimated, so the pace of market share gains cannot be exponential. The countries where telecom operators are currently making the fastest progress are Portugal, Belgium, France and the Netherlands, with a market share gain of 12% in Portugal in 2008, and around 4% in other countries (see chart below).

Figure 42: Telecom operators' pay-TV market share gains, 2008 versus 2007



Source: Arthur D. Little, Exane BNP Paribas estimates

The current macro-economic environment should have a corresponding negative impact on customers' willingness to pay for additional services. However:

– Pay-TV should, in our view, be a relatively resilient area for households, as it may benefit from customers' restriction on other more expensive forms of entertainment such as eating out, cinema, or even travel;

– The current environment may be an opportunity for newcomers to differentiate through aggressive value-based offers. In particular, in countries where the pay-TV market is dominated by a strong satellite-based pay-TV player (e.g. France or the UK), the recession could provide an opportunity for cheaper pay-TV offers launched by telecom operators.

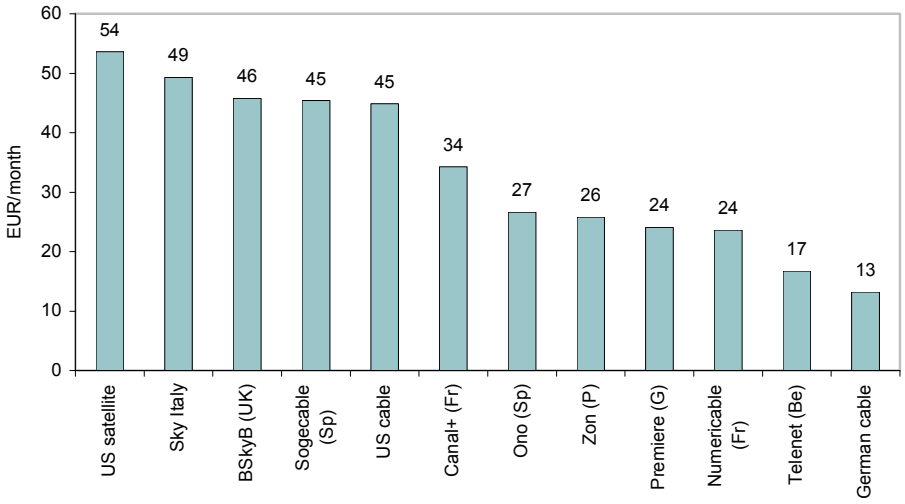
ARPU potential depends on content strategy

The first way of assessing the incremental ARPU that can be derived from triple-play is to simply look at the difference between the prices of double-play and triple-play offers: almost EUR40/month in the USA, but closer to EUR10–15/month in Europe, with the notable exception of France where triple-play is available at the same price as double-play (see Figure 20).

Aside from this, a key differentiating factor is the strategic positioning of each pay-TV player. As shown in the chart below, even within the same country, the pay-TV ARPU of the different providers can vary greatly. In France, Spain and Germany for instance, the ARPU of the satellite players (Canal+, Sogecable, Premiere) is higher than that of the local cable operator (Numericable, Ono, German cable operators) as the satellite players are selling their own premium content while the cable operators are in a resale position.

Figure 44 below shows the variety of additional content offers available from different operators in the triple-play market in Europe. These range from single TV non-exclusive channels that are sometimes sold on a channel-per-channel basis with monthly subscriptions of a few euros, to high-end television packages that include premium/exclusive sport and movie channels. In this respect, virtually all telecom operators are acting like cable operators, i.e. they resell content packages from local pay-TV leaders such as Canal+ in France, BSkyB in the UK, Sogecable in Spain, Sky in Italy etc., with monthly subscriptions ranging from EUR20 to EUR60.

Figure 43: Pay-TV ARPU varies greatly depending on the offer positioning



Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 44: Price ranges for additional content packages (EUR/month, including VAT)

		Content packages From…	Content packages To…	Movies Offer	Movies Price	Sport Offer	Sport Price
France	Orange	4.9	9.9	Orange Cinema Series	12.0	Orange Foot	6.0
	SFR	2.0	19.9				
	Iliad	6.0	10.0				
	Numericable	6.0	58.0				
	CanalSat	18.9	52.9				
	Canal+			Movies & Sport	36.0	Movies & Sport	36.0
				TPS Star (on cable)	18.9		
UK	BSkyB	18.7	51.7	1 movie channel	20.9	1 sport channel	20.9
	Setanta (DTT)	na	na	na	na	1 channel / Sat.	11.0
	Top-Up TV	11.0	na	PictureBox	5.5		
	Virgin Media	8.8	28.6	Sky Movies	26.4	Sky Sport	26.4
	BT	15.1	21.5	PictureBox	16.5	Standards sports	16.5
	Tiscali	6.6	24.2				
Spain	Telefónica	1.5	19.0	Favoritos Cine	7.2	Paquete Favoritos Deporte	6.0
	Orange	6.2	21.0				
	Jazztel	2.9	11.6				
	Ono	3.0	20.5			Barça TV	4.2
	Sogecable	4.0	42.0	Bouquet Cine	6.0	Bouquet Sport	6.0
Germany	T-Home	3.0	20.0			Foot	10.0
	Arcor	n/a	n/a				
	United Internet	35.0	50.0				
	Kabel Deutschland	16.9	29.8	Movie selection	7.9	Bundesliga	12.9
	Premiere	19.9	54.0			Bundesliga	19.9

Source: Arthur D. Little, Exane BNP Paribas estimates

The figure below illustrates the different strategic positions reflecting the different initiatives from telecom operators: only a handful of operators, i.e. Belgacom and France Telecom/Orange have chosen to develop their own content, while most are acting as resellers.

Belgacom has acquired football rights in Belgium; France Telecom has entered the content area in three different ways: (i) it invested in Studio 37, its own subsidiary dedicated to movie production; (ii) it acquired French Premier League football rights to create an exclusive sports channel; (iii) it signed exclusive partnerships with US studios to get differentiated movies and series content. All these measures aim to provide exclusive "Orange TV" offers for its customers.

Figure 45: Selection of content initiatives by telecom operators

Source: Arthur D. Little, Exane BNP Paribas estimates

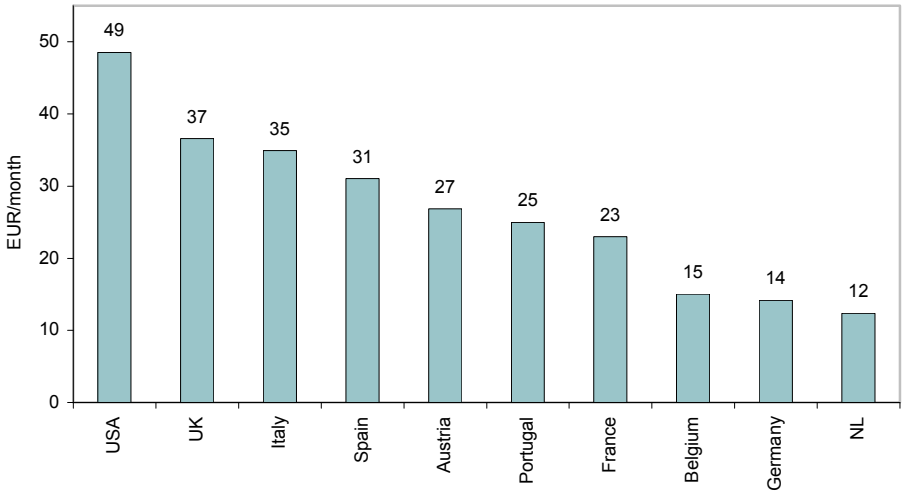
Following these moves, Orange Foot was launched in August 2008: for an additional EUR6/month, customers can watch one exclusive Saturday night football match from the French Ligue 1 as well as some additional content. Orange Cinema Series was launched in November 2008: for EUR12/month, customers get five TV channels with exclusive movies and series from HBO, MGM, Gaumont, BAC Films, etc. as well as additional on-demand content at no additional charge. These relatively low prices reflect that (i) France Telecom's content is by no means on a par with that of Canal+, so it cannot sell at the same price and (ii) the operator's own decision to target the middle of the market rather than the high end, which is already well addressed by Canal+.

Finally, there is also a geographical factor. As shown in the chart below, there are large discrepancies between different countries in terms of pay-TV ARPU: from 12-15/month in Germany, Belgium and the Netherlands to almost EUR50/month in the USA.

These ARPU differences reflect various local situations. One factor is clearly local circumstances and culture. The population's willingness to pay for premium television content depends on when and how these services have been launched and the population's preferences in terms of spending. Also, it depends on the way pay-TV services are offered in the country. For instance, German and Belgian cable operators have historically being positioned as "utilities": many German customers pay their cable bill indirectly, as it is included in their rents. This makes it harder for cable operators to up-sell new products to customers, as they do not have a direct relationship with them.

Another factor is the subscriber base: satellite can more easily apply a niche approach with high premium content, while cable, due to its fixed costs, needs to satisfy a higher number of customers – hence a cheap basic product with some additional packages targeted to specific customer groups.

Figure 46: Blended Pay-TV ARPU estimates by country, 2008*



** Weighted average of ARPU of all pay-TV players in each country, including satellite, cable and IPTV*

Source: Arthur D. Little, Exane BNP Paribas estimates

All in all, we believe that telecom operators entering the pay-TV market can expect the following ranges of ARPU:

– For a "high-premium" content strategy, if and where it is possible to achieve, ARPU could, in theory, reach EUR30-40/month as in the case of the high-end providers such as satellite operators in Europe. A light-premium strategy consists in investing around 15% to 25% of the content spending of a leading premium TV operator in exclusive content. This could be either a selection of movies, sports, documentaries or a combination of them, which is not available through the traditional Free-to-air TV channels.;

– In a "light-premium" content strategy, ARPU could reach EUR10–20/month depending on the countries, reflecting: 1) the current difference between double-play and triple-play packages, 2) the ARPU of low-end pay-TV providers such as cable operators in Germany, as well as 3) the price points chosen by France Telecom for its "light-premium" offers. By "light premium", we mean content including either one specific type of content targeting a specific segment/age group (e.g. content for girls), or best of third-choice content categories (e.g. best of children or documentaries, like Disney or Discovery channels), or older movies (e.g. movies more than two years old in France) and inexpensive sports (e.g. basketball). In a light content approach, the programming and packaging remains in the hand of the telecom operator;

– In a pure "resale" strategy, we would expect incremental pay-TV ARPU to settle between zero and EUR10/month, i.e. below the current price difference between double-play and triple-play offers. In addition to this, if and when the telecom operator resells TV packages from a high-end pay-TV operator (e.g. Iliad selling Canal+ to its customers), it earns a fee of EUR2–3/month per subscriber from the pay-TV operator.

VoD: a promising but crowded niche

Video-on-demand offers have existed for a while, but it is only recently that the quality of service and breadth of content have become really attractive for the mass market. This is a very consensual idea in the industry. VoD perfectly fits the growing trend towards customers watching video content at their own convenience. The debate within the industry is more about which business model will be the most successful (advertising-based or paying) and which players will capture this market.

We believe that the revenue opportunity is significant, even though the large usage figures sometimes quoted should be taken with a pinch of salt as free-VoD is also making big inroads:

– There are different business models for VoD and paying VoD is just one of them. The most used VoD services are the free ones, financed through advertising or paid for as part of bundles (e.g. YouTube, Comcast);

– The movie market is quite small compared to the telecom market, with revenues equivalent to around EUR5/month per household. As such, even if we assume that paying VoD services can capture a large part of this market in the long run, the overall size of the market will on our estimates fall into a range of only EUR0.5–1.2bn by 2015e in a country like France;

– Many players from all the different areas of the value chain are entering the VoD market. Access players (telecom and cable operators) are in a position to dominate the market in terms of revenues, but will still have to share the pie with internet-based offers from media groups and technology companies. As such, the revenue opportunity for a large domestic incumbent would be the equivalent of EUR0.6 per month per fixed line.

The many forms of VoD

Video-on-demand has developed in many different forms. The three main categories are Free VoD, “A la carte” VoD and Subscription VoD. As shown in the table below, the US cable operator Time Warner uses all three, with different kinds of programs and different positioning on the market:

– Free VoD is mainly used for short programs such as trailers, music clips, etc. as well as catch-up TV. We believe it is mainly a substitute for linear television. However, there are also some successful advertising-based VoD services for long videos such as movies, notably Hulu, a US start-up backed by large TV channels;

– “A la carte” VoD is the traditional pay-per-view VoD for full movies, with prices ranging from USD2 to USD11 per movie. This is mainly a substitute for DVD rentals;

Figure 47: Three different VoD business models at the US cable operator Time Warner

	Free VoD	A la carte	S-VoD
Content	Trailers, catch-up, music clips, ad-based shows, life-style programs	Movies, adult shows	Premium TV and movies, Sport seasons
Penetration (among VoD users)	76%	25%	54%
yoy growth	32%	24%	30%
Orders per quarter (average)	43	6	29
Time spent per order	21	106	45
Price	-	USD2 for library titles USD4 for new releases USD7 for indie movies USD11 for adult movies	USD13 for channels like HBO, Show USD100-200 for sports packages

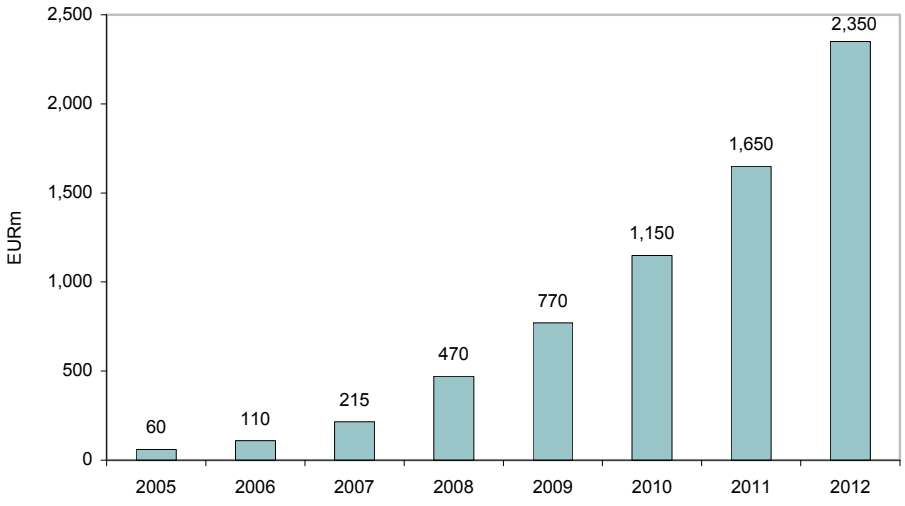
Source: Remtrak 2007

– Subscription VoD is used to sell unlimited access to content from a specific TV channel (e.g. HBO) or to a full sports season. This could cannibalise traditional pay-TV as well as DVD rentals.

A promising market

The VoD market has been growing very fast although from a very low base, and the current revenue stream in Europe (EUR470m annually in 2008) still represents a tiny part of consumer spending, equivalent to EUR0.2 per month per household.

Figure 48: VoD revenues in Europe



Source: PWC

Information is difficult to gather but it is clear that a number of initiatives from different players around Europe have been successful (see table below). In terms of usage, we would expect the most successful offers to be the free internet-based services such as YouTube and BBC's iPlayer. However, in terms of revenues, the cable and telecom operators are probably generating the bulk and successfully so, such as for Telenet in Belgium, Ono in Spain or Virgin Media in the UK.

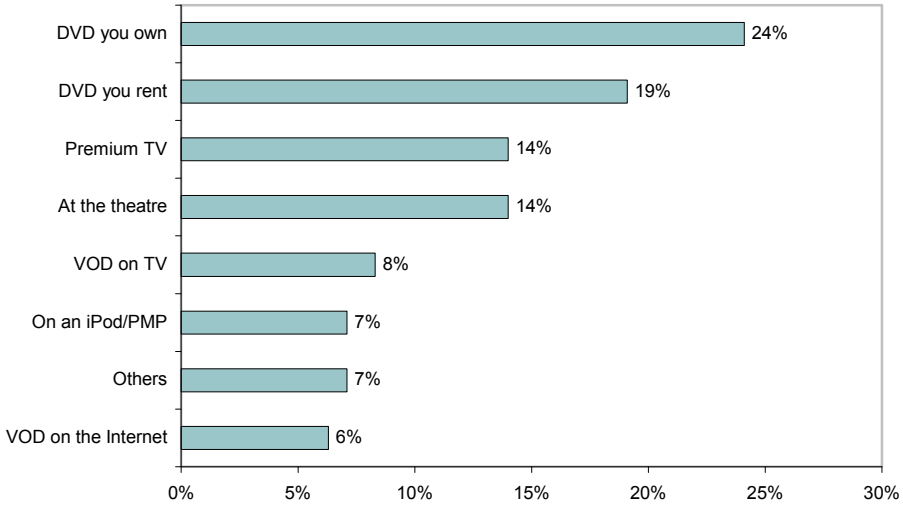
Figure 49: Selected data points on VoD in Europe

Country	Operator	Service	Period	Data point	Comments
Spain	Ono	VoD	Sep-08	10m views i.e. roughly 10 views per TV customer, up 66% yoy	60% of customers use the VoD service on a regular basis
France	Market	Catch-up TV	May-08	5.6m users up from 4m at YE07	9% of the French people over 15y
France	Carrefour	VoD service	Oct-08	EUR0.99-4.99 for 30 days	Based on Glowria, on Carrefour.fr
France	Market	VoD	FY08	EUR50-60m revenues up from EUR30m in FY07	-
France	Market	VoD	H1 08	6m downloads in H1 08, up 61% yoy	French films +20% yoy, US films +93% yoy
France	Orange	VoD	H1 08	2.2m downloads in H1 08, x2 yoy (0.3/month/user)	-
UK	Market	Online video	Jun-08	3.2bn videos viewed in 1m, 50% market share for Google, including YouTube	27.4m users i.e. 78% of UK Internet audience
UK	Virgin Media	VoD	Q4 07	99m views in Q4, 23 views/month per customer	47% of 3.5m TV customers regularly using VoD
UK	BBC	Online video	Aug-08	50m sports videos watched during the Olympics	-

Source: Arthur D. Little, Exane BNP Paribas estimates

We believe that the VoD market is likely to continue to grow strongly in the coming years as quality of service improves and the breadth of catalogue expands. As can be seen in the chart below, US customers continue to prefer DVD for watching movies (DVD is preferred by 43% of users, including owned and rental DVDs), but VoD is now significant (21% including VoD on TV, VoD on the internet and watching videos on personal media players such as the iPod). Many in the industry believe that DVDs will progressively disappear to be replaced by VoD, even though we would not go as far as agreeing with such a statement.

Figure 50: End-user movie preferences – USA



Source: Arthur D. Little, Exane BNP Paribas estimates

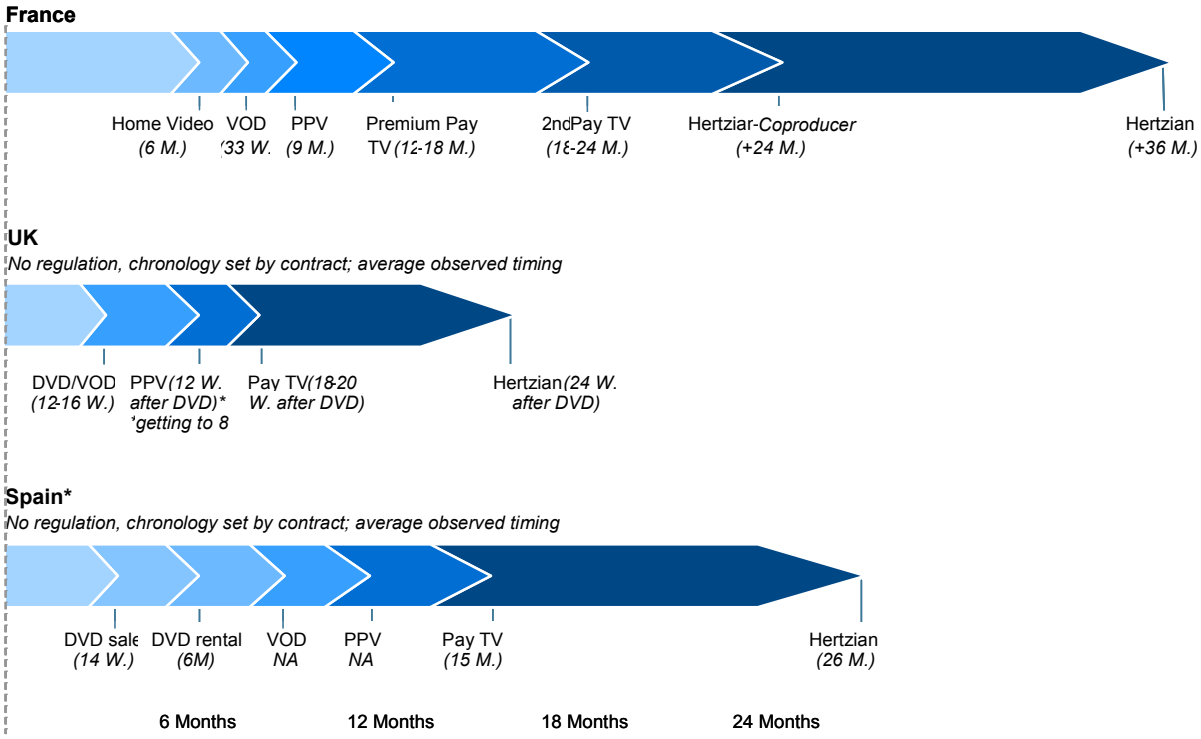
Significantly, one factor that remains a sticking point is that release dates for DVDs are still earlier than for VoD in countries such as France and Spain (but not in the UK). This has been highlighted by many players in the industry, notably in Sweden and France; they hope that this restriction could be lifted at some point in the future – and we note that in France, the CNC is recommending a move in this direction.

We have attempted to forecast the potential VoD market in large European countries, and have calculated a range of EUR0.6–1.2bn per year for a large country like France, equivalent to a range of EUR2.5–5.5 per month per household equipped with cable or IPTV. This is based on two different scenarios, outlined below.

Firstly, we have assumed that the VoD market can be estimated as a % of the overall movie market and we have built this percentage by analogy with the music market. For instance, in France, the online part of the music market has grown from zero in 2004 to 6% of the overall music market in 2008e (NB: this is digital music distributed via the internet; another 6% comes from digital music distributed via other channels) and we expect this to grow to c.30% by 2014e.

We have assumed that the VoD market will capture a similar share of the film market with a one-year lag. This leads to a French VoD market estimated at EUR500–600m in 2015e, or EUR2.5/month per household. Assuming an average price of EUR3–4 per video, this points to EUR0.7 views per household equipped with cable or IPTV in 2015e. This is still a low number compared to the current benchmarks of some cable operators: Telenet is already achieving more than 1.5 views per customer per month.

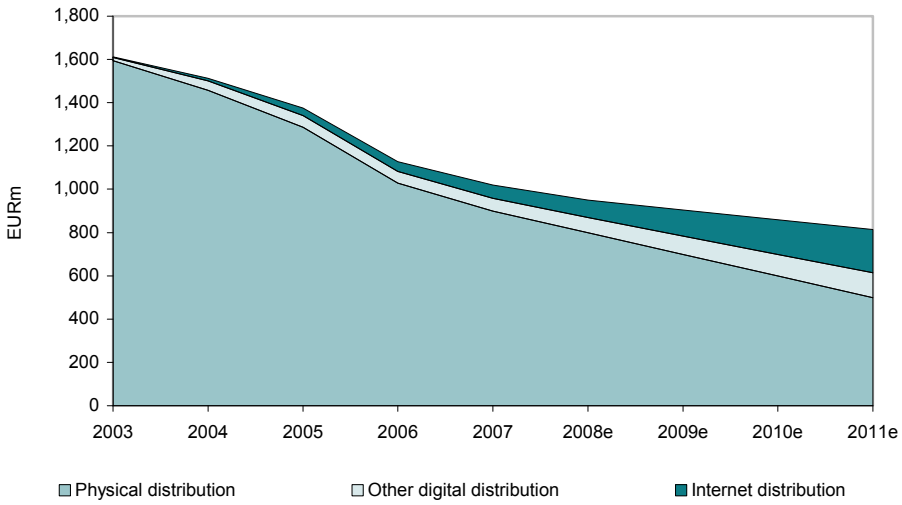
Figure 51: Media chronology in France, the UK and Spain



** In Spain, the differences between the windows of DVD rental, VoD and PPV are progressively reducing, all converging to approximately six months after the DVD sale window. This is leading to a loss of commercial appeal of the linear pay-TV versus VoD.*

Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 52: The music market analogy



Source: Arthur D. Little, Exane BNP Paribas estimates

Secondly, we have assumed that the overall French market would reach the Telenet benchmark by 2015e. Indeed, based on the same revenue assumption of EUR3-4 per video, this points to a market estimate of EUR1.2bn for France in 2015e, equivalent to EUR5/month per household. This is a high figure, equivalent to three quarters of the estimated movie market by 2015e. Telenet's high benchmark may be linked to the quasi-absence of premium TV channels in Belgium, so the relevance of this scenario seems lower than that of our more cautious scenario based on the music market trends.

Figure 53: Estimating the size of the video-on-demand opportunity in a large European country

France	2008e	2009e	2010e	2011e	2012e	2013e	2014e	2015e
Pay-TV households on cable or IPTV (m)	8.4	13.8	15.5	16.4	17.1	17.8	18.5	19.3
Total movie market (EURm)	1,618	1,591	1,579	1,598	1,620	1,645	1,638	1,634
Bear case – In line with music, one year late								
VoD market (EURm)	**93**	**134**	**210**	**298**	**398**	**465**	**529**	**598**
in EUR/month per pay-TV household	**0.9**	**0.8**	**1.1**	**1.5**	**1.9**	**2.2**	**2.4**	**2.6**
Assumed price per movie (EUR)	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.6
Implied views / pay-TV household / month	0.3	0.3	0.3	0.5	0.6	0.6	0.7	0.7
% of the movie market captured	6	8	13	19	25	28	32	37
Bull case – Telenet benchmark								
VoD market (EURm)	**93**	**203**	**345**	**493**	**652**	**830**	**1,027**	**1,244**
in EUR/month per pay-TV household	**0.9**	**1.2**	**1.9**	**2.5**	**3.2**	**3.9**	**4.6**	**5.4**
Assumed price per movie (EUR)	3.1	3.2	3.2	3.3	3.4	3.4	3.5	3.6
Views / pay-TV household / month	0.3	0.4	0.6	0.8	0.9	1.1	1.3	1.5
% of the movie market captured	6	13	22	31	40	50	63	76

Source: Arthur D. Little, Exane BNP Paribas estimates

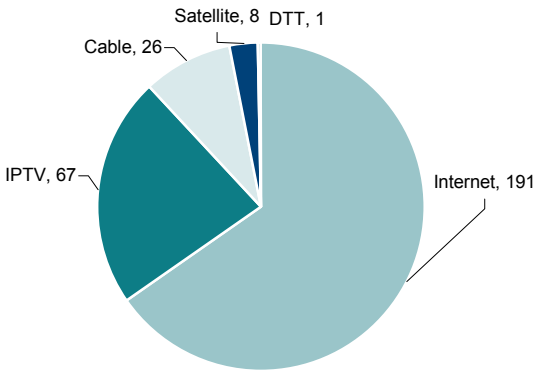
NB: for simplicity reasons, our model is based on just one pricing model, i.e. pay per view. However, this does not rule out revenues being generated through other pricing models such as subscription-based VoD, which we believe could be successful. The price points of S-VoD offers are currently in the EUR5–10/month range, a level consistent with the assumed pay-per-view usage multiplied by the price per view.

A crowded space, but access players dominate in terms of revenues

The VoD market is attracting players from all parts of the value chain and will not to be divided up between just telecom and cable operators: Internet companies, media/content groups and manufacturers are also likely to play an important role in the market. As can be seen in the chart below, the European VoD market is already crowded, with some 258 different providers in 2007 according to some figures, including 191 internet-based companies, 67 IPTV operators and 26 cable players.

Most European broadband providers have launched their VoD platform either with a "home-grown" solution, as is the case with most incumbents (France Telecom, BT, Deutsche Telekom, Telefónica, Telecom Italia, etc.) or with an outsourced solution such as Vodeo (e.g. Iliad, SFR/Neuf Cegetel).

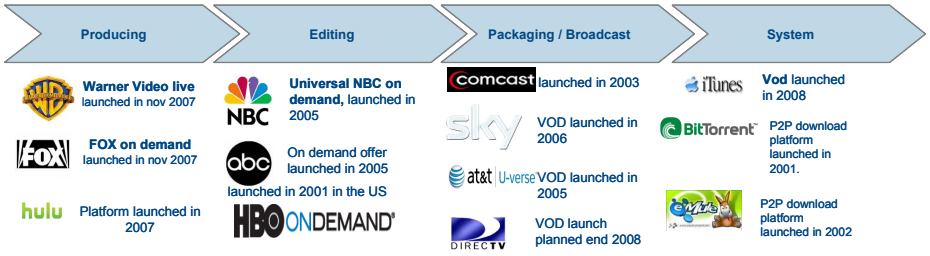
Figure 54: 258 VoD providers in Europe



Source: NPA Conseil

The chart and table below list a few of the initiatives launched by the different types of players, notably in the USA.

Figure 55: Examples of players present in the VoD market



Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 56: Examples of VoD offers from internet companies, manufacturers and TV channels (US market)

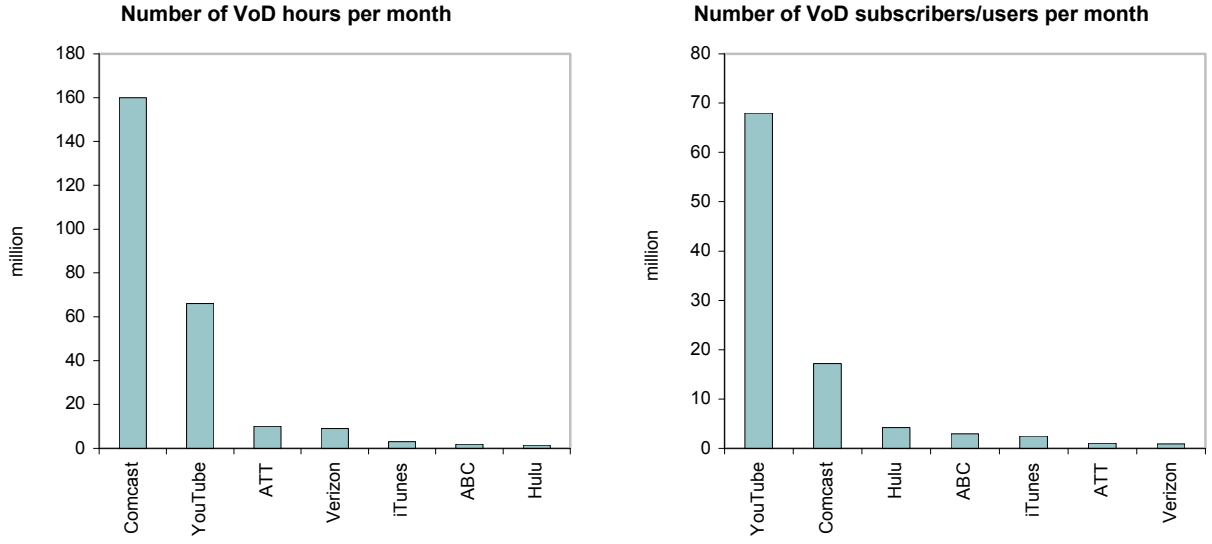
Company	Type	Launch	Business model	Distribution platform	Available to
Netflix	Internet	1999	PPV rent	Mail, Internet	All subscribers in the US
ABC	TV channel	2005	Free, PPV	Internet & TV (box)	All US online users / all broadcasters networks
NBC	TV channel	2005, 2007	Free, PPV	Internet & TV (box)	All US online users / all broadcasters networks
YouTube	Internet	2005	Business model	Intenet (PC, mobile), Apple TV, PS3, Wii	All online users
MSN	Internet	2005	Free (ad based)	Internet	Online users in 42 countries
CBS	TV channel	2006	Free, PPV	Internet & Mobile	All online users
Apple	Manufacturer	2006	PPV rent, buy	Internet & Mobile	All online users
Fox	TV channel	2007	Free (ad based)	Internet & TV (box)	All US online users / all broadcasters networks
Hulu	Internet	2007	Free (ad based)	Internet	All US online users

Source: Arthur D. Little, Exane BNP Paribas estimates

Not all these providers will prove to be equally successful, of course. Even today, there are clear winners and losers.

For instance, in the USA, the two clear winners in terms of usage are the cable operators Comcast and YouTube, which are both free. YouTube is an ad-based service (which remains weakly monetised: the USD300m it generates in revenues are low compared to its audience) and Comcast's VoD offering is free for 90% of its content.

Figure 57: Usage of VoD services in the USA – September 2008



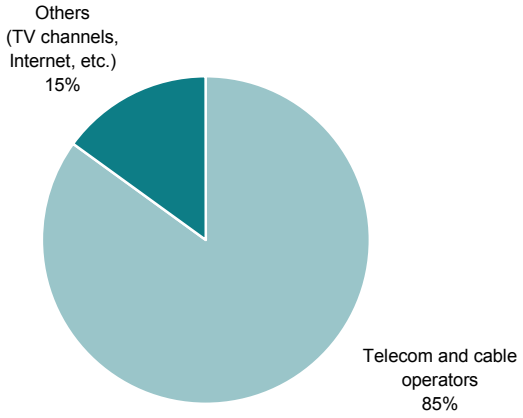
Source: Arthur D. Little, Exane BNP Paribas estimates

For France, we have found some data on the VoD revenue split showing that 85% captured by telecom and cable operators, even though internet players outnumber them considerably in terms of number of offers on the market.

We expect telecom and cable operators to continue dominating the VoD market in terms of revenues for the time being, as they have several key strengths compared to internet-based providers:

- Their offer is available directly from the TV screen, rather than from a PC monitor – this is about to change however (see pages 69–73);
- The quality of service is superior to internet-based offers as the operator's servers can be very near to the customer, with the operator controlling the bandwidth on its broadband access line (ADSL, fibre or cable). Against that, there will be debate over net neutrality, which may undermine this advantage (see pages 66–67);
- Billing is easy and painless as it is added directly to the telecom bill.

Figure 58: Split of VoD revenues by service provider in France, 2007



Source: Arthur D. Little based on CNC, Etudes Xerfi

Overall, in a large country where the VoD market could reach EUR0.6-1.2bn in 2015e, we would expect access providers to capture two thirds of the market and the incumbent to win c.40% market share among access providers. This represents a revenue opportunity of EUR150-300m for the incumbent in a large country. The (more realistic) low end of the range would be EUR0.6/month per fixed line.

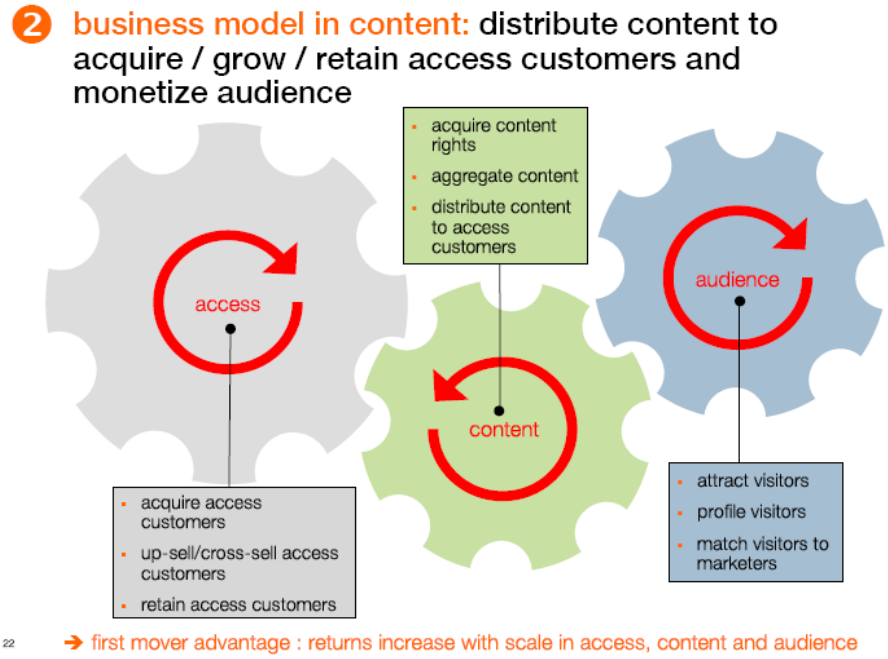
In terms of profitability, it is interesting to note that content rights (for movies, etc.) can today be bundled between pay-TV and VoD: as such, an operator buying content for a premium pay-TV service can leverage the same content on its VoD platform. However, this arrangement could be short-lived, as content providers are reported to be contemplating unbundling the rights for television and VoD, especially under pressure from internet players.

Advertising: limited and complex

Telecom operators have been eyeing the advertising market for years. They made their first foray in the early 2000s, launching internet portals alongside their internet access businesses and aiming to capture a significant share of the internet advertising market. Despite the money thrown at this opportunity, the attempt has generally failed and internet advertising is now dominated by internet specialists, in particular Google for search and large internet portals for display.

Nonetheless, many operators are still looking at advertising as a potential growth driver over the coming years. They speak of various markets (in addition to mobile advertising, not covered in this report): online advertising, in particular local advertising, and television interactive advertising. The recent France Telecom chart confirms that beyond access and content, the group is looking at monetising its audience, i.e. to generate advertising revenues.

Figure 59: France Telecom's explanation of its business model in content



Source: France Telecom

We believe that the fast-growing and relatively resilient local advertising market is one where telecom operators have a trump card, thanks to the knowledge of their customer base and local presence. However, the opportunity is limited: around EUR0.3/month per fixed line by 2015, and the market is dominated by yellow pages groups, which have created significant barriers to entry such as a large sales force and audience.

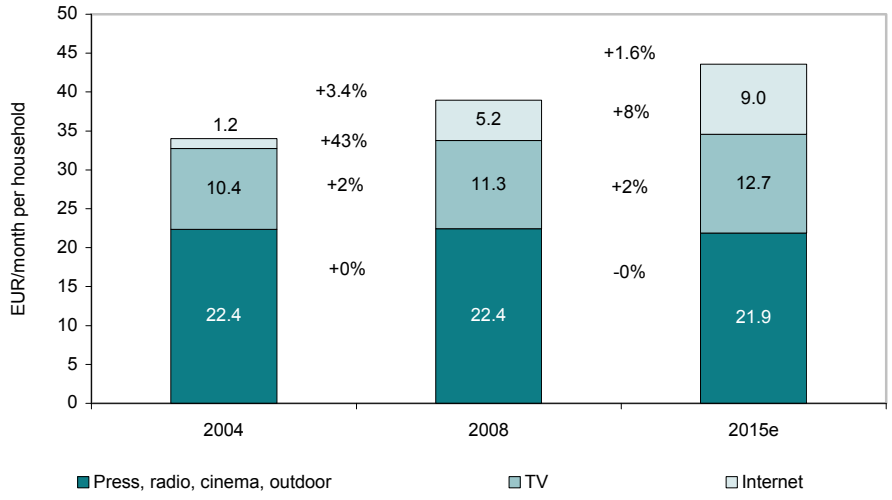
Through their set-top boxes, operators who decide to invest significantly in interactive TV advertising have a role to play in this market. This nascent market is set to grow fast in the coming years. However, it is already crowded, with initiatives from operators, internet players, equipment manufacturers, advertising agencies, web publishers, etc. Given the pressure faced by traditional media players, competition on online advertising will, in our view, remain very intense in the coming years. As a result, the share of this market that telecom operators will be able to capture is very uncertain.

Advertising: following GDP, with internet cannibalising the rest

Advertising-based revenues represent roughly half of the media market revenues in the four countries we looked at. Based on Zenith Optimedia figures, advertising in Germany, France, the UK and Spain represented a EUR51bn market in 2008, or EUR39 per month per household on average.

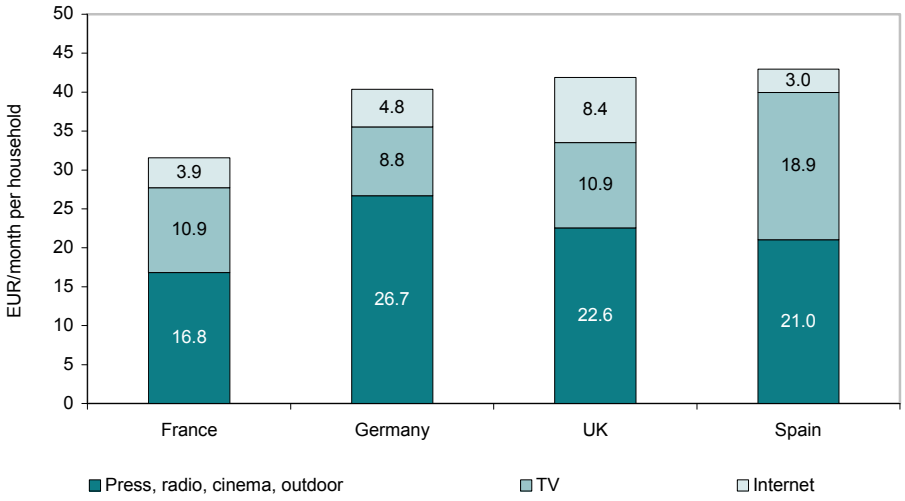
In the past four years, this has been growing by 3.4% per year, slightly above GDP growth. This growth has been driven by the development in internet advertising (43% 2004–2008 CAGR), which now represents EUR5/month per household, while TV advertising, which accounts for EUR11/month, has been growing by 2% per year, and other advertising revenues (including press, radio, cinema and outdoor) have been flat at EUR22/month per household.

Figure 60: Advertising revenues per household (France, UK, Germany and Spain)



Source: Zenith Optimedia, Arthur D. Little, Exane BNP Paribas estimates

Figure 61: Advertising revenue per household in European countries, 2008



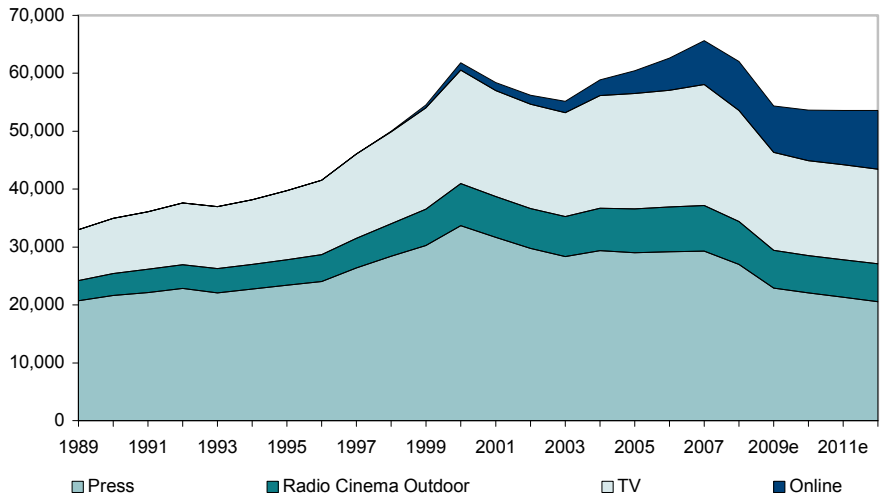
Source: Zenith Optimedia, Arthur D. Little, Exane BNP Paribas estimates

As shown in the chart above, the UK is the European market where internet advertising is most developed (EUR8/month per household in 2008), while Spain is the market with the highest TV advertising on a per household basis (EUR19/month). France is still a market that is less developed than average: total revenues are equivalent to EUR32/month per household versus EUR40-43 for the three other countries. This is probably linked to historical regulatory constraints notably on TV advertising.

For the coming years, we expect the secular trends to continue. In particular, internet advertising will slow, but will continue to grow faster than traditional advertising (see graph above).

Meanwhile, however, the recession will have a strong negative impact on advertising revenues. Advertising revenues should be much more impacted than the subscription-based revenues of telecom operators or pay-TV providers.

Figure 62: European advertising market (EURm)



Source: Arthur D. Little, Exane BNP Paribas estimates

Online advertising: too late, except for local advertising?

In theory, online advertising revenues can be captured by any company that has a website with a large audience, so telecom operators should be able to capture a share of this market.

If we leave out search services, dominated by Google, the potential market is estimated at c.EUR550m in France and the UK (2008) and c.EUR250m in Spain. This represents an average of EUR1.6 per month per household. In France for instance, Orange has a 10% market share in online display, representing revenues of c.EUR50m per year.

We believe that it will be increasingly difficult for telecom operators to penetrate this market, which is consolidated globally more and more. There are large economies of scale in this business, implying that the world leader Google (following its acquisition of Doubleclick) will remain the most profitable player in the field, in turn helping it remain the most innovative.

Operators' share of the online advertising market is unlikely to grow significantly, on an organic basis. However, there is one segment of the market where telecom operators have a trump card: local advertising.

We believe it is attractive for four reasons:

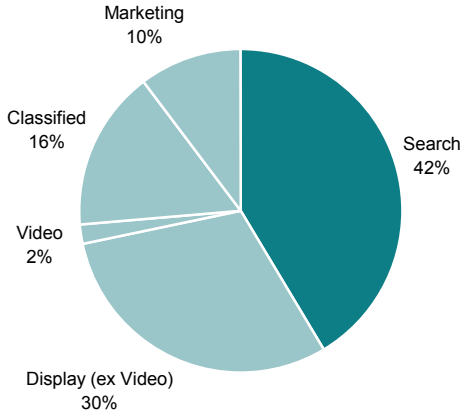
– First, it is a significant and growing market. Even though it is always difficult to extrapolate US advertising market trends to Europe (the US market is much bigger and "local" covers areas that can be as large as some European countries), we note that, in the US, local advertising represents more than 25% of the total advertising market, including 18% for local TV, 5% for local newspaper and 3% for local radio. According to some sources, local advertising represented EUR500–600m in France in 2007 and 2008, and this is expected to double by 2011–2012, representing an opportunity equivalent to EUR3.5–4.0 per month per household;

– Secondly, local advertising could be more resilient to the economic downturn than national advertising, as it derives revenues from the "long tail" of advertisers including small businesses around the country. As a result, it could be less discretionary;

– Thirdly, local advertising is typically a more targeted way of communicating a message to consumers, and better targeting yields higher revenues. According to one of the media players interviewed, targeted local advertising can generate a CPM (cost per thousand) up to five times higher than non-targeted advertising, i.e. EUR10;

– Fourthly, telecom operators have some advantages in this market, in particular a customer base they know well (e.g. they know their location) and a presence that is more local in each region than that of internet leaders such as Google.

Figure 63: Breakdown of the internet advertising market



Source: Arthur D. Little, Exane BNP Paribas estimates

Recent initiatives in local advertising from different kinds of players include the acquisition by France Telecom of Cityvox, a local guide website; the development of Google Maps; or the recruitment of local sales teams by some internet players.

One benchmark for assessing the potential for telecom operators to penetrate this market is Comcast, the large US cable operator, which generates USD1.6bn in revenues from advertising i.e. 5% of its total revenues, c.USD0.7bn of which comes from local advertising. Comcast has 4% of the US TV local advertising market.

For Comcast, this represents incremental revenue equivalent to USD2.5/month per video subscriber. If we were to assume that European telecom operators can generate EUR2/month per TV subscriber, this could add annual revenues of EUR50–120m for each large incumbent in the long run. This would boost incumbents' fixed revenues by 0.8%, on average or the equivalent of EUR0.3 per month per fixed line.

This small figure appears to be a bullish estimate for us, as (i) the US local advertising market is, and will remain, more developed than the European market, and (ii) European telecom operators will remain smaller players in their respective TV markets than Comcast in its market.

In any case, to exist on the online advertising market, operators would need to acquire capabilities which are very different from their core competencies, in particular online advertising sale and ad serving technologies. This could hardly be done in an organic way (at least in mature European markets) but it could be done through partnerships and revenue sharing agreements with internet pure players (such as yellow pages, regional newspapers, etc.).

Interactive TV advertising: unproven but already disputed

Many initiatives are focusing on the development of the much-anticipated interactive TV advertising market. According to some research, customers would welcome such forms of advertising (e.g. Harris Interactive, end-2007: 66% of US viewers said they want to interact with commercial advertising). One element of interactive advertising is the customer's ability to make an "impulse response" to the ad it watches. From an advertiser's perspective, the attraction of interactive ads is the ability to target customers more effectively and generate higher unit revenues as a result. The companies that have recently made announcements in this field include access providers (telecom and cable operators), internet leaders, equipment makers and advertising agencies:

- On the access side, SingTel launched location-based TV advertising on its IPTV platform in December 2008; SK Broadband (Korea) has introduced interactive advertising on its IPTV service "Broad&tv"; it allows customers to apply for various events via ads or within the Home menu while downloading a VoD programme; in October 2008, Virgin Media (UK) started dynamic advertising trials on its on-demand TV platform, after signing a deal with SeaChange (provider of on-demand system). This opportunity can be captured by operators developing an advanced TV offering based on set-top boxes, etc. and it requires significant investment in systems;
- On the internet side, Google has entered a partnership with EchoStar's Dish Network for Google TV Ads. Microsoft has made several investments in the online advertising market, shifting progressively from Google-dominated, web-focused advertising towards television advertising. Microsoft first acquired a company called aQuantive for USD6bn in 2007, and more recently bought Navic Networks (July 2008), a start-up (USD43m funding in three rounds over recent years), a leading developer of addressable TV advertising technologies. aQuantive's key asset is an advertising serving platform that is widely deployed in interactive TV and VoD systems;
- On the equipment side, TiVo, the digital video recorder provider, recently announced a new offer called Pause Menu, which loads relevant advertisements and searches when the TV is paused. It pushes advertisment to "fast-forwarding" viewers who do not watch the advertisements the way they are traditionally delivered. Pause Menu delivers targeted messages when a program is paused, whether this is a time-shifted program or a live TV one. The ads are downloaded to the DVR and then the targeted adverts are selected to cover periods when the TV is paused;
- Finally, regarding advertising agencies, WPP has recently announced an investment in Invidi, which is believed to be close to announcing deals with several major cable operators in the US to deploy its addressable TV advertising switching technology.

One of the limitations mentioned by companies is the issue of personal data usage. Following scandals regarding the use by some operators of personal data, regulations have been imposed (in Germany for example) that will make any interactive advertising initiative much more difficult.

3. Paying up for content is not the solution

Investing in premium content is a risky strategy for telecom operators, for two key reasons.

First, we find that a "high premium" content strategy entailing investments comparable to those of premium TV operators has more chances to destroy value than to create value. This is due to the high barrier to entry represented by content expenditures of incumbent pay-TV players (EUR0.5-2.0bn per year in large European countries): such expenditures cannot be amortised on a telco's TV customer base, which will remain smaller than that of an incumbent satellite pay-TV provider.

A "light premium" content approach offers a more balanced risk/reward for incumbent operators – but still cannot be profitable for alternative carriers as they lack critical size. As such, they are opting for a "resale" approach like most cable operators.

Second, as the stand-alone risk/reward of a premium content strategy is negative or neutral, such a strategy can only work if it is based on a "closed" model whereby the operator subsidises content with access. The problem is that such a model will, in our view, not last very long, as many forces will favour "open" models:

- The arrival of IPTV platforms leads to a fragmentation of the pay-TV market. In such a context, content providers are willing to distribute their content on as many platforms as possible rather than to favour exclusive content deals with one operator;
- We expect a multiplication of internet-based television services which could bypass operators' closed models based on their own boxes. Companies in other parts of the value chain, i.e. hardware groups (TV manufacturers, gaming companies, makers of home boxes/digital video recorders), content owners/TV channels and internet players, are partnering actively to develop attractive, easy-to-use TV services putting internet-based content on the TV screen. Over time, such services can boost traffic on access networks without adding revenues for operators, hence they can put two-pronged pressure on returns (less ARPU, more capex);
- Regulation is pushing in the same direction. The French government is studying a response to France Telecom's exclusive Orange content; the UK regulator could soon set regulated access prices to BSkyB's content and make it available on all platforms; the US regulator has ruled in favour of the so-called net neutrality.

If investing in premium content is not the right route for operators, what is? The key in our view will be for operators to develop innovative and easy to use content-related services enhancing the customer experience – HDTV and catch-up TV being excellent examples; they should also focus their efforts on local content rather than global content. To do that, they need to partner with other players across the value chain:

- What kinds of deals can they find? 1) More content distribution deals with pay-TV providers to enrich their bundles while avoiding becoming competitors; 2) Deals with local content groups/TV channels (e.g. Virgin Media/BBC iPlayer, Orange/France Television and M6), bypassing the pay-TV packages and creating a differentiation compared to the global content that will be served by internet-based TV services from internet specialists and hardware competitors; 3) Deals with internet-based video players who seek to get their content on the customers' TV sets by any means (e.g. SFR-Neuf/Dailymotion), or deals with gaming groups, using the gaming console in lieu of a set top box for specific market segments (e.g. Korea Telecom/Sony with the PS3);
- What assets do operators bring to the bargaining table that other players in the value chain do not have? They bring their access network, box, billing relationship and distribution network – in a word, access to the customer.

This proactive partnership approach can enable operators to deflect potential commoditisation threats by simultaneously improving their bundled offers and engaging with potential competitors. This approach is shared by a large number of operators we have talked to, so we expect many such announcements in the coming quarters.

The good news is that the current economic environment gives operators more time to organise themselves, because the recession will, in our view, delay the development plans of the advertising-funded internet leaders and the cyclical hardware manufacturers.

Pay-TV: poor stand-alone profitability for telcos

The revenue opportunity in pay-TV may be significant for telecom operators, but our analysis shows that it comes with such high costs that the financial risk/reward of the project is uncertain when analysed on a stand-alone basis.

Most players we interviewed expressed strong reservations about the entry of telecom operators into content, as they believe that the cultures, skill sets and assets required to be a good telecom operator are very different from those of a good content producer.

Financially speaking, we believe that the conclusion is the same: a “high premium” content approach, with a telecom operator trying to create a direct competitor to an existing pay-TV platform such as Canal+ in France or BSkyB in the UK, would probably destroy significant value for its initiator due to the very large content costs associated with such a strategy. A “light premium” content approach offers a better risk/reward in our view.

Also, given the high fixed costs of a TV rollout, the profitability of the project strongly depends on the market share of the telecom operator: it cannot be profitable for a small alternative carrier with a low market share in broadband (i.e. below 20–25% in a large country).

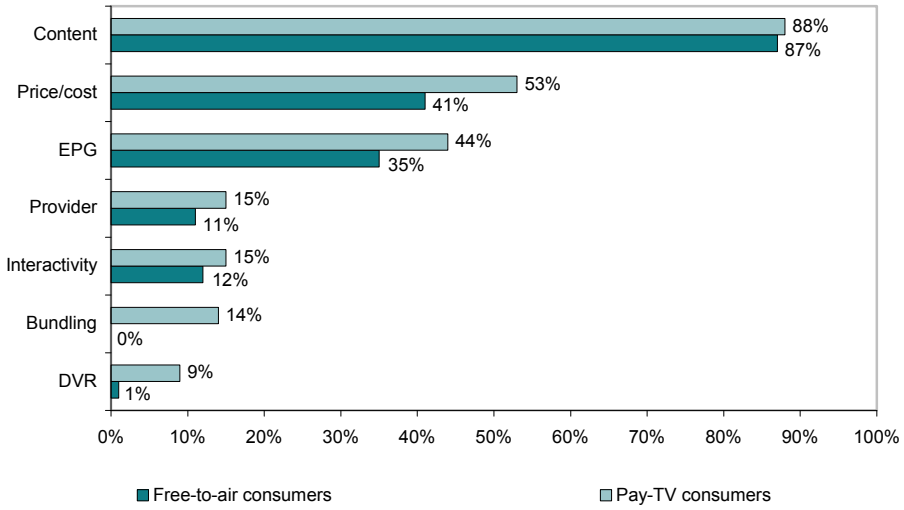
Content is potentially a huge expense

The main costs incurred in an IPTV project include technology (investments in the network and server deployment, home boxes, etc.), general & administrative, marketing and finally content costs. These first categories (i.e. technology and G&A) are required, to a certain extent, regardless of the ambition of the operator in terms of content. Conversely, content costs, and to a lesser extent marketing costs, will strongly depend on the operator’s strategy.

Indeed, when choosing a television offer, customers value content much more than any other factor, including price, as shown in the chart below taken from a recent Ofcom survey.

How much does it cost a TV station or a pay-TV package to provide quality content that customers are ready to watch or to pay for? The amounts range between a few hundred million euros for a free-to-air television channel in Spain and EUR1.5–2.0bn for a pay-TV operation in France, the UK or Italy (see table below). We estimate the average cost of TV content in Europe is EUR14 per household per month, ranging from EUR16–17 per month in France, the UK and Germany to only EUR6/month in Spain.

Figure 64: % of customers who cite elements of their TV offer as "must have"



Source: Ofcom

Figure 65: Programming costs of large television operators in Europe

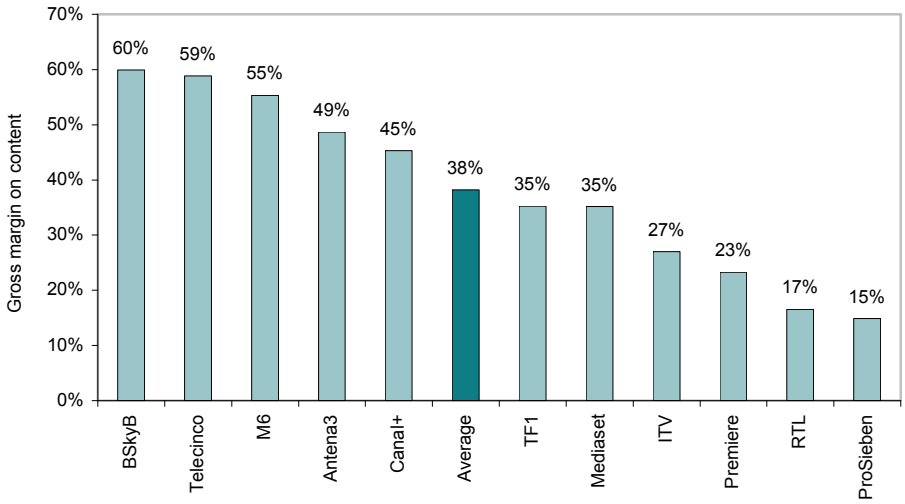
2008e	EURbn	EUR per household per month
France Television	1.9	
TF1	1.4	
M6	0.4	
Canal+	2.0	
France	**5.6**	**17.4**
ARD	0.4	
ZDF	1.4	
ProSieben	2.0	
RTL*	3.7	
Premiere*	0.8	
Germany	**8.2**	**17.3**
BBC*	2.0	
BSkyB*	1.9	
ITV*	1.2	
UK	**5.1**	**16.0**
RAI*	0.9	
Mediaset	1.3	
Italy	**2.2**	**7.5**
RTVE*	0.3	
Antena3	0.3	
Telecinco	0.4	
Spain	**1.1**	**5.7**
Total / average	**22.1**	**13.9**

** Estimates*

Source: Arthur D. Little, Exane BNP Paribas estimates

For commercial television in these European countries, the gross margin on content stands at 36% on average, ranging from low (or even negative) levels in Germany to more than 50% at M6 (free-to-air in France), Telecinco (free-to-air in Spain) and BSkyB (pay-TV in the UK) – see chart below.

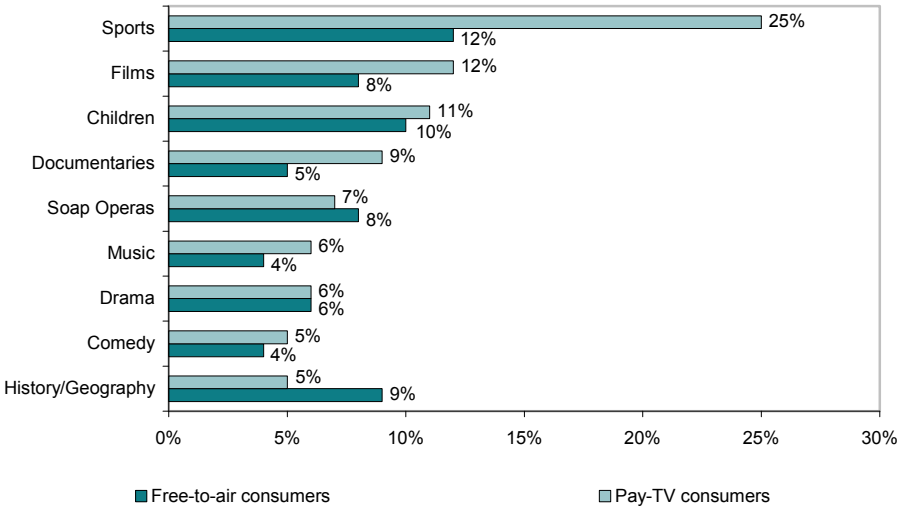
Figure 66: Gross margin of European TV players (on content costs)



Source: Arthur D. Little, Exane BNP Paribas estimates

With respect to content, the "must have" feature is sports. As shown in the chart below, 25% of the UK pay-TV customers surveyed by Ofcom quoted sports versus 12% for films, 11% for children's content, etc. In Europe, the sport of greatest importance for viewers is football. For example, in the UK, 59% of viewers say that football is a must-have and 28% say it is nice to have (i.e. a total of 77%), more than twice the percentage for the second most popular sport for UK viewers, i.e. cricket (which gets respectively 20% and 15%, i.e. a total of 35%). Clearly, there can be huge cultural differences between countries in terms of sport preferences, but football is the one that stands at the top of the table throughout Europe.

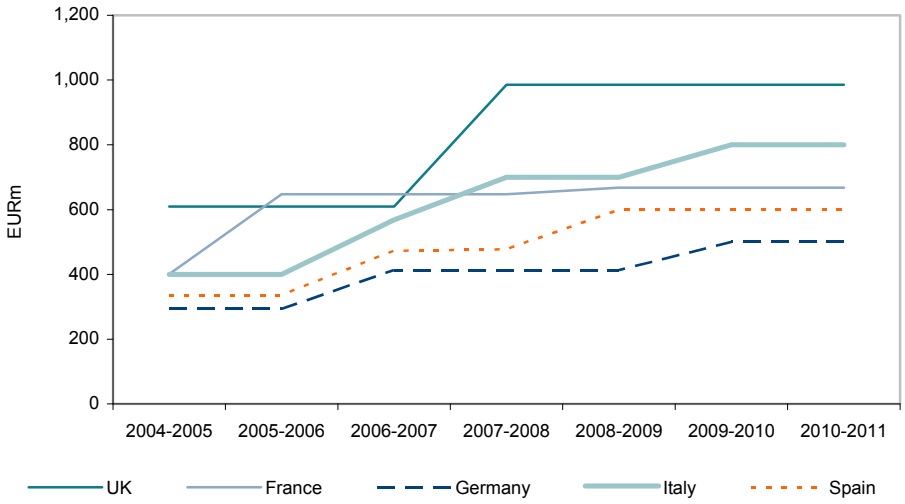
Figure 67: Spontaneous mention of channel genre among consumers who say content is "must have"



Source: Ofcom

However, the attractiveness of good TV sport content comes at a steep price. For example, sport represented more than half (54%) of BSkyB's programming costs in 2007. In particular, as shown by the chart below, the total cost of football rights has increased in the past few years and currently ranges between EUR400m per year in Germany and EUR1bn in the UK.

Figure 68: Annual cost of domestic football TV rights in Europe



Source: Arthur D. Little, Exane BNP Paribas estimates

As such, it is clear that if a telecom operator wanted to compete head-to-head with the pay-TV leader in a specific country, it would have to spend very large amounts in content, at least EUR500m per year in a large country (or even more), including a few hundred millions in sports (to get a significant share of football rights) and the rest in movies and series.

A "light premium" content strategy, however, could, in our view, be built with a much more limited annual content cost: around EUR100m pa, which could pay for movies and series as well as some sports, but not for the whole of a premium sport such as football.

We note that in France, France Telecom is spending EUR200–250m per year in content for its IPTV operations (excluding the EUR70m it pays for mobile rights) which is largely less than the content investment of Canal+, the leading French pay-TV operator. As such, at this stage, France Telecom's expenses are much too low to compete head-to-head with Canal+.

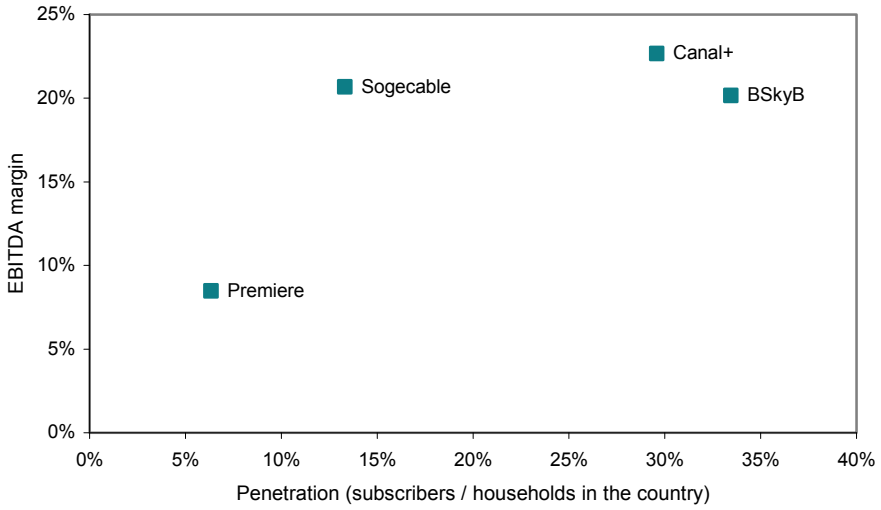
Margin benchmarking with satellite and cable operators

Another way of approaching the potential long-term EBITDA margin of a telecom operator entering the pay-TV market is to look at the current margins of established pay-TV players, both satellite-based pay-TV providers and cable operators.

The EBITDA margin of satellite players stands at around 20%, as can be seen in the chart below. In our sample, none has an EBITDA margin above 25%, while Premiere struggles with a sub-10% EBITDA margin. This is quite different from cable operators' EBITDA margins, which stand at around 40%, as shown in the chart below, with best-in-class Ziggo (Netherlands) at 55%.

Beyond the sometimes different accounting methods (e.g. boxes and/or content accounted for as opex or capex depending on the operators), which do not explain the whole of the difference, one factor that is very different between satellite and cable is the underlying level of capex. This clearly offsets the EBITDA margin difference: capex/sales of BSkyB and Canal+ stands at 6–7%, versus 20–25% for Telenet, Unity Media or Comcast. OpFCF margins stand at around 20% for cable operators versus 13% for satellite players. Given the much lower level of capital employed, the ROCE is better for satellite players than for cable operators.

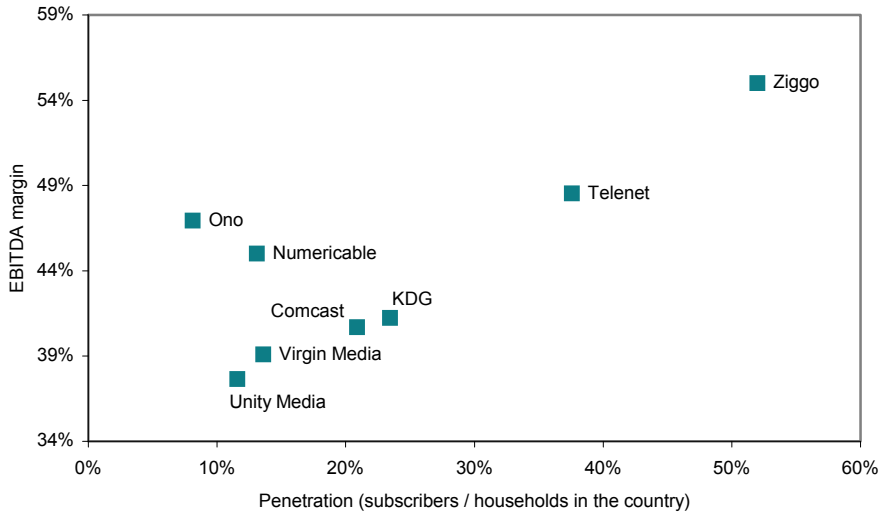
Figure 69: EBITDA margin of satellite pay-TV players versus size, FY08e*



** 2007 figure for Premiere, which should post negative EBITDA in 2008 due to high customer churn*

Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 70: EBITDA margin of cable operators versus size, FY08e



Source: Arthur D. Little, Exane BNP Paribas estimates

In addition to capex, the other differences between the business models of satellite-based pay-TV providers and cable operators include:

– Their approach on content: Canal+, Sogecable and BSkyB all have premium content strategies, and thus high related content costs, while cable operators are mostly resellers of content with very low content costs;

– Bundling: except for BSkyB, which has started to launch triple-play, satellite players are mono-product companies, while cable operators are offering triple-play. This could enable operators to achieve better economies of scale (e.g. on G&A costs, on boxes, etc.). It could also lead to lower commercial costs, as churn may be lower. Commercial costs are higher at Canal+ and BSkyB (15–17% of their revenues are spent in commercial costs i.e. GBP700m per year for BSkyB in the last two years and EUR600m per year for Canal+) than at an efficient cable operator like Telenet (7% of revenues).

However, not all the churn levels are consistent with the view that bundling should lead to lower churn. For instance, churn is low at BSkyB (c10%) and Canal+ (12–13%) while it is quite high at Ono (17–18%).

One common factor determining the profitability of these players is – as for telecom operators – the size. The larger their customer bases (as a percentage of the population addressable in the country) the higher their margins, as shown in the charts above.

Finally, the market structure has a very important impact on the margin, for many reasons. In a more competitive market, it is likely that: 1) prices will be lower, 2) commercial expenses will be higher, driven by higher churn and acquisition costs, 3) the market share of each player will be lower, hence economies of scale will be more difficult to achieve, and 4) content costs will be higher, since different players will compete to acquire content. This analysis can explain the particularly high margin of Telenet and Ono, which face limited competition respectively in Belgium and Spain, while the German cable operators or Virgin Media in the UK operate in more competitive environments and have lower margins.

How does all this bode for the long-term EBITDA margin generated by a telecom operator with its pay-TV initiative? It will depend on its content strategy:

– Assuming a “light premium” content approach, its business model would be quite close to that of a cable operator, hence an EBITDA margin in the region of 35–40%;

– Assuming a “high premium” content approach, this EBITDA margin would be reduced by the cost of content. The benchmark margin should be lower than the current c.20% level achieved by the successful satellite-based pay-TV players for two reasons: 1) the telecom operator to have a lower market share, and 2) its entry would lead to a more competitive pay-TV market.

The “light premium” strategy has a better risk/reward profile

Integrating these different benchmarks and references, we have built a DCF model describing the pay-TV project of a large incumbent of a large European country.

First, we have looked at the “high premium” content approach. In the table below, we have assumed that over the long run, 25% of the operator’s broadband customers subscribe to its high-end pay-TV product, generating an ARPU of EUR30/month. We have assumed commercial costs converging towards 11% of revenues, and content costs rising to EUR600m per year. This leads to an EBITDA that remains negative until 2014e, an EBITDA margin of 10% in 2015e, and a negative NPV.

Of course, the results are highly dependent on a few key parameters, in particular:

– The number of subscribers in the long run. This depends on the starting position of the operator (its current broadband market share), on the size of the opportunity in the country’s pay-TV market, and on the market structure (determining the potential long-term market share);

– The profitability in the long run, depending mainly on the content costs, and ultimately on the market structure (number of players).

The table below shows the NPV and 2015e EBITDA margin depending on these two parameters. We believe that the risk/reward is negative, as most "credible" combinations (2015e customer base penetration of 10–35% and annual content cost of EUR500–900m) lead to a negative NPV that can be quite substantial (more than EUR2bn of negative NPV in many cases), while only a handful of combinations lead to a positive NPV (which is limited to EUR1bn or less in most cases).

Figure 71: DCF model for the pay-TV initiative of a large incumbent – "High premium" content case

EURm	2008e	2009e	2010e	2011e	2012e	2013e	2014e	2015e
Broadband customers	8,298	9,006	9,420	9,765	10,041	10,179	10,317	10,455
IPTV customers	1,847	2,815	3,399	3,985	4,560	5,165	5,801	6,469
Proportion taking Pay-TV (%)	5	14	22	28	33	36	38	40
Pay-TV customers	**92**	**408**	**748**	**1,108**	**1,482**	**1,850**	**2,227**	**2,614**
Proportion of broadband customers (%)	1	5	8	11	15	18	22	**25**
Net additions	92	315	340	361	374	368	377	387
Churn	12	12	12	12	12	12	12	12
Churned users	6	30	69	111	155	200	245	290
Gross additions	98	345	410	472	529	568	622	677
ARPU (EUR/month)	**10.0**	**12.9**	**15.7**	**18.6**	**21.4**	**24.3**	**27.1**	**30.0**
Revenue (EURm)	**6**	**39**	**109**	**207**	**333**	**486**	**664**	**871**
Unit SAC (EUR per gross addition)	(50)	(50)	(50)	(51)	(52)	(53)	(54)	(55)
SAC (EURm)	(5)	(17)	(20)	(24)	(28)	(30)	(34)	(37)
Marketing costs	(50)	(50)	(50)	(50)	(53)	(55)	(58)	(61)
Sub-total commercial costs	**(55)**	**(67)**	**(70)**	**(74)**	**(80)**	**(85)**	**(92)**	**(98)**
% of revenue	(991)	(174)	(65)	(36)	(24)	(18)	(14)	(11)
Operation & Packaging costs	**(10)**	**(21)**	**(32)**	**(43)**	**(54)**	**(65)**	**(76)**	**(87)**
% of revenue	(180)	(55)	(29)	(21)	(16)	(13)	(11)	(10)
Content costs	**(67)**	**(133)**	**(211)**	**(289)**	**(367)**	**(444)**	**(522)**	**(600)**
% of revenue	(1200)	(345)	(194)	(140)	(110)	(92)	(79)	(69)
EBITDA	**(126)**	**(183)**	**(204)**	**(199)**	**(168)**	**(109)**	**(26)**	**86**
EBITDA margin	(2271)	(474)	(188)	(96)	(50)	(22)	(4)	10
Capex*	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(7)**	**(10)**	**(13)**
Capex/sales (%)	(90)	(13)	(5)	(2)	(2)	(2)	(2)	(2)
OpFCF	**(131)**	**(188)**	**(209)**	**(204)**	**(173)**	**(116)**	**(36)**	**73**
Post-tax	(88)	(126)	(140)	(137)	(116)	(78)	(24)	49
DCF (%)		100	92	85	78	72	67	61
WACC (%)	8.5	(126)	(129)	(116)	(91)	(56)	(16)	30
Growth (%)	0.0							
Exit	11.8							
	EV	**(176)**						

** The low capex assumed in our model is based on the assumption that the operator concerned already has an IPTV network. As such, the model only evaluates the incremental costs and revenues associated with the operator's content initiative.*

Source: Exane BNP Paribas estimates

Figure 72: Sensitivity analysis – "High premium" content strategy

NPV (EURm)		Long term annual content cost						
2015e customers		100	250	400	550	700	850	1,000
523	**5%**	(531)	(1,455)	(2,378)	(3,302)	(4,225)	(5,149)	(6,072)
1,045	**10%**	324	(600)	(1,523)	(2,447)	(3,370)	(4,293)	(5,217)
1,568	**15%**	1,182	259	(665)	(1,588)	(2,511)	(3,435)	(4,358)
2,091	**20%**	2,042	1,118	195	(728)	(1,652)	(2,575)	(3,499)
2,614	**25%**	2,902	1,978	1,055	132	(792)	(1,715)	(2,639)
3,136	**30%**	3,762	2,839	1,915	992	68	(855)	(1,779)
3,659	**35%**	4,622	3,699	2,775	1,852	929	5	(918)
4,182	**40%**	5,483	4,559	3,636	2,712	1,789	866	(58)

2015e EBITDA margin		100	250	400	550	700	850	1,000
523	**5%**	(5%)	(90%)	(175%)	(260%)	(345%)	(429%)	(514%)
1,045	**10%**	40%	(3%)	(46%)	(88%)	(131%)	(174%)	(217%)
1,568	**15%**	55%	26%	(2%)	(31%)	(59%)	(88%)	(117%)
2,091	**20%**	63%	41%	20%	(2%)	(23%)	(45%)	(66%)
2,614	**25%**	67%	50%	33%	16%	(2%)	(19%)	(36%)
3,136	**30%**	70%	56%	42%	27%	13%	(1%)	(16%)
3,659	**35%**	72%	60%	48%	36%	23%	11%	(1%)
4,182	**40%**	74%	63%	53%	42%	31%	20%	9%

Source: Exane BNP Paribas estimates

As such, we believe that the only solution for such as strategy to work would be to sell the high premium content offer developed by the operator not only to its own broadband customer base but to a wider audience. In other words, it would mean building a fully fledged competitor to the existing satellite-based pay-TV player in the country.

Given the historical track-record of the pay-TV sector, where most number two players have struggled and most have ultimately been consolidated (e.g. TPS in France, Telepiu in Italy, Digital+ in Spain), we believe that this option would be extremely risky.

Second, we have modelled the "light premium" content strategy, with the following differences: a much lower ARPU (EUR10/month), but also a much lower content cost (EUR100–150m in the long run) and a slightly larger customer base (30% of the broadband customer base) as the lower price point can attract a wider audience (notably if there is an untapped segment in the low end of the market).

In this case, EBITDA turns positive in 2013e, the long-term EBITDA margin reaches 32% and the NPV is positive – although small (a few hundred million euros) compared to the market capitalisation of an incumbent operator.

Figure 73: DCF model for the pay-TV initiative of a large incumbent – "Light premium" content case

EURm	2008e	2009e	2010e	2011e	2012e	2013e	2014e	2015e
Broadband customers	8,298	9,006	9,420	9,765	10,041	10,179	10,317	10,455
IPTV customers	1,847	2,815	3,399	3,985	4,560	5,165	5,801	6,469
Proportion taking Pay-TV (%)	5	17	26	33	39	43	46	48
Pay-TV customers	**92**	**472**	**882**	**1,318**	**1,769**	**2,214**	**2,669**	**3,136**
Proportion of broadband customers (%)	1	5	9	13	18	22	26	30
Net additions	92	380	410	435	452	444	456	467
Churn	12	12	12	12	12	12	12	12
Churned users	6	34	81	132	185	239	293	348
Gross additions	98	413	492	567	637	683	749	815
ARPU (EUR/month)	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**	**10.0**
Revenue (EURm)	**6**	**34**	**81**	**132**	**185**	**239**	**293**	**348**
Unit SAC (EUR per gross addition)	(30)	(30)	(30)	(31)	(31)	(32)	(32)	(33)
SAC (EURm)	(3)	(12)	(15)	(17)	(20)	(22)	(24)	(27)
Marketing costs	(20)	(20)	(20)	(20)	(21)	(22)	(23)	(24)
Sub-total commercial costs	**(23)**	**(32)**	**(35)**	**(37)**	**(41)**	**(44)**	**(47)**	**(51)**
% of revenue	(414)	(96)	(43)	(28)	(22)	(18)	(16)	(15)
Operation & Packaging costs	**(10)**	**(14)**	**(17)**	**(21)**	**(24)**	**(28)**	**(31)**	**(35)**
% of revenue	(180)	(40)	(21)	(16)	(13)	(12)	(11)	(10)
Content costs	**(67)**	**(133)**	**(136)**	**(139)**	**(142)**	**(144)**	**(147)**	**(150)**
% of revenue	(1200)	(393)	(167)	(105)	(76)	(60)	(50)	(43)
EBITDA	**(94)**	**(145)**	**(106)**	**(65)**	**(21)**	**23**	**67**	**112**
EBITDA margin (%)	(1694)	(429)	(131)	(49)	(12)	10	23	32
Capex*	**(5)**	**(5)**	**(5)**	**(5)**	**(5)**	**(6)**	**(8)**	**(9)**
Capex/sales (%)	(90)	(15)	(6)	(4)	(3)	(3)	(3)	(3)
OpFCF	**(99)**	**(150)**	**(111)**	**(70)**	**(26)**	**17**	**59**	**103**
Post-tax	(66)	(101)	(75)	(47)	(18)	11	40	69
DCF (%)		100	92	85	78	72	67	61
WACC (%)	8.5	(101)	(69)	(40)	(14)	8	26	42
Growth (%)	0.0							
Exit	11.8							
	EV	**316**						

** The low capex assumed in our model is based on the assumption that the operator concerned already has an IPTV network. As such, the model only evaluates the incremental costs and revenues associated with the operator's content initiative.*

Source: Exane BNP Paribas estimates

The sensitivity analysis (see table below) shows that:

– The worst-case value destruction (in a realistic case on content costs) is EUR850m, while the best case value creation is EUR900m. The risk/reward of such a strategy appears balanced (on a stand-alone basis), while the "high premium" approach was clearly value destructive, in our view;

– The sensitivity of the NPV to the number of subscribers is important: assuming less than 2m customers subscribed to the pay-TV offer in the long-run, the NPV of the project turns out to be negative.

This last point shows that it will be extremely difficult for an alternative carrier with a low market share on broadband to launch a profitable pay-TV operation, even with a "light premium" content approach. This confirms that the move towards triple-play favours larger players in each country, thus promoting local consolidation.

Most operators we have talked to, as well as several regulators, believe that local economies of scale are an increasingly important success factor and that this will lead to consolidation of local triple-play markets, with ultimately only "a handful of players" remaining – in particular in the markets that are currently the most fragmented, i.e. the UK and Germany.

Figure 74: Sensitivity analysis – "Light premium" content strategy

NPV (EURm)			Long term annual content cost						
2015e customers			50	100	150	200	250	300	350
523		5%	(522)	(830)	(1,137)	(1,445)	(1,753)	(2,061)	(2,369)
1,045		10%	(234)	(542)	(849)	(1,157)	(1,465)	(1,773)	(2,081)
1,568		15%	57	(251)	(559)	(867)	(1,174)	(1,482)	(1,790)
2,091		20%	348	40	(268)	(575)	(883)	(1,191)	(1,499)
2,614		25%	640	332	24	(284)	(592)	(899)	(1,207)
3,136		30%	931	624	316	8	(300)	(608)	(915)
3,659		35%	1,223	915	608	300	(8)	(316)	(624)
4,182		40%	1,515	1,207	899	592	284	(24)	(332)

2015e EBITDA margin			50	100	150	200	250	300	350
523		5%	(43%)	(128%)	(213%)	(298%)	(383%)	(468%)	(553%)
1,045		10%	19%	(24%)	(67%)	(110%)	(152%)	(195%)	(238%)
1,568		15%	40%	11%	(17%)	(46%)	(75%)	(103%)	(132%)
2,091		20%	50%	29%	7%	(14%)	(36%)	(57%)	(79%)
2,614		25%	57%	39%	22%	5%	(12%)	(29%)	(47%)
3,136		30%	61%	47%	32%	18%	3%	(11%)	(25%)
3,659		35%	64%	52%	39%	27%	15%	2%	(10%)
4,182		40%	66%	55%	45%	34%	23%	12%	2%

Source: Exane BNP Paribas estimates

Finally, we have also looked at the "resale" model. The key difference is that the gross margin is very low (it is similar to that of a reseller) but it is deemed constant in revenues in percentage terms, i.e. there is no risk taken by the operator as it is not buying its own content. We assume that the gross margin could be, at most, in the 10–15% range (in France, telecom operators reselling the Canal+ services receive EUR2–3/month per customer from Canal+).

Given the other costs and capex involved, the potential OpFCF margin is low at around 5%. As such, the risks and the rewards of such a strategy are both much smaller compared to the two other approaches – and the tangible impact of such a strategy lies more in its indirect benefits for telecom operators (see pages 17–23).

Lower churn: a small indirect benefit

One argument often put forward by operators who launch content services is that customers with bundled products have a lower churn. Although this is a much-debated issue among the operators we have talked to, we believe that this is the case – based on the experience of cable operators such as Telenet and that of France Telecom in France.

But this is a small positive. It can increase the NPV of an operator's pay-TV project by only a few percentage points (up to 10%), but it does not change the overall economy of the project. Assuming that the churn rate is two percentage points lower for pay-TV customers than for traditional broadband customers (e.g. 10% versus 12%), the NPV of the project increases by just EUR30–50m, which is not significant compared to the size of the operator.

This conclusion is based on a model assuming that: (i) as long as the operator acquires new broadband customers, 100% of these take triple-play when they subscribe to broadband, with a unit SAC of EUR200 (including opex and capex); (ii) beyond this initial phase, the pay-TV customer base continues to grow within the existing broadband base, with the operator spending a specific SAC of EUR50 to migrate the customer to its pay-TV offer (which is an optimistic assumption in our view). Assuming that the churn benefit is 2% and that 30% of the customer base migrates to the pay-TV offer in the long run, the blended churn comes down to 11.4% versus 12.0%. We then calculate the difference between the commercial cost savings linked to the lower churn in the long run and the incremental SAC incurred to move customers to pay-TV.

Figure 75: Estimating the value creation from lower churn on pay-TV subscribers

NPV gain (EURm)		Churn differential on pay-TV subscribers					
2015e customers		0.0%	(0.5%)	(1.0%)	(1.5%)	(2.0%)	(2.5%)
523	**5%**	0	3	7	10	14	17
1,045	**10%**	0	6	13	20	26	33
1,568	**15%**	(6)	4	14	24	34	44
2,091	**20%**	(11)	2	15	28	41	54
2,614	**25%**	(19)	(3)	13	30	46	62
3,136	**30%**	(29)	(9)	10	30	49	69
3,659	**35%**	(40)	(17)	5	28	51	73
4,182	**40%**	(52)	(26)	0	26	52	78

Source: Arthur D. Little, Exane BNP Paribas estimates

Premium content telcos: will incremental benefits ever be shown?

Most operators in Europe are pursuing a resale TV strategy. As we have seen in pages 17–23, the side benefits of triple-play (in particular slower line losses and market rationalisation) can be achieved with such a resale approach.

For the two operators buying or even developing their own content, France Telecom and Belgacom, we have just seen that it is difficult to turn the acquisition of content into profits on a stand-alone basis – but are there incremental side benefits to such a strategy, compared to a resale strategy?

In theory, a premium content strategy could bring incremental benefits in terms of churn and/or market share, as customers are locked in to the operator's specific content. One thing that a resale strategy does not do is enable the incumbent to differentiate strongly from large cable operators or alternative carriers that have also developed a solid presence on triple-play. However, at this stage, there is no evidence that a premium content strategy leads to better results than a mere resale approach:

– All the results we have shown previously, both in terms of market stabilisation (France Telecom example) and in terms of line losses (Portugal Telecom, Telekom Austria, TeliaSonera and KPN) have been achieved on a resale strategy;

– France Telecom has only recently (H2 08) moved to its premium approach, and at the end of 2008 the operator had less than 100k subscribers to its Orange Foot and Orange Cinema Series channels.

The table below summarises the relative costs and benefits of the different content strategies we have looked at.

Figure 76: Summary of the relative costs and benefits of different content strategies

Strategy	Direct benefits	Indirect benefits	Cost	Overall ranking
High premium content	ARPU +++	Lower fixed line losses + Lower churn + Market rationalisation +	---	-
Light premium content	ARPU ++	Lower fixed line losses + Lower churn + Market rationalisation +	-	+
Resale	ARPU +	Lower fixed line losses + Lower churn + Market rationalisation =	=	=

Source: Arthur D. Little, Exane BNP Paribas estimates

In any case, we believe that the premium strategy is likely to face significant hurdles in the coming years, including the technology shifts with internet-based TV and regulation.

Technology trends and regulation favour an open model

Most cable and telecom operators operate in an "open" model, i.e. they mostly act as resellers of existing content. Exceptions include France Telecom's initiatives to acquire exclusive content, along the lines of BSkyB or Canal+, and to bundle it with access. The specificity of this "closed" model is that it enables (it is even based on) cross-subsidisation between content and access:

– A telecom operator like France Telecom was able to pay EUR200m for football rights not because it can sell this content profitably on a stand-alone basis, but because it believes that this increases the value of its access network (i.e. that it helps to reduce line losses, improve broadband market share and reduce churn);

– A satellite player like BSkyB is able to sell triple-play at GBP17/month including broadband and unlimited calls because it expects customers on this product to be more loyal than single-play pay-TV customers, at a time when cable, telecom operators and DTT have established themselves as alternatives. BSkyB has pushed vertical integration far, with its own content, its own broadband network and its own boxes.

This closed model is in our view unlikely to last, in particular because of both technology trends (multiplication of the platforms able to distribute content, both access players and internet-based players) and regulation.

For telecom operators, this means that they are likely to stay on an open model like cable operators rather than to adopt a closed model like France Telecom. Most companies we have talked to have chosen an "open" model. Their role will be to aggregate content from third parties rather than to produce or acquire it. We note that in recent comments, even France Telecom has signalled a softening of its stance, saying that it was unlikely to step-up its foray into content.

For traditional media players who are present both on access and content, this means that they could increasingly separate the content part and the access part of their business. Some may move entirely towards the access business model, like cable operators, while some others may move towards the content production/licensing model (like the French TV channel M6). For instance, Time Warner separated its cable activities from its entertainment to increase the value of each asset, and Virgin Media announced recently a possible divestiture of its content business unit.

Regulation promotes an open model

There is regulatory work ongoing, notably in two key markets: France and the UK, with important steps also being taken in the USA which could influence European markets. In these three instances, regulators are working on legislation that would avoid a strict bundling of content and access.

France – Orange's TV offers have sparked a heated debate between Canal+ and France Telecom. Since the merger between Canal Sat and TPS, the antitrust body has imposed many rules on Canal+, which in particular must distribute its premium content on all platforms. This notably rules out any advantage for SFR/Neuf Cegetel in terms of accessing TV channels of the Canal+ group.

Since then, the association of alternative carriers AFORS has filed a lawsuit against France Telecom's deal with France Television (the public TV broadcaster) on its catch-up TV service, distributed only to Orange TV customers; AFORST lost its case. However, on 8 January 2009, the French government has officially mandated the Competition authority to make an official recommendation on the exclusive content offers developed by internet access providers.

The authority will look at the potentially anti-competitive effects of content offers from operators that are currently offered only to their own broadband customers. A likely outcome in our view could be that it recommends forbidding such bundling. This would make France Telecom's foray into exclusive content very difficult.

The UK – Ofcom has been looking for several years at obligations on BSkyB, which owns a large part of the UK's premium content. Today, there is no formal regulation of access to BSkyB's content, but the existing agreement between BSkyB and Virgin Media which makes Sky's content available on Virgin Media's cable network had been reviewed (and approved) by Ofcom and the Competition Commission.

Ofcom is currently reassessing the situation and has already published two consultations on the matter. The last one, released in December 2008, favours regulated access to Sky's content. The project is not to "unbundle" Sky's content (i.e. not to force BSkyB to sell each of its TV channels on an individual basis) but to define a wholesale framework in which all distribution platforms, not only Virgin Media, could access the company's content at regulated prices (set by Ofcom).

Ofcom's next public consultation on the subject is expected in Spring 2009; the final implementation may happen in H2 09 if the framework can be designed and set at the Ofcom level, or later (2010) if it has to be set in the UK's Enterprise Act.

The Netherlands – The Dutch regulator has mandated cable companies to open their network to third party players (with the exception of the incumbent KPN), and KPN/Reggefiber had to guarantee "open access" to the FTTH networks that it is building to get an approval from the regulator and the competition authority.

USA – Finally, in the US, the net neutrality debate is also hot. Cable operators have been accused by internet companies such as Google of discriminating between their own content and internet-based content – i.e. breaching the so-called net neutrality.

However, in August 2008, the FCC ruled that the cable operator Comcast had illegally inhibited its broadband users from using file-sharing software. The legal complaint against Comcast related to BitTorrent, software that is commonly used to download movies, TV shows, music etc. over the internet. The FCC chairman said that the ruling was meant to set a precedent that operators could not prevent customers from using their broadband access the way they want without good reason. It is not yet clear what stance the Obama administration will take on this issue, but during the election campaign, Obama had expressed views in favour of net neutrality.

Net neutrality is being pushed strongly by internet players, and Google recently announced a tool/service which will enable customers to determine whether their access provider interferes in the bandwidth of the broadband line depending on the services used – showing its determination to keep up the pressure, notably on US cable operators.

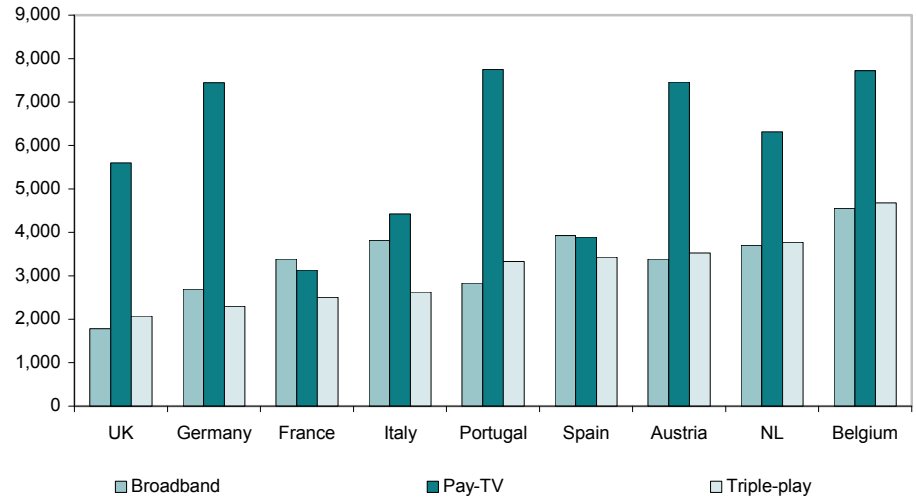
…and so does the multiplication of distribution platforms

IPTV leads to a multiplication of platforms able to broadcast content beyond the traditional cable and satellite-based players. As shown in the chart below, in Europe, triple-play markets are much more fragmented than the "old" pay-TV markets (i.e. the HHI concentration index is lower – see from page 81 for a per country view). This means that in each country, only one or two players have the critical size necessary to pursue a premium content strategy. Other players, including cable operators and mid-sized telecom operators, will have no choice but to adopt an "open" model for content.

Moreover, technology trends, in particular the upcoming development of internet-based TV, will enable customers to access content through an even larger choice of platforms, including not only their triple-play access provider, whoever it is, but also from internet players such as Google, Microsoft or Yahoo, equipment manufacturers such as Apple, TiVo and several producers of TV sets, game consoles companies such as Sony, Nintendo, etc. and finally TV/content groups like the BBC (pages 69–73).

In such an environment, it is likely that content producers will see an opportunity in signing distribution deals with several platforms rather than keeping content on an exclusive basis for one particular platform.

Figure 77: HHI index of the broadband, pay-TV and triple-play markets



Source: Arthur D. Little, Exane BNP Paribas estimates

There are two clear examples of such a trend in the UK market:

– At the beginning of 2007, BSkyB decided to terminate broadcasting its package of channels on Virgin Media to marginalise the competitor. However, after 20 months of suffering for both players (many customers quit Virgin while Sky suffered a significant advertising loss when audience fell from 11 million to 8.5 million), Sky decided to resume broadcasting its channels on Virgin Media;

– BSkyB recently announced a new web-based offer in the UK. This is an online-only subscription-based service to Sky's TV channels called "Sky Player TV", offering live TV and VoD. Customers can access it without the need to subscribe to an existing TV-based service. It starts at GBP15/month for the "Entertainment Pack" and goes up GBP34/month for the additions of all of the Sky Sports family of channels. This service can be read as a way to be present on the turf of web-based video services and to extend its reach beyond its existing customer base. As such, BSkyB seems to have chosen to sell its content through all possible channels rather than to keep it to its customer base only.

Internet-based TV: long term risk of commoditisation

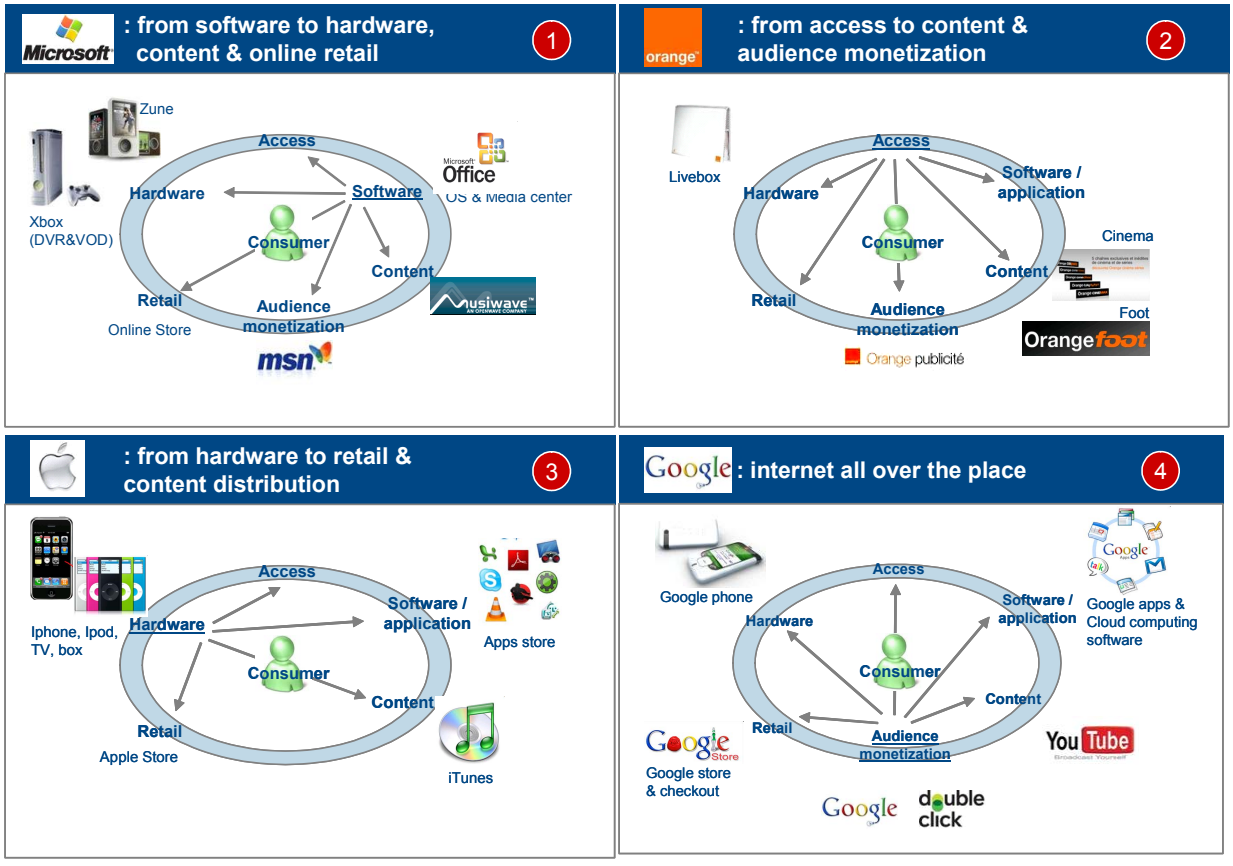
Beyond the "traditional" battle between telecom and pay-TV, a new form of competition is emerging, which can potentially affect the value of the whole market by reducing the ability of triple-play operators to charge for content. This long term threat is coming from companies not originally operating in telecom services or cable/pay-TV:

- Internet/software companies, such as Google, Microsoft and Amazon, as well as specialist internet start-ups such as Hulu;
- IT hardware/consumer electronics companies, such as Apple, Sony and Nintendo;
- Free-to-air televisions, such as the BBC in the UK and large TV networks in the US.

In particular, gaming consoles could represent a dangerous "Trojan horse" for alternative content offers penetrating the home: consoles are present in millions of households; they are already connected to TV sets and they are increasingly connected to broadband lines, hence have access to internet-based content.

Many of these companies are developing attractive "open" internet-based TV offerings that can compete with the "closed" TV offerings built by telecom operators and pay-TV providers. These new offers have limitations, but they meet an increasing demand from customers to be able to access "all content", not only the limited content packaged by their access provider – be it a cable, satellite or IPTV operator. Moreover, these services often come with a superior customer experience thanks to more advanced features. For instance, the Xbox 360 and PS3 gaming consoles offer a higher resolution than IPTV and DTH providers.

Figure 78: Moves from different players in the value chain



Source: Arthur D. Little, Exane BNP Paribas estimates

If customers migrate to such offers, the broadband access network faces the risk of returning to its state of “dumb pipe”, with the operators not in the position to control and monetise the traffic on their network. This was outlined by a majority of companies we have talked to: telecom operators for which it is a risk, and groups from other parts of the value chain for which it is an opportunity.

At this stage, access players have two very strong advantages over internet-based television: 1) their offer is directly available on the TV screen, while internet-based services can for now be viewed mostly on the PC screen; 2) their quality of service is superior to that of internet-based offers as the operators’ servers are very close to the customer (rather than “somewhere in the internet”). Moreover, the access operator controls the bandwidth on the customer’s line (ADSL, fibre or cable) while the internet-based video provider has to deal with the hiccups of internet traffic.

However, there are clear changes on these two fronts: media, internet and software groups are forging partnerships with hardware manufacturers/consumer electronic companies so that their video content can be accessed on the TV screen.

From the customer’s point of view, a key strength of offers developed by/with internet leaders or game specialists is the ease of use. Compared with the often clumsy and slow programme guides developed by cable and IPTV operators, a web-like or game-like user interface developed by Google, Apple or Sony can easily make the difference.

Moreover, there are ways for these new competitors to guarantee a good quality of service, either through specific commercial agreements with access operators or through regulation i.e. “net-neutrality” rules.

Fast-growing internet-based video

There is an abundance of online video services, developed by internet leaders (YouTube, MSN Video), internet start-ups (Hulu, Dailymotion) and media groups such as TV channels (virtually all TV channels have a website with streaming capabilities) and content owners (e.g. Hollywood majors, music artists, newspapers, etc.).

Many operators have highlighted to us the “massive growth” in content consumption over the internet, with video as the key driver thanks to applications such as YouTube and the BBC’s iPlayer.

These offers are mostly free i.e. based on advertising. They are therefore targeting audience as the main revenue driver:

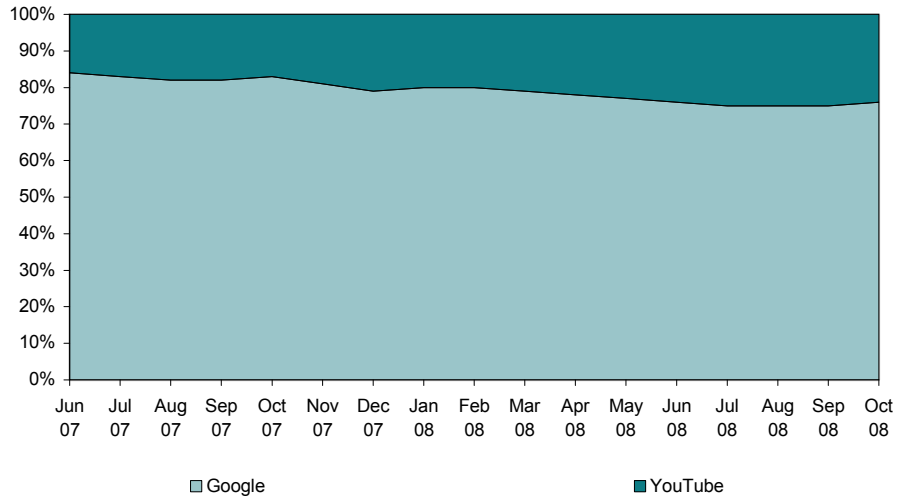
– YouTube, bought by Google in 2006, has a global audience of 77m unique users. However its revenues remain limited: around USD300m, corresponding to EUR4 pa per unique user, as only 4% of its content is monetised with advertising, notably due to copyright issues. In terms of content, YouTube initially focused on user-generated content, but the site is also signing content distribution partnerships with music majors (e.g. deal with Universal Music) and now with US movie studios (MGM in November 2008), based on revenue sharing agreements. YouTube is also adding high-definition video.

– MSN Video has a different strategy. It features premium legal content thanks to its content acquisition strategy with, for instance, a deal signed with TF1/Endemol in France, the MTV awards in the USA, etc. MSN Video is one of the fastest-growing channels on the internet but monetisation is lagging. Its partnership agreements are based on revenue sharing (a minimum of 50% is kept by MSN).

– One interesting start-up initiative is called Hulu. Built by NBC, Universal and News Corp, its content is available only to US PC equipped households. It has reached a US audience of 7 million unique users. It features premium content but not “fresh” i.e. blockbusters dating back over two years. Its total revenues reached USD70m in 2008 versus USD100m for YouTube in the USA only, which would lead to revenue per user of at least USD10 per unique user per year, 2.5x higher than at YouTube.

Video usage is growing faster than other web-based applications as shown for instance by the weight of video search on YouTube within the total number of searches performed on Google’s sites: up from 16% in Q2 07 to 25% in Q3 08. Another data point confirms this: 45–50% of online users in France used video applications in 2008 compared to 20% in 2004.

Figure 79: Search split between Google sites



Source: Comscore, Arthur D. Little, Exane BNP Paribas estimates

Paving the way for full-fledged internet-based TV offers

Beyond these video applications on the PC screen, we see a large number of credible initiatives aimed at developing full-fledged offers for the TV screen – which show that established leaders in online video such as YouTube are far from being the only credible contenders on the future internet-based TV market. Since it is about connecting the TV to the internet, there is clearly a need for a new (or upgraded) piece of hardware, be it a box, a digital video recorder, a gaming console or a TV set – hence hardware manufacturers have a card to play.

The different solutions explored to bring the content onto the TV screen include:

– A “simple” connection between the PC and the TV, through different technologies (wire-line or wireless, including HDMI, WiFi, etc.) with an application running on the PC to feed the TV with the content downloaded from the internet;

– The development of new set-top-boxes or TV sets that are capable of accessing a consumer’s internet connection i.e. to connect to a consumer’s broadband modem or home router and download/stream internet-based video content. This can be new boxes (e.g. Apple TV), existing boxes such as a digital video recorder (e.g. TiVo, Amazon Unbox), or new “intelligent” TV sets. A number of tech companies (Netgear, Myka, ZeeVee, Sezmi, Neulion, etc.) are developing hardware and software aimed at this opportunity.

– The development of new video capabilities for existing home equipment such as game consoles (Xbox, PS3, etc.): we believe that these devices are particularly interesting as they are already present in tens of millions of households worldwide (see table below), they are already connected to TV sets and they are increasingly connected to the internet;

– An agreement between a content or TV group and an access provider to bring the content to the TV set via the access provider's existing set-top-box (e.g. agreement between the BBC and Virgin Media on the iPlayer).

Here are a few examples of recent developments in this area.

BBC's iPlayer on the TV screen – At the end of April 2008, the UK cable operator Virgin media and the BBC announced that its iPlayer service will be available on the TV sets of Virgin Media's 3.5 million customers. Users can watch full screen pictures at full quality on their television set without the need for downloading. The BBC's iPlayer was initially launched as a web-based service and is very successful. The service allows viewers to catch-up on the BBC's TV shows from the past seven days at no extra cost.

Until the development with Virgin Media, the content was available only on the PC screen. However, the April 2008 press release included the following quote from the BBC Director of Future Media and Technology: "We have always envisaged a BBC iPlayer on a TV platform and in the living room. (…) This partnership (…) underlines our commitment to making BBC iPlayer a multiplatform offering". This clearly shows the ambition of the UK media group. We would not be surprised if other UK telecom operators signed partnerships to distribute BBC iPlayer over their network.

Gaming consoles become media centres – New generation gaming consoles such as the Wii, Xbox 360 or PS3 are connected to the TV set as well as to the internet, via the broadband line. They now offer not only video games but also movies, television and other content. There are now almost 100m new generation gaming consoles installed in households around the world. Xbox is now the number two VoD provider in the US thanks to Microsoft's partnership with Netflix and studios.

Figure 80: Gaming consoles – Installed based

Console	Manufacturer	January 2009
Wii	Nintendo	46.3
Xbox 360	Microsoft	27.8
PS3	Sony	19.9
Total "new generation"		**93.9**
Nintendo DS	Nintendo	97.9
PSP	Sony	43.8
Total		**235.6**

Source: Arthur D. Little, Exane BNP Paribas estimates

Even though they come at attractive prices, the technical capabilities of these consoles are very advanced. For instance, the PS3 supports Full HD (1080 pixels) and features a slot for a Blu-ray Disc drive to play games, HD movies, etc. They have large memory capacity and advanced connections including USB2.0, WiFi, HDMI, etc.

Finally, the three main companies behind these consoles, Nintendo, Microsoft and Sony, are clearly powerful and operate on a gaming market worth EUR35bn worldwide (of which consoles represent EUR20m), with high single-digit revenue growth expected in the coming years.

Multiplication of the connected DVR – TiVo, the leading digital video recorder provider, has developed several offers based on the connection of its box to a broadband line.

This includes “Pause Menu”, a system delivering targeted advertising to customers, a search feature called “Swivel Search” (allowing to find program information, related shows etc. when the customer clicks on the “pause” button on the TiVo remote) and a partnership with the video rental company Netflix to show online movies to customers which have a TiVo and are Netflix customers.

Many other connected DVRs have been presented at the 2009 Consumer Electronics Show, including a set-top-box called Myka enabling access to internet-based video through BitTorrent; one called Roku sold by the VoD provider NetFlix, enables access to a catalogue of 10,000 movies (selling for USD100 plus the NetFlix monthly fee of USD18). Netgear has several boxes including an “internet TV Player” providing access to many types of content such as YouTube videos, TV channels from all over the world and VoD services on the TV screen – this would sell at USD200 and involves no monthly rental fee; SageTV HD Theater enables to play HD video content from one’s PC and from the internet (YouTube) on one’s TV (USD200); etc.

YouTube on TV – On 17 January 2009, YouTube announced the launch of YouTube for Television, a section of its site with a new user interface for easier viewing on TV screens. This service is initially available through two games consoles: the Sony PS3 and Nintendo Wii, in 22 countries. Additional devices will be added over time. YouTube had already begun its migration from the PC to the television in the living room since 2007, with deals with Apple (for Apple TV), Sony, HP, Panasonic and TiVo.

This strategy obviously implies that YouTube’s content is adapted to large screens, hence the move towards longer clips and better quality, including YouTube HD which enables videos of up to 1Gbyte.

TV screens show Yahoo widgets (and other applications) – The 2009 Consumer Electronics Show (Las Vegas) was full of TV sets integrating the new initiative from Yahoo called Yahoo Widgets. These are small applications running with the help of a specific Intel chip, delivering services and content on large LCD and plasma TV screens. Products from Samsung, Panasonic, LG and Sony are expected to be on the mass-market from mid-2009.

Yahoo’s services include news (weather, stock quotes, etc.) as well as access to social networks such as mySpace, video-conferencing, etc. – all accessed from the remote control. The idea is to attract other developers of applications to create an ecosystem of services on the TV screen.

The offer from TV manufacturers goes beyond the Yahoo widgets. For instance, LG’s TV sets offer Yahoo’s widgets as well as access to content from NetFlix, YouTube and Flickr.

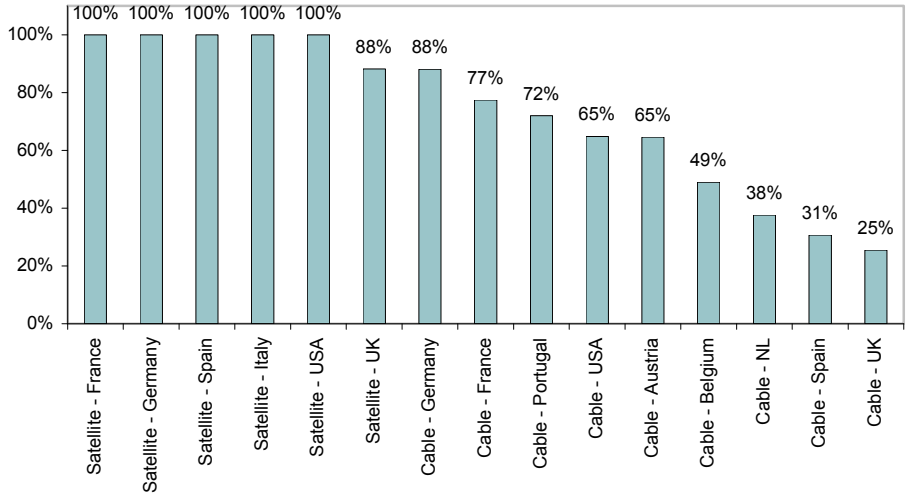
Direct and indirect risks for access providers

If such internet-based video platforms grab a significant share of the TV viewing experience, what are the consequences for the traditional pay-TV providers and IPTV operators? We believe that they would have a negative impact on their returns, with both potentially less revenues and more capex.

First, access providers could lose revenues, either existing or potential revenues.

Satellite operators are the most exposed, with 100% of revenues derived from pay-TV (except for BSkyB: 88%) and cable operators are also very exposed, with 53% of revenues derived from pay-TV on average in Europe, but with large local differences: from 25% in the UK to 88% in Germany.

Figure 81: Share of revenues derived from pay-TV, 2008e



Source: Arthur D. Little, Exane BNP Paribas estimates

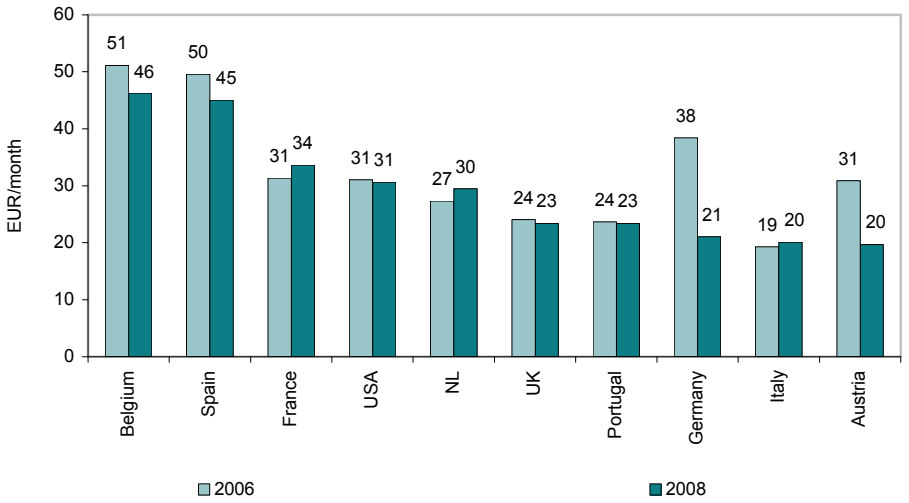
Regarding telecom operators, pay-TV revenues are currently very small so the downside risk is limited. However, the risk for them is not being able to develop a new revenue stream in pay-TV despite significant investments in the area, and more generally, not being able to bundle content offers with telephone and broadband, hence facing commoditisation with further pressure on fixed ARPU.

In Figure 82 below, we show that the broadband ARPU of European incumbents currently ranges from cEUR20 per month in Austria, German and Italy to c.EUR45 in Spain and Belgium. Germany, Italy and Austria are the countries with the lowest penetration of IPTV: some companies have highlighted that this situation is one of the reasons why operators in these countries have not managed to weather the continued pricing pressure on the fixed broadband market.

If we were to assume pressure on broadband ARPU throughout Europe due to an inability to grow TV revenues and a commoditisation of broadband access, this would significantly damage operators' long-term outlook and valuation. For a typical fixed incumbent, cutting 2015e ARPU by EUR5 reduces its valuation by c.8% (see page 23).

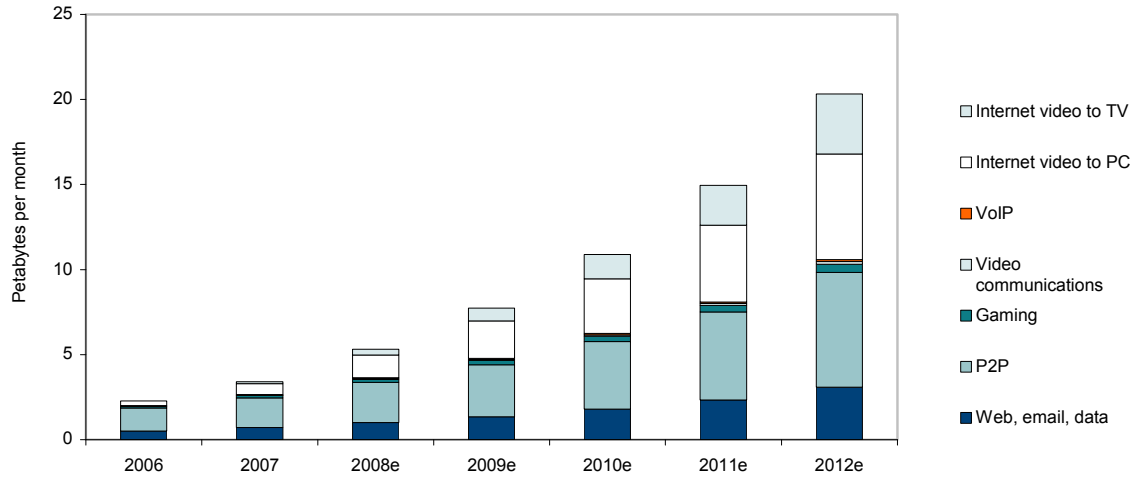
Second, the growth in internet-based video offers will strongly impact the amount of traffic carried on telecom networks. As shown in the chart below, Cisco expects the annual video-related internet traffic (to PCs and to TVs) to represent 9,700 Pbytes by 2012 i.e. almost twice the total traffic carried on the internet in 2008.

Figure 82: Incumbent's broadband ARPU



Source: Arthur D. Little, Exane BNP Paribas estimates

Figure 83: Residential IP traffic forecasts (000' Petabytes per month)



Source: Cisco

This represents a significant threat since operators will have to upgrade their networks to make sure that the quality of service for all other services would not suffer from the growth in video-related traffic.

If we assume that this traffic grows completely outside of their control, they could find it difficult to earn a return on this capex – as the broadband pricing is generally a flat rate independent of the traffic of the customer. One solution could be for them to charge the video content providers for the bandwidth they use. For instance, the news recently emerged that Google was negotiating with a US cable operator to make sure that the operator reserve bandwidth for its services, in particular YouTube, we assume. The first read is positive as it would mean that the operator would get a return on its investments in capacity. However, such an option would also mean a more subtle risk that the operator becomes a "dumb pipe", with Google developing an ever-expanding suite of customer-centric services and the customer becoming increasingly loyal to the web-based service provider rather than to its broadband access provider.

Operators will react through services and local content

Large investments in premium content would be likely to destroy value and in any case the "open" model is likely to win over the "closed" model – given the expected technology and regulatory trends. However, in our view, telecom operators have other means of defending themselves from rapid commoditisation, and the recession gives them time to do so.

Developing easy to use new services around content

One general aspect is for operators to work on one of their key relative weaknesses compared to other companies in the value chain. Offers from the likes of Google and Apple are successful with consumers first and foremost because they are attractive and easy to use.

Most operators we have talked to recognise that they have a lot to do to improve the ease of use of their services. Many operators have already started action plans on these fronts. They try to simplify their offers; in particular they reduce greatly the number of different services they push to customers. Examples of such initiatives include Telenor, France Telecom, etc.

More specifically, we believe that there are many services that can be developed by operators to increase customers' stickiness.

In the USA, innovative players like TiVO or Slingbox are at the forefront, but large telcos, cable players and DTH players (Verizon, AT&T, Comcast, DirectTV, etc.) also offer very advanced services on their boxes:

- Verizon FiOS customers now get up to 150 high definition channels through their box (compared to 10 HD channels at Orange in France, for instance);
- AT&T's video storage offer enables 133 hours of recording in standard definition TV and 37 hours in HD (at least 30% more than on Iliad's Freebox);
- AT&T and Verizon are providing their own widgets (similarly to internet players such as Yahoo) on the set-top-box to access internet services such as news, local weather, stock quotes, yellow pages information, pictures from social networks such as Flickr, etc. all on the TV screen;
- Comcast has launched "tru2way", a technology services to be rolled out (including third party applications) to its customers without relying on the set-top box.

In Europe, telecom operators are now also developing services around content that are more and more numerous and advanced: high definition, DVR and storage (integrated either in the set-top box or in the network), simultaneous viewing and recording (of up to four channels at the same time), access to the content of a PC (and watch the content on the TV screen, for instance), remote access to the DVR (e.g. to access content stored on the DVR from any PC connected to the internet, or to schedule and manage recordings), video-on-demand and catch-up TV, interactive advertising, electronic program guide, games, chat, TV-commerce, etc.

In particular, many companies see HDTV as a key attractive feature for customers – and recent results of BSkyB in the UK highlighted that demand is there, even (or even more so?) in a recessionary environment. These options are sometimes included in the bundles, but they are also often charged at rates of EUR5-10/month, as shown in the following table.

Figure 84: Price ranges for additional services (EUR/month)

Country	Multi-screen	DVR	HDTV
France	5–10	5–10	0–5
UK	10–11	0–5.5	0–11
Spain	n/a	0–10	0
Germany	n/a	0–10	10
USA	0–4	4–12	3–7

Source: Arthur D. Little, Exane BNP Paribas estimates

In such a complex environment, operators – of which many had historically thought that they would be able to "do it all themselves" – are now realising that they need to partner with other parts of the value chain.

Other companies in the value chain are engaging in cross-partnerships. Telecom operators start doing the same. They have unique assets that make them very attractive partners for other kinds of players.

Operators have assets they can leverage

Operators have important assets that they can rely on – and most of them relate to their privileged access to customers:

- A wide access network providing two-way broadband (as opposed to most satellite-only operators) and a wide reach (wider than that of cable operators in most countries). Net neutrality rules are likely to block telecom operators from leveraging this asset in a "brutal" way, but it does not mean that they cannot monetise it;
- The box: as we have seen, the operators' box is not the only one to have potential in terms of content, but it is present in most broadband homes in most countries – hence it is a key asset for providing and aggregating services, contents, etc.;
- The billing relationship: this is a rare asset that internet players (advertising based), content providers and manufacturers do not have at all. It can be monetised in two ways: (i) the sale of additional products/services can be added to the bill; (ii) for advertising-based services, customer insight can be monetised by operators in partnership with advertising specialists that have advanced data-mining skills;
- A distribution network: hundreds (and sometimes thousands) of shops that can be used to sell not only services but also hardware: operators have already started to sell laptops, but they could also act as efficient resellers of different kinds of boxes e.g. Apple TV, gaming consoles, etc.;
- And often (although not always), operators have a strong **brand**, identified with reliability, trust, etc. This is a useful asset for all partners who lack a strong brand, notably many technology and/or content companies.

These assets and their uniqueness when comparing telcos with other groups in the value chain, have being highlighted by operators we have talked to, in all countries.

As we have seen in pages 17–23, we expect operators to keep and nurture these assets, which make them a partner of choice for other players in the value chain. They will continue upgrading their access network and they will work on keeping their market share of access as high as possible.

Many attractive potential partnerships with players in the value chain

Then, operators are likely to try and partner with most other kinds of players in the value chain:

- Operators will continue to sign deals with local pay-TV players that could become competitors, such as the distribution of Canal+ offers by all access providers in France, the rumour of discussions between Sky Italy and Telecom Italia, etc.

- They will find win-win deals directly with local content companies, in particular local TV channels – bypassing to some extent the pay-TV packages. There are already many examples of such deals, including the agreement between Virgin and BBC on the iPlayer; Orange France's "Rewind TV" offer with the French public channels of France Television, and now M6; Portugal Telecom's deal with TVI (for exclusive Euro 2008 HD broadcasting), etc. This is positive for local TV channels as they need to find new distribution platforms and do not have the means to develop innovative technology platforms themselves. This is positive for telecom operators because such local content is highly appreciated by customers, while global players such as Google (YouTube) or Sony (gaming consoles) will not distribute such local content, at least not initially (this is especially the case in smaller countries that are not at the top of their priority list). The importance of local content has been highlighted by a vast majority of companies we talked to, both telecom operators and content providers in basically all countries.

- Finally, operators will, in our view, find deals with internet players, based on revenue sharing – or, in a "worst case", on wholesale pricing of bandwidth (as rumoured in the discussion between a US cable operator and Google). Outbidding Google on the quality of web-based services such as email or maps will not be possible… but operators can monetise their access to the customer. This was shown for instance with the partnership between Neuf Cegetel (now SFR) and Dailymotion (a local competitor of YouTube), with Dailymotion available on channel #100 on Neuf Cegetel's IPTV box. Finally, operators could become a distribution platform for gaming groups, as shown with the partnership between Korea Telecom and Sony whereby the Sony PS3 is the set-top box for KT's IPTV service named Mega TV.

A large number of operators we have talked to, notably in Sweden, Belgium, France, Germany, Portugal and Italy, are looking to develop an increasing variety of partnerships across the value chain – so we expect more announcements of this kind in the coming quarters.

We believe partnerships are much more likely than acquisitions regarding the development of operators into new areas of the value chain. M&A is not really considered by anyone in a significant manner – even though assets are now cheap. Most companies in the value chain believe that content/access integration does not make sense as content needs to be monetised on the widest possible audience, not only on one access network. One exception is the interest of Telefónica in Digital+ (Sogecable), with Telefónica reportedly looking for "preferential access" to content.

Moreover, the good news is that the current economic environment provides operators with more time to organise themselves.

The recession gives telcos more time to react

The global economy – and Europe in particular – is going through a deep recession. Economists continue to cut their estimates for world GDP growth. Exane BNP Paribas's economics team now forecasts a GDP decline of 1.4% in 2009 for the Euro zone (see table below).

At this stage, the economy has had a limited impact on the European telecom markets, except in Spain – an economy that slowed abruptly in 2008 unlike most other European countries. However, given the extent of the economic slowdown expected in 2009 in the Euro zone and in the UK – similar to that observed in 2008 in Spain –, we do not see how the European telecom markets could remain unaffected.

Figure 85: GDP growth estimates (Exane economic team)

Country	GDP Annual Growth rate in %				Yoy change (%)	
	2007	2008e	2009e	2010e	2008/2007	2009/2008
France	2.2	0.9	(1.2)	0.6	(1.3)	(2.1)
Germany	2.6	1.4	(1.5)	0.7	(1.2)	(2.9)
Italy	1.4	0.0	(1.1)	0.2	(1.4)	(1.1)
Spain	3.7	1.3	(1.5)	0.7	(2.4)	(2.8)
UK	3.1	1.1	(1.9)	0.3	(2.0)	(3.0)
USA	2.0	1.4	(1.3)	2.0	(0.6)	(2.7)
Emerging Asia	9.4	7.7	5.3	6.8	(1.7)	(2.4)
Latin America	5.6	3.8	1.5	2.7	(1.8)	(2.3)
Eastern Europe	7.3	4.8	0.7	2.6	(2.5)	(4.1)
Middle-East	5.8	6.2	4.5	5.1	0.4	(1.7)
Africa	6.2	6.1	4.5	6.0	(0.1)	(1.6)

Source: Arthur D. Little, Exane BNP Paribas estimates

The recession will increase customers' sensitivity to prices and could slow the adoption of new products such as triple-play – but recent results of BSkyB in the UK show that home entertainment can be an area in which customers continue to spend (or even spend more) when times are tough, as it is an inexpensive form of entertainment compared to others (e.g. going out to the movies or to a restaurant).

We believe that a long economic crisis would harm telecom operators relatively less than their competitors in the value chain, in particular device/equipment manufacturers and internet players – for two reasons. First, we expect less of an impact on telecom operators' recurring revenues than on revenues of these other groups. Second, in our view, operators have leeway in terms of opex and capex, so we expect them to be able to protect their free cash-flow generation in 2009 – as detailed in the Exane BNP Paribas report entitled *Stronger than you think*, published on 15 January 2009.

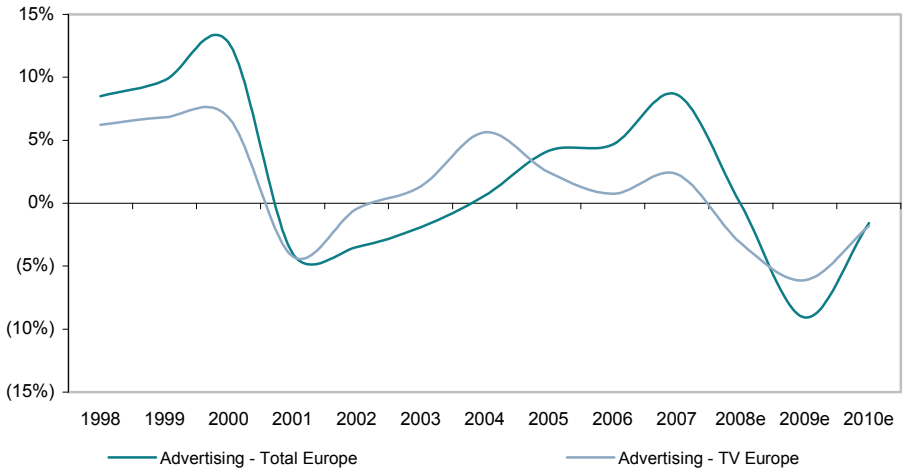
Other parts of the value chain should be significantly affected by the recession. Therefore, the relative position of telecom operators is likely to improve during the next few years. This could give them the opportunity to better impose their vision of the sector than if the economic boom had continued.

Indeed, all players that are funded (or want to be funded) by advertising are facing growing headwinds. The worldwide advertising market is down sharply. Even the online advertising market is slowing, which means lower-than-expected revenues and cash-flows for internet companies like Google and Yahoo.

Some of these companies are even engaging in cost-cutting measures, a first for them, which should clearly distract management from some of their "scope expansion" plans. As such, the threat to the traditional telecom business model represented by advertising-based business models will take more time to materialise.

Second, there will be less funding available for internet companies for M&A, a key engine of their growth and innovation in the past few years, as well as for innovative start-up companies in general.

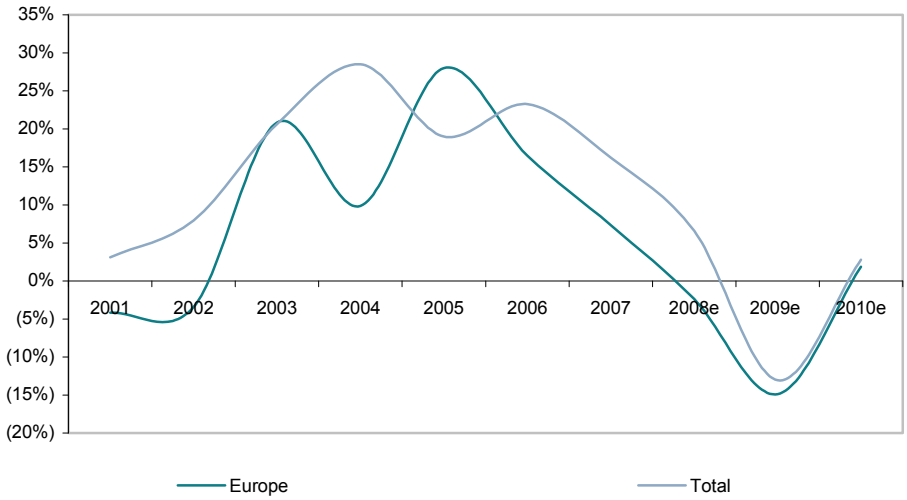
Figure 86: Year-on-year change in the advertising market



Source: Arthur D. Little, Exane BNP Paribas estimates

Third, lower equipment sales (handsets – see chart below, boxes, TVs) and potentially lower telecom capex will mean that systems manufacturers will be even more dependent on operators, so their initiatives to develop activities competing directly with that of telecom operators should be put in check at least for now.

Figure 87: Yoy variation of mobile handset sales (units) in Europe & in the world



Source: Arthur D. Little, Exane BNP Paribas estimates

Overall, we conclude that companies that could threaten telecom operators are likely to be less aggressive than previously feared. Telecom operators will have more time to adapt to these threats – hence to "move the lines" in their favour in the competition with adjacent industries such as media, internet and systems players.

4. What scenario for which market?

As we have seen, the move to triple-play comes with different opportunities and risks in each country – and the starting positions of different incumbents are also different. The competitive landscapes are different and can change in different ways: new entrants, consolidation. How do all these parameters combine and what is the most likely overall scenario for each market?

Will any European market become as penetrated and as profitable as the US triple-play market, with triple-play revenue per household of more than EUR70 per month, leading to a return to growth in the fixed market? On the contrary, will the move to triple-play lead to deteriorating revenue trends for some incumbents?

As we have shown on pages 8–23, the range of outcomes for a domestic incumbent is wide: in a bear case with low broadband market share and low ARPU, the top line can decline by more than 3% pa. over 2008–2015 leading to a DCF-based valuation equivalent to 3x EBITDA. In a bull case, with high broadband market share and high ARPU, the top line can grow by 1% pa leading to a valuation equivalent to 6x EBITDA.

The table below summarises our view per country – focusing on the outlook for the local incumbent:

– Portugal appears to be the market offering both revenue growth potential and visibility, as the incumbent has already started to stabilise fixed lines thanks to triple-play. This comes at a cost (opex and capex), but this cost has already been communicated by the operator, and the project is clearly NPV-positive;

– Austria offers large theoretical potential, but the strong competition from mobile broadband has depreciated the market's value and the incumbent needs to upgrade its network before it can really benefit from the pay-TV opportunity;

– In the Netherlands, penetration is high and pay-TV ARPU is low, but KPN can grab market share from cable operators. The market is already consolidated hence it offers good visibility;

– In Italy, there is a good opportunity for the incumbent in pay-TV as the penetration is low and there is no cable, but this requires a strong commitment in terms of capex and commercial push, while Telecom Italia's high debt means limited flexibility;

– Spain also offers good visibility, but the potential for higher penetration is offset by the downside on ARPU – and the impact of the recession overshadows this picture;

– In Belgium, there is still upside in the triple-play market, a tool necessary for the operators to capture customers on their network (DSL or cable) and to fend off competitive initiatives from mobile-only operators;

Figure 88: What scenario for which market?

	Triple-play risk/reward	Main risk	Consolidation?	Revenue conclusion	Comments
Portugal	+	n/a	Limited	+	Good visibility
Austria	+	Mobile broadband	Cable-mobile?	=/+	Capex required
Italy	+	Sky into triple-play	Limited	=/+	Capex needed; acceleration in IPTV uncertain
Spain	+	n/a	Digital+ acquisition?	=	Upside but not in the short term
Netherlands	=	n/a	Cable-mobile?	=	Good visibility
France	=	Indirect impact from 4th licence	Possible if 4th licence	-/+	Depending on 4th licence and M&A
UK	=	BSkyB leveraging premium content	Fixed-fixed	-/+	Need capex in any case
Germany	=	Cable into triple-play	Fixed-fixed	-/=	Depending on speed of consolidation (slow for now)
Belgium	-	TV offer from KPN or Mobistar?	No	-/=	Good short term visibility

Source: Arthur D. Little, Exane BNP Paribas estimates

– In France, we see a peaceful triple-play market for now, but the fourth mobile licence could disrupt the mobile market and have an indirect impact on the fixed market. It could also trigger M&A. The ultimate scenario on the French market is therefore significantly blurred;

– In the UK, the visibility is low depending, notably, on how the regulation of BSkyB's content evolves. Consolidation is necessary, but not sufficient. To get back on track, BT also needs to invest to upgrade its network and there is downside risk if it does not;

– Finally, in Germany, triple-play should benefit cable operators and negatively impact the alternative carriers. Here again, consolidation is necessary and could help improve the incumbent's revenue trends.

Risk/reward for telecom operators on the triple-play market

The table below gives a more detailed view of the risk/reward for telecom operators in the triple-play market, integrating two main factors: 1) their opportunity in the pay-TV market, a function of the potential for additional pay-TV penetration and the opportunity for telcos to gain a share of this market (analysis detailed in pages 33–41) and 2) the risk that operators face in broadband linked to the evolution to triple-play, a function of the current market share of other triple-play contenders compared to their potential and of the level of broadband ARPU (the higher, the riskier):

– In our view, Portugal, Spain and Italy are the countries most favourable for telecom operators, combining a significant growth opportunity in the pay-TV market and a favourable competitive environment;

– Germany offers a low-growth opportunity in pay-TV in a very fragmented market hence the risk/reward appears neutral for the incumbent and negative for alternative carriers;

– The UK appears in the middle of the pack, with still some growth potential in pay-TV but a weak position for telecom operators versus pay-TV players;

– Finally, the risk/reward appears in line with the average in France as the market has average growth potential and is not as concentrated as in some other countries.

Figure 89: Risk/reward for incumbent operators in triple-play, by country

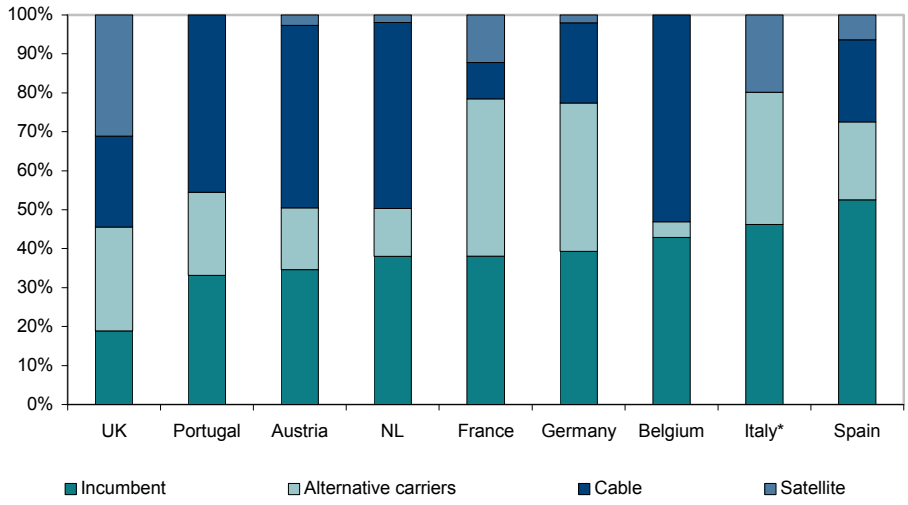
	Pay-TV opportunity			Broadband risk			
	Penetration	Market share	Total	Market share	ARPU	Total	Overall
Portugal	1	1	2	0	1	1	3
Spain	2	1	3	1	(1)	0	3
Austria	1	1	2	0	0	0	2
Italy	2	0	2	(1)	1	0	2
France	1	0	1	0	0	0	1
UK	1	0	1	(1)	0	(1)	0
Germany	1	0	1	(1)	0	(1)	0
Netherlands	0	1	1	(1)	0	(1)	0
Belgium	0	1	1	(1)	(1)	(2)	(1)
Average	**1.0**	**0.6**	**1.6**	**(0.6)**	**0.0**	**(0.6)**	**1.0**
US benchmark	(1)	1	0	0	0	0	0

Source: Arthur D. Little, Exane BNP Paribas estimates

Broadband markets are much more fragmented than pay-TV markets, with an average HHI of 3300 in broadband versus 5900 in pay-TV. This very high number for the pay-TV market reflects the historical monopoly or duopoly structure of most markets, with zero or one satellite platform per country and zero or one cable operator (for each area/region), and still low market share for IPTV players. We have calculated the HHI of the combined "triple-play" market, combining the market shares of both broadband and pay-TV operators as if they operated on a single, "converged" market. As shown in Figure 77 on page 68, for most markets, the triple-play market is slightly more fragmented than the broadband market.

Regarding the relative strengths of the different players – hence the risk/reward in terms of market share for telecom operators – it appears clearly in the following chart, which puts Spain and Italy first as regards the strength of the local incumbent in the triple-play market, and the UK last.

Figure 90: Relative weight of different kinds of players in the cumulative broadband + pay-TV markets (estimated % of 2008e revenues)



** Regarding Italy, we have included pay-DTT in satellite*

Source: Arthur D. Little, Exane BNP Paribas estimates

France: status-quo, but just for a year

The French triple-play market is dominated by telecom operators, with high broadband penetration, low broadband ARPU and high IPTV penetration. We see the threat from Numericable as minimal (owing to its branding and balance sheet issues) and therefore expect the broadband market shares of Orange, Iliad and SFR to remain stable.

Figure 91: Market shares in the French triple-play market

France	Broadband	Pay-TV	3-Play
France Telecom (%)	47	11	38
SFR / Neuf Cegetel (%)	24	6	19
Bouygues (%)	0	0	0
Iliad (%)	24	13	21
Numericable (%)	5	21	9
Canal+ (%)	0	48	12
Number of players	**5**	**5**	**5**
HHI	**3,386**	**3,129**	**2,504**

Source: Arthur D. Little, Exane BNP Paribas estimates

On the content side, 2008 has been marked by the high-profile investments of Orange in Premier League football TV rights (the group paid EUR203m per year) and in movies and series. With these investments, France Telecom's total investment in content remains far from those of the pay-TV leader Canal+ (EUR2bn in FY08e).

We believe that from now on, the hyped competition between the two groups should ease. France Telecom's CEO has recently signalled a cap to the group's ambitions in terms of development of its own content. Canal+ will remain on the side-lines of the triple-play market, focusing on premium content rather than on the size of its access customer base.

Such a status-quo is encouraged by several legal factors: (i) regulation obliges Canal+ to sell its content through all access platforms, (ii) France Telecom may be forbidden to bundle its exclusive Orange TV content with access offers, and (iii) the SFR shareholders' pact between Vivendi and Vodafone prevents Vivendi from providing telecom services outside of SFR, hence Canal+ cannot launch a triple-play product à la BSkyB.

Regarding fixed/mobile competition, we also see a status-quo for now, as fixed-mobile substitution is already well advanced on voice traffic and there is no threat from mobile broadband on fixed broadband at this stage. Indeed, Orange and SFR have no interest in such a strategy as they are also present on the fixed market, and Bouygues's 3G coverage is not good enough for it to launch aggressive mobile broadband offers.

As such, the outlook for the French market is quite stable – even though it is not exactly as concentrated as the US triple-play, with 3–4 credible broadband players versus only two in each region in the US. We forecast rising triple-play ARPU in France, but it should not reach US-style levels, even in the long run.

However, there is a potentially disruptive change ahead, with the likely award of the fourth mobile licence to Iliad.

Fourth licence could disrupt mobile & fixed markets – and lead to M&A

Such a new entrant has the potential to shake-up the French mobile market. Iliad will face many challenges to gain market share, and has already said it would use an aggressive pricing strategy on mobile voice. In a bear-case scenario (market share of 10% acquired by the new entrant in the long run, negative impact on ARPU and on EBITDA margin), the combined valuation of the existing mobile operators could be cut by around EUR10bn, i.e. more than 15%.

Moreover, this change could also have repercussions on the balance of the fixed/broadband market. Indeed, the response from the existing mobile operators to Iliad's entry in their market could be to undercut Iliad in its home-turf i.e. broadband.

In particular, for several reasons, Bouygues Telecom could be the operator most impacted by Iliad's entry. Having no significant presence in the fixed/broadband market, Bouygues Telecom could decide to launch aggressive ADSL offers to respond to Iliad. As detailed in the report, a cut of EUR5 in broadband ARPU would lower the valuation of the fixed incumbent player by 7–8%, and the impact would be much stronger on alternative carriers.

To avoid this disruptive scenario, we would not rule out that Bouygues Telecom could acquire Iliad. This would be a best-case scenario for the long term, with three remaining fixed-mobile integrated players (plus Numericable). A second-best scenario would see Bouygues Telecom acquiring Numericable: this would lead to a competitive market with four fixed-mobile integrated players (Orange, SFR, Iliad and Bouygues/Numericable).

UK: fragmented for the foreseeable future

The ever-increasing demand for bandwidth at declining unit costs, driven by services such as BBC's iPlayer, places smaller ISPs under increasing squeeze. Allied to competitive pressure from mobile broadband and large multi-play offers from BSkyB and Virgin Media, we reiterate our view that further consolidation of the UK fixed/broadband market must occur.

The global financial crisis will delay this consolidation, as operators focus on customer retention and cost control. In revenue terms, the impact of the credit crunch on the consumer telecom market should be muted. Increased availability of HD services will drive demand. BSkyB remains particularly well placed, having the ability to combine premium content with fixed broadband and telephony services.

In the mobile market, the overwhelming trend is towards basic mobile broadband access using USB dongles on laptops and "netbooks", with low flat-rate tariffs. This will place the mobile networks under increasing pressure for bandwidth, hence further in-building technical and commercial consolidation between fixed and mobile is inevitable.

However, even if the consolidation finally happens, the market will remain fragmented and there will be at least six major players from the broadband, TV and mobile worlds (BT, Virgin Media, BSkyB, Vodafone, Orange and Telefónica/O2 – and potentially T-Mobile and/or Three) which will compete with overlapping offers.

Figure 92: Market shares in the UK triple-play market

UK	Broadband	Pay-TV	3-Play
BT (%)	27	3	19
Vodafone (%)	0	0	0
Telefónica O2 (%)	0	0	0
France Telecom (%)	6	0	4
Deutsche Telekom (%)	0	0	0
H3G (%)	0	0	0
Carphone Warehouse (%)	16	0	11
Tiscali (%)	10	0	7
Virgin Media (%)	21	27	23
BSkyB (%)	11	70	31
Others (%)	8	0	5
Number of players	**9**	**3**	**9**
HHI	**1,781**	**5,598**	**2,072**

Source: Arthur D. Little, Exane BNP Paribas estimates

BT's market share on broadband and ARPU are already low, but a failure to invest in infrastructure to compete with BSkyB and Virgin Media for the distribution of high value-content could have a significant impact also on wholesale revenues. Is there upside on the contrary? We see two possible scenarios.

Meltdown or "chacun chez soi"?

In the first scenario, BSkyB would continue to gain market share in the triple-play market (which it already dominates), thanks to the attractiveness of its content offers, putting further pressure on market shares, ARPU and returns of the other players. This would undermine fixed operators' ability to invest to upgrade their infrastructure – hence would also impede them from differentiating through speed from mobile broadband. This could lead to a "meltdown" scenario benefiting mostly BSkyB.

In the second scenario, we would see a more balanced situation regarding content: BSkyB's content would be wholesaled through all access providers and BBC would promote its iPlayer not only through Virgin Media but also through BT (and other broadband operators having developed an IPTV-grade broadband network).

Compared to the first scenario, this would give notably BT some financial room for manoeuvre for investment in fibre infrastructure. This scenario could, in effect, delay convergence: BSkyB would remain dominant on content but only on content; fixed broadband access would remain competitive but networks would be upgraded; and the mobile market would remain a separate issue – indeed the upgrade of fixed infrastructure would enable fixed operators to provide a service much superior to mobile broadband.

The role of the regulator in managing these scenarios will be critical and we expect to see further evolution in the regulatory environment. Ofcom will be key in ensuring a viable commercial framework while preserving universal accessibility for consumers.

Germany: downside is limited but upside is limited too

We see more upside for cable operators in terms of broadband market share (hence on their ARPU) than for telecom operators in the pay-TV market. Given the high cable penetration, the low monetisation of television and the relatively low broadband penetration, triple-play is difficult to sell for telecom operators: up-selling pay-TV to broadband customers who already have many TV channels for free (or almost for free), is not a simple proposition. On the contrary, cable operators can up-sell cheap telephone and broadband to their many TV customers (as long as they have upgraded their network to provide such services); their offers are quite aggressive and successful.

Many German players we talked to expect competitive pressure to increase. We note that in H2 09, a number of broadband customers of Deutsche Telekom will see their two-year contracts mature; this may create an opportunity for other players. The triple-play push by cable operators puts particular pressure on alternative ISPs such as United Internet and Freenet, which are currently losing market share.

We reiterate our view that this very fragmented broadband market has to consolidate – even though, in any case, the German market will remain crowded with at least five key players: Deutsche Telekom (fixed, mobile, TV), Vodafone (mobile, fixed, TV), cable (TV, fixed), Telefónica (mobile, fixed) and KPN/E-Plus (mobile). However, some players we have talked to have expressed doubts about the potential for a real consolidation to occur in the next two-three years given the constraints on the capital markets.

Figure 93: Market shares in the German triple-play market

Germany	Broadband	Pay-TV	3-Play
Deutsche Telekom (%)	47	2	39
Vodafone (%)	13	0	11
KPN (%)	0	0	0
Telefónica (%)	1	0	1
United Internet (%)	12	0	10
Telecom Italia (%)	10	0	9
Freenet (%)	5	0	4
Versatel (%)	3	0	3
Cable & Fiber (%)	8	85	21
Others (%)	1	0	1
Premiere (%)	0	12	2
Number of players	**9**	**4**	**10**
HHI	**2,710**	**7,447**	**2,310**

Source: Arthur D. Little, Exane BNP Paribas estimates

As fixed-TV bundling is difficult for telecom operators, their logical response to cable is fixed-mobile bundling: Deutsche Telekom, Vodafone and ISPs are doing this. However, the "stickiness" of fixed-mobile bundles is, in our view, limited as mobile voice can be considered as a commodity in the German market. We believe it is more likely that fixed-mobile competition continues, spurred by E-Plus and O2 on one side, the two mobile-centric challengers (which should continue pushing fixed-mobile substitution on voice – they lack a quality 3G network to be able to launch aggressively mobile broadband) and cable operators on the other side.

In conclusion, for the incumbent, downside risk is limited on broadband market share and ARPU (as they are already quite low) but we do not see significant upside either, as cable and mobile operators are likely to capture a large part of the market's growth.

Spain: economic turmoil should favour competitive status-quo

The Spanish market is very concentrated, with only three significant players on fixed broadband, and presents significant growth potential in pay-TV. The cable operator Ono already has more broadband customers than TV subscribers – so it has limited cross-selling upside in this respect, meaning no significant threat to telecom operators on their home turf.

Figure 94: Market shares in the Spanish triple-play market

Spain	Broadband	Pay-TV	3-Play
Telefónica (%)	57	17	53
Vodafone / Tele2 (%)	5	0	4
France Telecom (%)	14	2	12
TeliaSonera (%)	0	0	0
Ono (%)	20	27	21
Jazztel & others (%)	4	0	3
Sogecable (%)	0	53	6
Number of players	**5**	**4**	**7**
HHI	**3,927**	**3,891**	**3,429**

Source: Arthur D. Little, Exane BNP Paribas estimates

Who will capture the growth in pay-TV? Telefónica ARPU on broadband remains very high. As such, for the incumbent, the pay-TV opportunity is more a way to protect its high ARPU and market share than a way to increase revenues. Beyond Ono, the companies well placed are Orange, with aggressive triple-play prices, and there could be an opportunity for a pay-DTT operator like the service developed by Mediaset in Italy.

Discussions around Digital+ could lead to a joint-venture between Telefónica and a large media group, Vivendi or BSkyB, owning the premium content in Spain. Even assuming that Telefónica will not be able to merge its current pay-TV customer base (Imagenio) with the acquired one (Digital+), due to regulatory constraints, this could strongly "solidify" the incumbent's position in the competition with Orange and Ono (leverage on Digital+'s customer base to promote cross selling; privileged access to rights and contents), hence it could lead to an even better scenario for the incumbent.

A view expressed by some players we talked to is that the current economic conditions and the difficulty to find financing will lead to the elimination of the weakest players: we could think of Yoigo on the mobile side and Jazztel on the fixed-line side; there could even be an issue with the refinancing of Ono in the next two years. The Spanish triple-play market is therefore unlikely to become more competitive in the coming years.

However, in the short to medium term, given the very difficult economic conditions in Spain, the outlook is not positive. The consumer has become more intelligent in the use of services and looks for tariffs that enable it to control its spending and ARPU is therefore decreasing. Additionally, churn is increasing on fixed services and there is lower market growth and less interest in sophisticated new services.

Italy: pay-TV opportunity but hurdles for telcos

Competitive pressure has remained limited on the Italian fixed-broadband market similar to many other European countries, but the share of the incumbent has decreased both on telephony and broadband, leading to a continued reduction in the market's concentration index. Telecom Italia is currently focusing on higher end customers and on increasing existing customers' ARPU. It is also trimming commercial efforts in the lower end segments – hence its lower share of net additions (circa 25%).

Figure 95: Market shares in the Italian triple-play market

Italy	Broadband	Pay-TV	3-Play
Telecom Italia (%)	58	3	46
Vodafone / Tele2 (%)	5	0	4
Wind (%)	12	0	9
H3G (%)	0	0	0
Tiscali (%)	6	0	4
Fastweb (%)	13	7	12
Others (%)	6	0	5
Sky Italia (%)	0	58	13
Mediaset (%)	0	32	7
Number of players	**6**	**4**	**8**
HHI	**3,818**	**4,422**	**2,625**

Source: Arthur D. Little, Exane BNP Paribas estimates

The regulator has undertaken a process aimed at achieving equality of treatment in access to the incumbent's local network and in June 2008, Telecom Italia filed 72 commitments to improve competitors' access to its local network. This includes the creation of an infrastructure division that will be managed at arms' length following the BT Openreach model. This network separation is only functional, not structural.

In June 2008, Telecom Italia and Fastweb also announced that they would share investment in NGN infrastructure. This could lead to lighter regulation with regards to levels of returns. The final proposal was submitted to the regulator on 29 October 2008. AGCOM is due to communicate its decision shortly. Improved access conditions would be positive for alternative operators but is unlikely to be a "game changer" since, on the other hand, some of them are increasingly focusing on free cash flow generation.

Penetration of pay-TV is low in Italy, so there is a growth opportunity on the triple-play market. In past years, there has been an increase of the weight of pay TV (satellite and terrestrial) versus the traditional media sector, in particular analogue TV. For the first time, in 2007, advertising revenues were less than half of the total TV sector revenues. The market is currently dominated by satellite (Sky Italia) and terrestrial (Mediaset) operators. Telecom Italia's recent progress has been slow with just 38k net additions in Q3 08 but the group is keen to promote IPTV penetration, targeting 1.5m customers by end-2011.

Given the regulations on Sky Italia and the market structure (polarisation between strong broadband players and strong pay-TV players), telecom operators have access to all content, in particular Sky Italia's premium channels and act mostly as resellers of content (for instance, Fastweb is distributing Sky to its customers; Sky has the full ownership of the customer and Fastweb gets an intermediation fee).

However, this situation could change given recent rumours that Newscorp/Sky Italia is interested in acquiring a stake in Telecom Italia. Sky's interest in the Italian telecom market is not new (it has evaluated acquiring Tiscali, without success). Whilst such a deal could make sense strategically, it would potentially face many hurdles, notably regulatory scrutiny (combination of two dominant players) and financial (Telecom Italia's current controlling shareholders bought a stake at a much higher price than the current trading price).

Portugal: very active in triple-play & mobile broadband

In the past year, the Portuguese telecom market saw accelerated multiple-play development (triple-play and fixed-mobile broadband offers) and significant growth in mobile broadband adoption.

In particular, following the separation between Portugal Telecom and its cable arm, re-branded Zon Multimedia, Portugal Telecom has launched a very successful IPTV product called Meo which has attracted 300.000 subscribers in the first year of operation and, at the same time, has enabled fixed line losses to slow.

Figure 96: Market shares in the Portuguese triple-play market

Portugal	Broadband	Pay-TV	3-Play
Portugal Telecom (%)	42	13	33
Vodafone (%)	0	0	0
Sonaecom (%)	12	0	9
Zon (cable & DTH) & other cable (%)	27	87	46
Tele2 (%)	9	0	6
Others (%)	9	0	6
Number of players	**5**	**3**	**5**
HHI	**2,833**	**7,753**	**3,327**

Source: Arthur D. Little, Exane BNP Paribas estimates

Next generation networks and FTTx rollout are expected to have an important impact over the next few years. An agreement between the government and major players (with the exception of Vodafone) establishes an estimated investment of EUR2.5bn million in the development of NGN, a credit line of EUR800m for operators and a target of 1.5m households connected by fibre by 2010. A regulatory framework is yet to be fully decided, but public announcements suggest that operators will carry out fibre deployment independently. In less attractive rural areas, municipalities may play an important role regarding rollout of next generation networks.

In 2009, Portugal Telecom will launch a DTT operation, following the award of both free-to-air and pay-TV multiplexes licenses, the later pending judicial decision. On the other hand, ZON has accomplished the acquisition of smaller cable players operating at regional level, successfully developed their fixed voice offer and more recently, launched a MVNO.

Some actors in the marketplace see the moves of these players as increasing the competitive intensity in the market and expect further pricing pressure on multiple-play, while some others see them as a trend that will ultimately oblige other players to scale back their ambitions, hence reducing the competitive intensity in the market. Sonaecom's massive fibre rollout plans have been refrained by uncertainty on regulation. Vodafone has been delaying the launch of its IPTV service (it is likely to go ahead in 2009) and stayed out of the agreement for NGN networks.

In the mobile market, operators have kept their focus on the large scale adoption of mobile broadband, namely through the "e-escolas" program enabling the sale of subsidised PCs and mobile broadband access to students and the education community. Mobile broadband penetration should therefore continue to grow.

Netherlands: can stability last long?

The Dutch fixed-broadband market reached a high penetration and the competitive situation has been stable for a few years with a significant share for cable operators and the incumbent KPN using DSL.

Over the last 12 months, that "equilibrium" has started to be disrupted as a result of two video related forces: 1) the competitive force of KPN to successfully enter the digital TV market with DTT and IPTV services offered in a triple play package in response to fixed line losses as well as KPN's build-out plan for FTTH; 2) the regulatory force to open access of the cable networks to third party players and the first signs of enforcing open network access to KPN's FTTH network.

Figure 97: Market shares in the Dutch triple-play market

The Netherlands	Broadband	Pay-TV	3-Play
KPN (%)	44	11	38
Vodafone (%)	0	0	0
Deutsche Telekom (%)	6	0	5
Tele2 Versatel (%)	6	0	5
Total Cable (%)	41	78	48
Others (%)	3	0	3
Satellite (%)	0	11	2
Number of players	**5**	**3**	**6**
HHI	**3,698**	**6,317**	**3,773**

Source: Arthur D. Little, Exane BNP Paribas estimates

As a counter response to KPN's competitive actions, cable operators are now launching the next generation broadband cable technology (DOCSIS 3.0) and pushing HDTV. We expect the real battle for video/triple play to take place in the next 12–18 months.

KPN can also offer quadruple-play by including its mobile services. Other fixed operators – predominantly the cable companies – are therefore considering using 2.6GHz spectrum, which is to be auctioned in 2009, for entering the mobile space. The mobile market as such had also "stabilized" after a consolidation process had cut the number of operators from five to three. For pure mobile operators, it will therefore be key to decide whether to partner with fixed players.

Belgium: solid triple-play market

The Belgian triple-play market is very concentrated with only two significant players, Belgacom and Telenet. The concentration increased with the recent consolidation moves: acquisition of Versatel/Tele2 by KPN and of Scarlet by Belgacom.

Figure 98: Market shares in the Belgian triple-play market

Belgium	Broadband	Pay-TV	3-Play
Belgacom (%)	50	13	43
Mobistar (%)	1	0	1
Cable (%)	45	86	53
of which Telenet (%)	34	44	36
of which VOO (%)	4	30	9
of which others (%)	7	12	8
KPN (%)	4	0	3
Satellite (%)	0	1	0
Number of players	**6**	**5**	**7**
HHI	**4,558**	**7,550**	**4,658**

Source: Arthur D. Little, Exane BNP Paribas estimates

The market is characterized by a battle in the mobile sphere as well as the continued aggressive push of digital TV by both Belgacom and the cable operators: the high penetration of cable has led to stiff competition between Belgacom and Telenet / VOO / Numericable to push triple-play solutions as a weapon to gain control of access. However, with each customer having the choice between only two providers, the battle is not focusing on prices. The situation on the mobile market is different and competitive intensity should accelerate as the impact of the European regulation on termination rates and roaming put further pressure on EBITDA margins.

Finally, strategic moves could be brewing. Telenet has announced its intention to develop in mobile and declared an interest for the fourth mobile licence. VOO, the cable operator in the South is developing a mobile capability as well and is in the process of selecting a mobile network operator. Mobistar announced at the end of the year that it is evaluating the best solution to enter the pay-TV market. While a status-quo is most likely in the short term, further consolidation remains a strong possibility over the long term.

Austria: mobile broadband the key driver, for how long?

The Austrian mobile broadband market saw a further surge in 2008, with mobile broadband accounting for 38% of total broadband subscriptions by the end of the year. The main reasons for the high mobile broadband penetration include the large 3G coverage and the competitive prices of mobile broadband offers compared to fixed broadband: mobile broadband starts at EUR9/month for 3GB.

2008 saw the addition of innovative services to mobile broadband: mobilkom launched a proactive anti-virus protection for EUR3 per month; Hutchison 3G added free-of-charge TV services. Also, in autumn 2008, mobile operators started to package their offerings with fixed broadband: mobilkom austria's mobile broadband customers can expand their mobile broadband subscription to include fixed-broadband access for EUR15 per month. Similar bundles were being offered by H3G and Orange in cooperation with UPC and Tele2, respectively. Finally, mobile operators have launched bundles including a mobile broadband subscription and a heavily subsidized laptop.

Figure 99: Market shares in the Austrian triple-play market

Austria	Broadband	Pay-TV	3-Play
Telekom Austria (%)	45	4	35
Deutsche Telekom (T-Mobile) ((%)	0	0	0
France Telecom (One) (%)	0	0	0
Tele2 (%)	11	0	8
Hutchison 3G (%)	0	0	0
Cable (%)	33	86	47
Satellite (%)	0	10	3
Others (%)	11	0	8
Number of players	**4**	**3**	**5**
HHI	**3,388**	**7,460**	**3,526**

Source: Arthur D. Little, Exane BNP Paribas estimates

On the fixed-broadband segment, convergent offers are increasingly successful. Incumbent, Telekom Austria, launched "aonKombi", including the fixed-line rental, broadband internet and up to 3 SIM cards for a monthly subscription of EUR34.90 (communications on the mobile were billed per minute at EUR0.05). A huge success, the bundle drives Telekom Austria's DSL net additions and allows the company to counter ongoing fixed-mobile substitution. Also, by the end of 2008, Telekom Austria's IPTV offer (aonTV) reached 64k subscribers, i.e. 8% of its broadband customer base.

In contrast, cable broadband and unbundled DSL subscriptions are facing stagnation or are even decreasing customer numbers. The cable operator UPC announced that it plans to invest EUR100m to upgrade its network infrastructure in 2009. Using DOCSIS 3.0 technology, UPC will be able to offer very high speed internet services with a bandwidth of 100Mbit/s within the next two years. As a consequence, the competition for fixed broadband customers between UPC and Telekom Austria will intensify over the coming years. Telekom Austria's potential in TV is real, but in many cities including Vienna, it faces well entrenched cable operators – whose bills are often not paid directly by the customer but are paid through the rents via the building managers. Finally, several attempts to acquire Tele2 did not materialise, but we expect further consolidation to happen during 2009 or 2010.

Switzerland: competition unchanged despite fibre battle

We expect the Swiss competitive situation to remain stable in 2009. The incumbent Swisscom will still capture the largest part of broadband new additions and can further monetize fixed-mobile bundles, leveraging their existing subscriber base.

The growth potential is in mobile data for all players. Mobile broadband (excluding mobile multimedia) has just reached 13% of total broadband access lines (including fixed) by the end of 2008. Swisscom has shown strong growth in 2008 in mobile broadband, significantly outpacing both Orange and Sunrise.

Operators have started to subsidize notebooks with data plans that are expected to remain a key driver also in 2009. For now, fixed broadband cannibalization is limited and fixed-mobile broadband bundles have not yet been pushed to the market. However, the success of mobile broadband will be sensitive on network quality and coverage, which becomes a major differentiator for players in a market where customers are used to service levels of widely available fixed broadband.

In the past, Switzerland was able to boost its fixed broadband penetration to 75% of households primarily due to the infrastructure competition between DSL and cable. Swisscom has upgraded its fixed network with VDSL investments (75% coverage in 2008) and is now moving to FTTH: in December, it announced a plan called "Fibre Suisse" involving a CHF2.8bn capex over the next six years. Competition on infrastructure has clearly begun after some city utilities decided to invest in fibre.

By laying down four fibre links per customer (of which one will belong to Swisscom), Swisscom adopts a "friendly" architecture that could leave more room to competition than the current regulatory framework on copper lines. Swisscom has offered to pay CHF58m to the city utility IWB (Basel) and CHF120m to EWZ (Zurich) to use their infrastructure. The incumbent aims at protecting its fixed revenues, combining retail and wholesale revenues; more direct competition with city utilities would lead to more investments for Swisscom and less wholesale revenues.

Orange and Sunrise are questioning their capacity to compete against Swisscom if they agree with this framework. The recent cancellation of talks about their participation in the rollout of fibre in Basel shows that the debate is still intense.

We do not expect FTTH to completely reshuffle market shares on the broadband market, but this will represent an opportunity for the incumbent to grab a share of the pay-TV market (CHF1bn according to Swisscom) that is for the moment in the hands of cable operators (notably Cablecom). However, given the high cable penetration rate (more than 85% of the population receives the TV signal through cable) and the high number of free channels available (depending of the region, up to 50), this could take time to materialise.

Glossary

Abbreviation	Description
ADSL Asymmetric Digital Subscriber Line	A digital technology that allows the use of a standard telephone line to provide high speed data communications. Allows higher speeds in one direction (towards the customer) than the other.
Analog switch off	A commonly used term to describe the ending of broadcast analog terrestrial TV signals by turning off the transmitter. Analog switch off is usually followed by turning on a digital transmitter to transmit digital terrestrial TV (DTT) signals.
ARPU Average Revenue Per User	Represents the revenue generated by a user within a certain period of time.
Broadband	A service or connection capable of supporting always-on services which provide the end-user with high data transfer speeds. Large-capacity service or connection allowing a considerable amount of information to be conveyed often used for transmitting bulk data or video or for rapid internet access.
Cable TV	TV programming and services received through a cable-wired link (co-axial, twisted pair, or fibre-optic) from a headend.
CAGR Compound Annual Growth Rate	The average annual growth rate over a specified period of time. The mathematical formula used to calculate CAGR = (present value/base value)^(1/#of years) – 1.
DSL Digital Subscriber Line	A family of technologies generally referred to as DSL, or xDSL, capable of transforming ordinary phone lines (also known as 'twisted copper pairs') into high. The International Communications Market 2008 310 speed digital lines, capable of supporting advanced services such as fast internet access and video-on-demand. ADSL, HDSL (High data rate Digital Subscriber Line) and VDSL (Very high data rate Digital Subscriber Line) are all variants of xDSL).
DTH Direct-To-Home	Term used to describe satellite broadcasting directly to 18” hom-based receiving dishes. See Direct Broadcast Satellite (DBS).
DTT or DTTV Digital Terrestrial Television	Refers to the broadcast of digitals signals, via a large antenna, that are transmitted through the air to consumer’s receiving aerials.
DVD Digital Versatile Disc	A high capacity CD-size disc for carrying audio-visual content. Initially available read-only, but recordable formats are now available.
DVR Digital Video Recorder (also known as Personal Video Recorder and Digital Television Recorder)	A digital TV set-top box including a hard disc drive which allows the user to record, pause and rewind live TV.
FTA Free-to-Air	TV signals that are transmitted over the air. FTA broadcasts transmissions are usually delivered via satellite (see DTH) or terrestrial (see DTT).
FTTx	An acronym referring to either FTTC, FTTH or FTTN:
FTTC Fibre-to-the-cabinet	Access network consisting of optical fibre extending from the access node to the street cabinet. The street cabinet is usually located only a few hundred meters from the subscriber premises. The remaining segment of the access network from the cabinet to the customer is usually a copper pair but could use another technology, such as wireless.
FTTH Fibre-to-the-home	A form of fibre optic communication delivery in which the optical signal reaches the end user's living or office space.
FTTN Fibre-to-the-Node; Fibre-to-the-Neighbourhood	A broadband architecture that provides high speed internet and other services to the home by running fibre via VDSL over the existing telephone copper lines to the home. This architecture is lower-cost to deploy than the competing FTTP technology but in turn does not bring the full bandwidth capability of the FTTH. Data rates are limited to 25–30 Mbits/s
HD High Definition	In the US, it is generally defined as resolutions of 1080 vertical interlaced lines of resolution, or 720 vertical progressively scanned lines of resolution or higher. In Australia, it can mean anything upwards of 576 vertical, progressively scanned lines of resolutions. For IMS Research purposes, HD is defined as a display capable of a minimum of 768 lines of resolution as defined by XGA display mode.
HDTV High-Definition Television	A technology that provides viewers with better quality, high-resolution pictures.
HHI Herfindahl-Hirschman Index	A commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. The HHI number can range from close to zero to 10,000.
IPTV Internet Protocol Television	Television and/or video signals that are delivered to subscribers or viewers using Internet Protocol (IP), the technology that is also used to access the internet. We use the term to mean delivery over a ‘closed intranet’, typically operated by ISPs and local-loop unbundlers, rather than over the public internet. IPTV services are hosted on servers placed in the exchange, which means they can be delivered with assured QoS since the ISP has more control over the network.
On-Demand	The ability to request video, audio or information to be sent to the screen immediately by “clicking” on the appropriate icon.
Pay-per-view	A service offering single viewings of a specific film, programme or event, provided to consumers for a one-off fee.
Pay-TV	Subscription-based television services, usually provided by both analog and digital cable and satellite, but also increasingly by digital terrestrial methods. In this study, we refer to Pay TV as any TV that requires a subscription including low fee subscriptions for example in Germany, Netherlands or Belgium.
PSTN Public Switched Telephony Network	The standard, non-digital landline telephone service that most residential homes use
STB Set-top Box	Stand-alone units which have some form of broadcast signal as an input, and an output interface to a TV receiver.
SVoD Subscription-Video-On-Demand	SVoD allows the consumer to subscribe to On-Demand services for a particular channel or selection of programming. For example, for an additional monthly fee, a subscriber to HBO could upgrade to HBO SVoD allowing them to view any HBO programming at any time.
VoD Video on Demand	A service or technology that enables TV viewers to watch programmes or films whenever they choose to, not restricted by a linear schedule.
VoIP Voice over Internet Protocol	An interactive service which enables voice communication over Internet Protocol based network.

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