WIK-Consult • Final Report

Study for the European Competitive Telecommunications Association (ECTA) and International Telecommunications User Group (INTUG)

Business communications, economic growth and the competitive challenge

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Preface

This document is the **Final Report** of the study on “Business communications, economic growth and the competitive challenge”. The study has been conducted from May 2012 to November 2012 by WIK-Consult GmbH on behalf of the European Competitive Telecommunications Association (ECTA) and the International Telecommunications User Group (INTUG).

The opinions expressed in this report are those of the authors and do not necessarily reflect the views of ECTA or INTUG

Bad Honnef, January 2012

WIK-Consult GmbH

Management Summary

Since the liberalisation of electronic communications in Europe in the 1990s significant attention has been given to the impact of increased competition on the services and prices available to consumers and SMEs. Less focus has been made of the role that communications play in driving efficiency within larger businesses and the effects this may have on European productivity.

Whilst only approximately 2% of companies within the EU could be described as multi-site or multi-national corporations (MSC/MNC), they form a major component of the European economy, generating 60 million jobs, representing nearly half of business turnover and more than 50% of "value added" across the EU. Europe's corporations also have an important role in maintaining Europe's position within the global economy. UNCTAD, a division of the United Nations, found in a 2010 report that 46% of the world's largest companies are based within the EU27 region.

Overview of MSC/MNC (2010)

Category	Total EU27	MSC/MNC	% of total
Number of enterprises	21.4 m	360,000	2%
Persons employed	138.9 m	60.0 m	43%
Turnover	21,600 bn Euro	11,500 bn Euro	53%
Value added	6,315 bn Euro	3,200 bn Euro	51%

Source: Eurostat, WIK calculations. Figures are for non-financial business economy.

Electronic communications are integral to the performance of companies of all sizes, and perform a key role in all aspects of the supply chain from internal communications and liaisons with suppliers through to interactions with consumers. Cloud computing and the Internet of things are just two examples of technological developments relying on electronic communications which could change the way businesses function. Communications is also important in realising the potential benefits of the single market.

Recent figures from the European Commission[1] suggest that total revenues for electronic communications in Europe were €327bn in 2010. Estimates based on data from EITO, indicate that communications services supplied to all kinds of businesses reached about €169 bn – more than 50% of total communications revenues. Out of this, the value of products and services supplied to MSC/MNC in 2010 is estimated at around €90 bn.

Although business communications to MSC/MNC make up a large part of the telecommunications market, it has commonly been assumed by policy-makers and regulators that larger business are well-informed and exert significant buyer power

1 Digital Agenda scoreboard 2012

when purchasing communications services. As a result, relatively few studies have been conducted on large businesses' experience of communications services. However, the results of a 2009 end-user survey by the European Regulators Group[2] and an October 2011 survey of Spanish corporations by NRA CMT[3] suggest that competition in this area could be less well-developed than might be expected.

In this report, conducted on behalf of the International Telecommunications User Group (INTUG) and the European Competitive Telecommunications Association (ECTA), an end-user survey and expert interviews with users and suppliers have been carried out together with desk research on the status of competition and regulation to better understand the demand and supply-side aspects of the business communications market and to assess competition problems and potential barriers to achieving a single market for communications to large corporations.

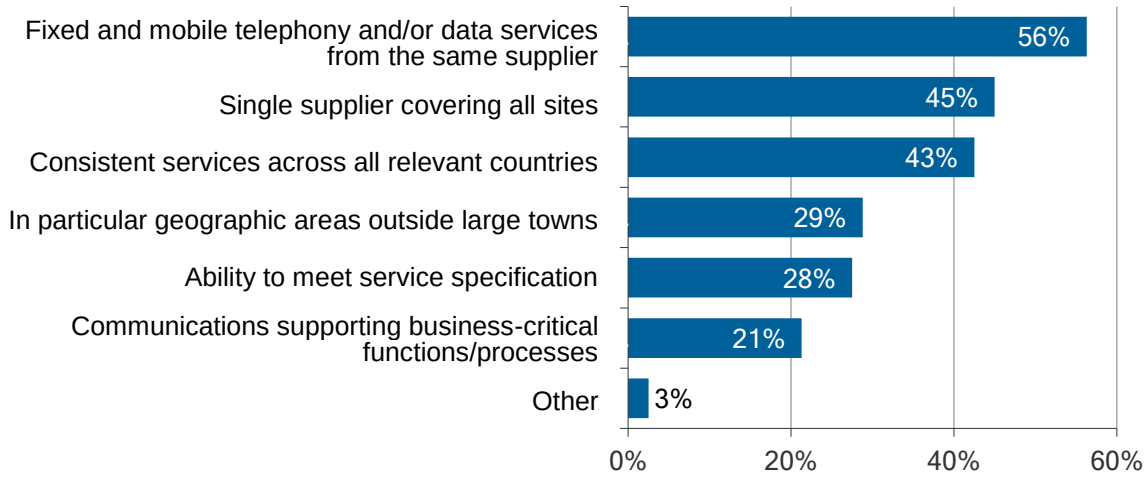
112 multi-site and multi-national businesses whose operations cover all countries of the EU27 zone responded to a survey, carried out with the support of INTUG. Key findings are that:

- Large companies are primarily interested in communications "services" rather than the technological elements which underpin them. Prime amongst these are Internet and mobile services. Companies seek service reliability, bandwidth and technical resilience, along with security and satisfying service level agreements.
- Business Communications Services (BCS) usually constitute a bundle of different products and solutions, ideally tailor-made for the company concerned.
- Business service users show an overall preference (69% of respondents) for using a "single supplier" covering a range of services to all relevant sites rather than separate suppliers for each site and/or service. Convenience was cited by 71% of respondents as an important consideration favouring a single supplier.
- Where companies preferred to use multiple suppliers, the preference was primarily due to value for money and need for resilience, or a preference for specialist suppliers for different services. Only 5% of respondents stated that they actively preferred to source contracts on a country-by-country rather than on a multi-national basis.
- End-users' choice of suppliers is often limited. Fewer than one in five respondents found that several suppliers were generally able to make a suitable offer. In 46% of cases, respondents claimed that it was rare to have more than 1 or 2 suppliers able to make a suitable offer.
- The most commonly cited problem by business end-users was inability to purchase fixed and mobile services from the same supplier. More than 40% of users also cited problems in finding a supplier that could cover all relevant sites or provide consistent services across all countries.

2 ERG (2009).
3 CMT (2011).

- In practice, possibly due to difficulties in sourcing effective services from a single supplier (only 53% of those preferring a single supplier found that this was normally a practical option), many end-users used several suppliers in order to meet their requirements despite their preference for a single supplier.
- The complexity and tailored nature of business services means that switching provider can be costly and problematic. The technology officers interviewed suggested that there is a tendency to remain with their current supplier, unless a significant price differential is offered.

Difficulties in obtaining multiple fit-for-purpose offers covering any of the following aspects



Source: WIK Consult.

Interviews with four cross-border communications providers identified as major players in the report by Gartner on the "magic quadrant" of business communications service providers[4] and two communications providers offering services to businesses on a nationwide basis, reveal the following characteristics about the supply of services to major businesses.

- The primary focus of business service provision is typically in the "value added" segment of the value chain. However, the availability of infrastructure to access sites is a key requirement in enabling service delivery and a major cost component in service delivery – constituting up to 40-50% of revenues.
- Whilst there are numerous operators offering services to multi-site and multi-national businesses, their geographic reach and service capabilities do not

4 Cf. Gartner (2012).

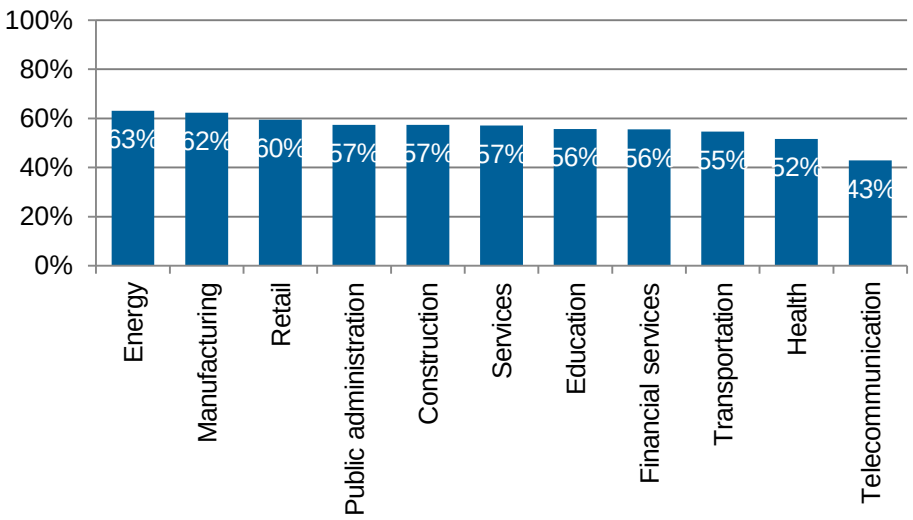
always overlap. This is also reflected in specific strengths and weaknesses highlighted in the Gartner report.

- Due to the dispersed nature of many of the sites – requiring coverage nationwide and cross-border, specialist suppliers of business communications are only able to use their own infrastructure in a minority of cases. In countries where service providers did not benefit from vertical integration, more than 90% of business access lines were leased from third parties, with the majority of these (75%+) coming from national incumbents, although there was some geographic variation.
- The primary access methods used by the interviewed companies to reach customers are: leased lines, xDSL bitstream (wholesale broadband access) and wholesale Ethernet services. Whilst traditional interfaces are still extensively used, demand is shifting towards more modern Ethernet interfaces. Unbundled copper and fibre loops are also used in some cases for business connections especially by companies with a nationwide focus, but their use tends to be more limited amongst specialist providers of business communications to multi-national corporations because they lack the scale in specific regions for these access methods to be viable.
- Business communications providers consider the availability and quality of wholesale access to be fragmented within the EU. A key problem is variations in regulation applied by NRAs in different jurisdictions.
- The decision of business communications providers on whether or not to bid for contracts is influenced by the proportion of sites in different areas (e.g. rural areas) or countries. The greater the proportion of sites in areas or countries where infrastructure inputs are not available on reasonable terms, the less likely they are to consider a bid viable.

Due to the fragmented nature of the retail market in which several players compete for different customers with varying requirements across Europe, it is not possible to assess specific retail market shares in the provision of cross-border business communications. However, in the few cases where national regulators have assessed retail markets for business provision in their national jurisdictions, the market shares of incumbents have been higher than might be anticipated, and often higher than market shares obtained by national incumbents in the provision of broadband services for consumers and SMEs.

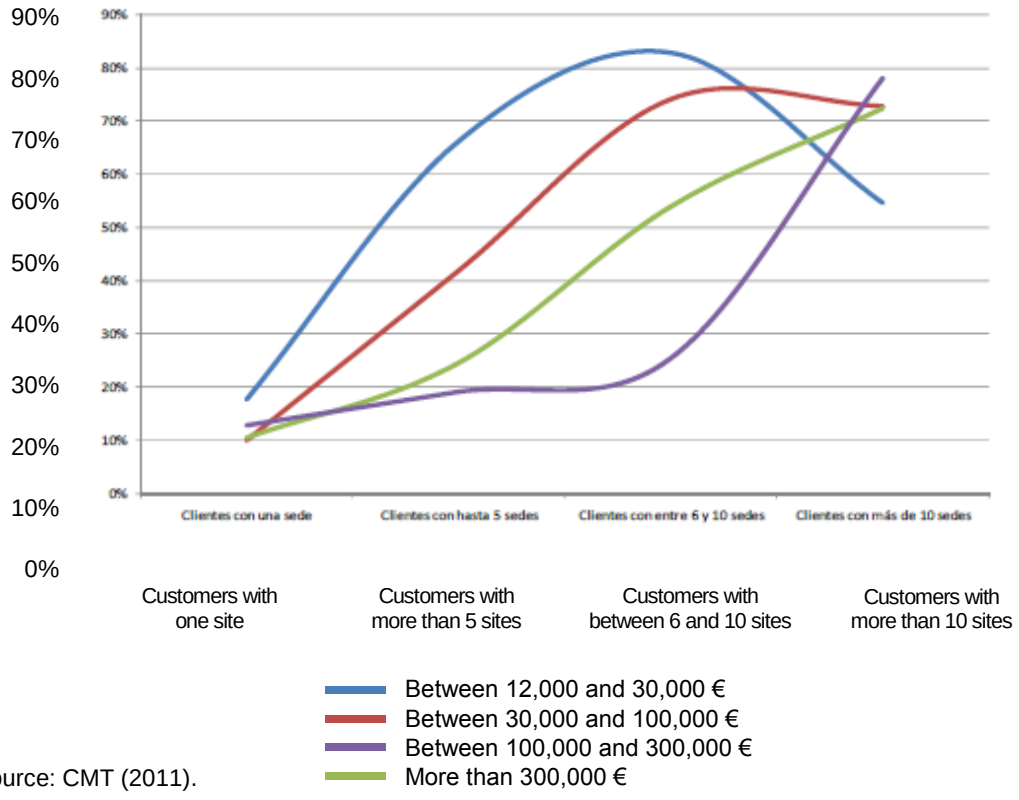
A survey conducted by AMA in Germany suggests that Deutsche Telekom benefits from market shares of above 50% in every business user segment except telecommunications. CMT, the Spanish NRA, made similar findings concerning the market position of Telefónica. As shown in the chart below, Telefónica's market power was found to increase for companies with a larger number of sites.

Market share of Deutsche Telekom



Source: AMA (2012).

Telefónica's market share depending on number of customer sites and company size



Source: CMT (2011).

In a recent study by OPTA[5], KPN was found to have 55-60% of the retail market for "business network services".

Whilst not all NRAs have conducted a segmented analysis, and mobile business services are not covered in detail by this report, it appears that national incumbents may also have a strong position in the provision of mobile services to businesses. In Norway, an obligation on the dominant mobile operator to provide MVNO services was specifically justified in part on the basis of its relative strength in business services.

High retail market shares in business communications are supported by high market shares in the underlying inputs used to serve businesses. In most countries incumbents have been found to have >70% market share in terminating segments of leased lines (market 6 in the EC Recommendation on Relevant markets).

Whilst regulation is typically mandated on terminating segments of leased lines, there are significant variations in the scope of the defined markets and in the remedies applied in different countries. In several countries, regulation is limited to lines below a given speed, for example 155Mbit/s in Germany and Austria and 2Mbit/s in Romania, Czech Republic and Hungary, whilst elsewhere speed caps are very high (1Git/s in UK) or not present. In Austria, the market was also geographically segmented such that 12 municipalities were excluded from the scope of regulation, whilst elsewhere geographic segmentation is limited (e.g. in the UK to certain districts of London) or not present. Cost-orientation is applied in most cases, but in France price controls are not applicable above 10Mbit/s, whilst in other countries such as Spain and Portugal wholesale Ethernet services (WES) are not subject to cost-orientation. As traffic is migrating from traditional interfaces towards wholesale Ethernet services, the lack of cost-orientation on WES is likely to have an increasing impact on competition in business communications.

There is also a mixed picture in relation to wholesale broadband access, typically mandated in the context of market 5 of the EC Recommendation on relevant markets. When analysing market definitions and assessing significant market power, most regulators do not differentiate in the market analysis between WBA used for residential and business purposes. As a result, some NRAs such as those in the UK, Portugal and Poland have removed or relaxed regulation in certain regions on the basis of competitive pressure from LLU and cable. Meanwhile others, including NRAs in Austria and the Netherlands, have concluded that LLU and cable do not apply significant competitive pressure in the business segment and have therefore distinguished the business provision of WBA from residential provision. Some, but not all countries have

[5] Cf. consultations by OPTA regarding FTTO (http://www.opta.nl/nl/actueel/alle-publicaties/publicatie/?id=3650) and WBA/leased lines (http://www.opta.nl/nl/actueel/alle-publicaties/publicatie/?id=3651)

applied specific business grade SLAs and KPIs. Several countries have excluded FTTC and/or FTTH from the scope of the market definition or remedies for wholesale broadband access whilst in Spain, speeds above 30Mbit/s are not regulated. As NGA networks are rolled out by SMP operators, this exclusion may disproportionately affect businesses which may demand the higher capacities offered via FTTx.

A summary of regulatory approaches to key wholesale products used for business service provision based on summaries provided by the European Commission in the context of the article 7 regulatory review process is shown below.

Market 5: wholesale broadband access

Country	Bitstream nationwide?	FTTx included?
AT	Yes - separate business market	Excludes FTTH
BE	Yes	Excludes FTTH
CZ	Yes - proposal for segmentation and deregulation on basis of cable + Wifi opposed by Cion	Proposal to limit or exclude FTTH remedies
DE	Yes in principle	Yes
DK	Yes	Yes
ES	Yes for ATM and IP technology, no for Ethernet technology.	Yes, but >30Mbit/s remedies excluded
FR	Yes	Excludes FTTH
HU	Yes	Yes
IE	Yes where rolled out	Yes FTTC (Curb/Cabinet) launch due Feb 2013
IT	Yes, for BS on copper; for BS on fibre, availability depends on TI NGA deployment plan	Yes, but TI RO for bitstream on fibre is still under evaluation by NRA
NL	Yes (business grade – distinct from low quality WBA)	Excludes FTTH
PL	Yes, but remedies geographically segmented (no cost orientation in major cities)	Yes (lack of FTTH cost-orientation challenged by Commission)
PT	Geographically segmented	Existing – no detailed NGA remedies. Proposal – yes, except for excluded areas
RO	No	No
SE	Yes (in theory)	Yes
UK	Markets geographically segmented (no SMP in significant proportion)	Yes

Source: WIK-Consult research.

Market 6: terminating segments of leased lines/wholesale Ethernet access

Country	Regulated PPCs available?	Cost orientation?
AT	Geographically segmented with major cities excluded and no regulation >155Mbit/s	
BE	Yes, awaiting BIPT decision following consultation	Yes
CZ	No regulation >2Mbit/s (3 criteria test not met)	No price control
DE	Yes, but no regulation >155Mbit/s	Yes
DK	Yes	Copper <2Mbit/s but not above
ES	Yes (but no lines >70km traditional interfaces or >35km Ethernet interfaces)	Copper traditional, retail minus for Ethernet
FR	Yes	No cost orientation >10Mbit/s
HU	No regulation >2Mbit/s (3 criteria test not met)	No price control
IE	Yes, but no regulation >155Mbit/s for trunk between certain listed cities.	Yes
IT	Terminating segment of leased lines are regulated (but lines to mobile operators excluded)	Yes, price cap (less stringent for WES and >155Mbit/s)
NL	Yes	Yes
PL	Yes	Yes
PT	Yes	Yes, but not WES (retail minus)
RO	No regulation >2Mbit/s (3 criteria test not met)	No
SE	Yes (proposed up to 30Mbit/s, DWDM unregulated)	Yes (where regulation applied)
UK	Yes (limited geographic segmentation), no remedies >1Gbit/s	Yes

Source: WIK-Consult research.

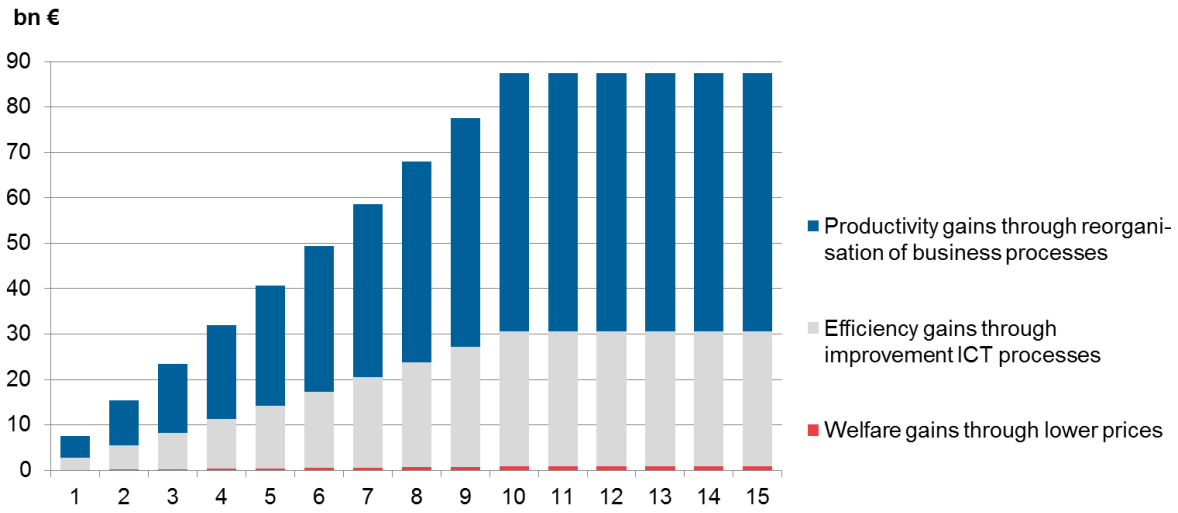
The results of the end-user survey and interviews with specialist suppliers of BCS provide compelling evidence that a cross-border retail market may exist for provision of bespoke communications to larger businesses. It seems that a significant proportion of business end-users (at least those characterised as MNC) may purchase services on a multi-national basis. Supply by specialised providers of business communications is similarly cross-border. Moreover, whilst some companies do prefer to buy different communications from different providers, only 5% of end-users using multiple suppliers said that they actively preferred sourcing services on a country-by-country basis rather than multi-nationally. Switching to individual products on a site by site or even national basis would not seem to be an attractive option to most business users and switching even to a single alternative provider is perceived as incurring considerable costs.

Interviews with business service providers suggest that their derived wholesale demand is similarly cross-border. However, perhaps due to the fragmented nature of ownership of national infrastructure and different approaches taken by national regulators, supply at wholesale level tends to be national.

Achieving consistent and effective wholesale remedies for business communications across Europe could enable the emergence of a truly single market for business communications at the retail level in which providers could expand cross-border and compete with each other on an equivalent basis, independent of their ownership of infrastructure in particular countries. Attention to regulatory requirements in the business segment could have an even greater effect than those in residential markets because competition in business services is focused on “value added” and innovation, because business markets do not benefit from competitive constraints from cable and mobile, and also because – unlike consumer markets - inadequacies in one country have a knock-on effect in the provision of retail business communications services more widely.

Moreover, gains could be felt not only within the businesses concerned, but in the increased productivity resulting from improved internal processes. In order to assess the potential effect, WIK-Consult has quantified economic benefits following a modelling approach developed by Indepen in 2008.

Total economic benefits (not discounted) over a 15 year period



Source: WIK Consult.

Based on an updated evaluation and new research the total economic benefits due to effective ex ante regulation for wholesale services relevant to business communications could be quantified to NPVs of 112.49 bn Euro over the first five years, 413.98 bn Euro

over the first 10 years and 774.45 bn Euro over the complete observation period of 15 years, respectively. 65% of these benefits derive from productivity gains through reorganisation of business processes, another 34% are caused by efficiency gains through improved ICT processes and the remaining 1% comes from welfare gains through lower prices for BCS.

Recommendations

There has been a tendency for policy-makers to focus attention and set targets relating to residential communications services. In view of the absolute size and economic significance of electronic communications provided to businesses, policy-makers at EU and national level should revise this approach and also acknowledge the importance of achieving competitive markets for communications in the business segment. A key requirement in delivering this objective would be the consistent treatment of wholesale access for business service provision.

The current EU Framework for electronic communications makes provision in article 15(4) Framework Directive for the European Commission to adopt a Decision identifying trans-national markets which may be susceptible to ex ante regulation. In accordance with article 16 (5) Framework Directive, relevant NRAs should jointly analyse such markets and decide on the imposition of any regulatory obligations. In principle, such a provision would seem to be relevant to the problem identified in this case. However, whilst the retail market for bespoke communications to MSC/MNC may be characterised as cross-border, this market is not susceptible to ex ante regulation in itself, because regulation of upstream wholesale markets would be likely to render the market effectively competitive.

Meanwhile, due to the fragmented nature of provision of wholesale inputs for business services which results in different suppliers in different countries (although the competitive conditions are similar), it appears that the wholesale market/s which would be susceptible to ex ante regulation, could not be characterised as cross-border. As a result article 15(4)FWD appears not be applicable based on the current EU communication framework.

During the next revision of the Framework, one option could be for the European Commission to make proposals to amend the provisions such that they could issue a Decision requiring a co-ordinated approach amongst NRAs to market definitions and remedies in any case where the relevant retail market is cross-border and consistent application of wholesale remedies on SMP operators is needed to achieve effective competition. This would seem to be the ideal long-term solution in addressing national fragmentation which impacts the delivery of pan-European services.

In the meantime, the European Commission could consider interim solutions. These could include:

- **Relevant Market Recommendation:** In accompanying guidance to the review of the relevant market recommendation, the European Commission could usefully describe the retail market for bespoke business communications to larger businesses and identify this as a cross-border market. It could also acknowledge that demand for business service inputs may be cross-border and highlight in this context, that there may be merit in identifying a common approach to defining the relevant wholesale markets and defining remedies. This common approach would need to be elaborated either through a Commission Recommendation or guidance from BEREC. The European Commission could also consider undertaking regular assessments of end-user outcomes in the cross-border retail market for business communications in order to assess the functioning of this market.
- **Regulation on business communications:** Whilst regulation should normally be applied in accordance with market analysis principles under the EU Framework for electronic communications, there are precedents in which a directly applicable Regulation has been used in order to address perceived short term gaps in the Framework (e.g. the Local Loop Unbundling Regulation) or longer term market failures which are not easily addressed through ex ante regulation or competition law (the Roaming Regulation). Business services could be characterised as a short term problem affecting the single market, and requiring resolution ahead of the review of the telecommunications framework. However, this solution would require political consensus with the European Council and Parliament.

Defining a common approach

Benchmarking of regulatory conditions shows that there are widespread variations today in the treatment of wholesale access products used for business services. Meanwhile, the end-user survey and interviews in this report together with the analysis on economic impact appear to suggest that a more harmonised market definition and remedies for business access would be beneficial in meeting the demands of large corporations.

One key aspect would be to identify a common definition for the retail market for high-end business communications (i.e. distinct from single site SMEs) which could be applicable across Europe and potentially beyond. The scope of such a market would need to be further elaborated but could involve:

- bespoke bundles of fixed voice and data,
- multi-site/multi-national provision and/or contracts of a minimum value, and
- business-grade specification for example through premium SLAs and technical requirements.

It could be further considered whether mobile forms part of this market in light of user preferences and behaviour.

Concerning wholesale markets, the following principles could be considered, based on best practice amongst EU NRAs – that the wholesale market or markets for business access should

- be technologically neutral, but sensitive to the need for technologies to meet business-grade service specifications; this would suggest markets which encompass the most modern technologies including FTTC/VDSL and FTTH and interfaces such as Ethernet, but in general exclude technologies such as wireless and cable which do not provide the requisite service levels or resilience demanded by business users when compared with xDSL/FTTx technologies;
- not be delineated as regards speed, since speeds are often a function of rapidly evolving technologies rather than implying significant differences in underlying costs;
- encompass both symmetric and asymmetric bandwidth, because end-user and supplier demand exists for both – often in combination for different sites;
- enable the provision of business services without restriction including multiple VLANs in order to foster retail innovation.

Given the transnational dimension of the retail market and the existence of cross-border demand for business wholesale services, it is important that guidance should also be provided on the geographic scope of the wholesale market/s for business access, and in particular cases in which markets may be geographically segmented. In this regard one option would be to follow the logic of the NGA Recommendation para 22[6], adapted to the business context. This would mean that in principle business access markets should be defined on a nationwide basis, unless there are specific business-dense regions in which there are several FTTx infrastructures in place and business-grade wholesale products are supplied to meet the demands of BCS providers

Key elements of a common approach to business remedies could include:

- Non-discrimination in provision of wholesale services for business. Wholesale products including those with more modern interfaces and/or with enhanced SLAs should be launched 6 months in advance of retail launch.
- Business-grade SLAs and associated KPIs by which the fulfilment of SLAs may be measured. Penalties for failure to meet SLAs should have deterrent effect.

6 NGA Recommendation para 22
http://eur-lex.europa.eu/LexUriServ/%20LexUriServ.do?uri=OJ:L:2010:251:0035:0048:EN:PDF

- Technical characteristics of wholesale broadband access which satisfy the needs of business providers and end-users such as low contention rates or uncontended products, capability to offer multiple VPNs.
- Connection points aggregating sufficient customers to be viable for business providers covering wide geographic areas.
- Requirement to meet reasonable demand from wholesale customers for enhanced services, whether or not the SMP operator plans to offer such services at retail level.

1 Introduction

1.1 Background and context of the study

In March 2010, the European Commission adopted its strategy for 2020[7], in which it identified key targets for the "Digital Agenda". Prime amongst these are the objectives to achieve 100% coverage of 30Mbit/s and 50% take-up of 100Mbit/s broadband by 2020. These targets, similar to many adopted by national Governments inherently relate to "mass market" Internet. However, no specific objectives or initiatives have been adopted at European level concerning electronic communications for businesses. The December 2012 Digital "to do" list[8] published by the European Commission as part of the review of the Digital Agenda, includes actions aimed at spurring mass-market deployment of ultra-fast broadband, but is again largely silent on business communications.

This could be seen as a significant omission during these economically challenging times as larger businesses represent 43% of European employment and contribute more than half of EU value added, and they place considerable reliance on ICT, for internal processes, business to business transactions and interfacing with end-customers. Studies including MICUS/WIK in 2008 for the European Commission on the "Impact of broadband on growth and productivity"[9] found that significant economic benefits could be gained by boosting usage of broadband by businesses in general.

Aside from the implications for European productivity, a further aspect of business communications that is particularly relevant for EU policy-makers is that it appears to contain a cross-border dimension in that services to multi-national corporations must cover several countries. However, available evidence suggests that problems may exist in achieving a functional single market for business communications.

In 2009, the predecessor to BEREC, the European Regulators Group ERG released findings from a business end-user survey[10], which revealed that a significant proportion of multi-site and multi-national corporations were not receiving a satisfactory level of choice or service offerings to meet their needs.

A2012 Ecorys/TU Delft study for the European Commission criticised the lack of pan-European standardised wholesale services suited to supply business service requirements. The study suggests that "when a pan-European tender has a big footprint in a specific country (e.g. Germany, France) the incumbent supplier can, in the absence of standardised WBA offers, easily fence off other pan-European service providers who depend on bitstream access."

7 Europe 2020 Communication http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

8 http://ec.europa.eu/digital-agenda/en/news/digital-do-list-new-digital-priorities-2013-2014

9 http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/broadband_impact_2008.pdf

10 ERG: Report on the regulation of access products necessary to deliver business connectivity services, ERG (09) 51, December 2009

Recognition of this issue was also given in a specific case when, in March 2012 the European Commission opened article 7 proceedings under the Framework directive to challenge the proposal of Dutch regulator OPTA to exempt business fibre from regulation[11]. Inter alia, the Commission stated: "that a barrier to the development of the internal market would arise with the failure to impose access remedies on infrastructure that constitutes an important and growing part of the single product market, which is characterised by the presence of an SMP undertaking. Without regulation of the fibre element of the high-quality WBA offer, KPN will be able to limit the expansion of alternative providers of high-quality broadband access at the retail level by withholding access to a necessary input. This would impact on the ability of such alternative operators to offer to their retail (business) customers pan-European connectivity and other cross-border services.."

As the European Commission reviews the areas on which it expects national regulators to focus ex ante measures to support competition (the Recommendation on Relevant markets[12]), there is an opportunity to take a broader view of the market for business communications and assess and address the barriers which may be preventing the development of an effective internal market for communications for multi-site and multi-national corporations.

1.2 Objectives of the study

This study describes the role of multi-site and multi-national corporations in the European economy and assesses the potential benefits of achieving an effectively competitive market for business communications. Furthermore, through a comprehensive survey of business users and interviews with business communications providers as well as desk research on the approaches taken by national regulators, it aims to gather relevant evidence to highlight where the barriers are in achieving this goal. Finally, it sets out Recommendations for policy-makers on how the market review process, telecoms legislation and standardisation initiatives could be improved to underpin the creation of a single market for business communications.

The study is structured in the following way:

(1) to examine the role played by multi-site and multi-national corporations in contributing to European growth and employment,

(2) to assess the communications requirements of such corporations,

11 European Commission: Commission decision concerning Case NL/2012/1299: Wholesale broadband access (Market 5) and wholesale terminating segments of leased lines (Market 6) in the Netherlands. Opening of Phase II investigation pursuant to Article 7a of Directive 2002/21/EC as amended by Directive 2009/140/EC, 21 March 2012

12 http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/rec_markets_en.pdf

(3) to examine the supply side, assessing how the communications needs of corporations are met and what are the business models and wholesale requirements of suppliers of communications to major businesses,

(4) to identify competition issues in the sector and how these are affected by regulation,

(5) to calculate the benefits to major corporations directly and the broader economic benefits of addressing competition problems in the telecoms sector, and

(6) to deliver comprehensive policy recommendations to achieve effective outcomes for end-users of business communications, including some guidance on legal and regulatory instruments.

1.3 Methodological approach for research of MSC/MNC[13]

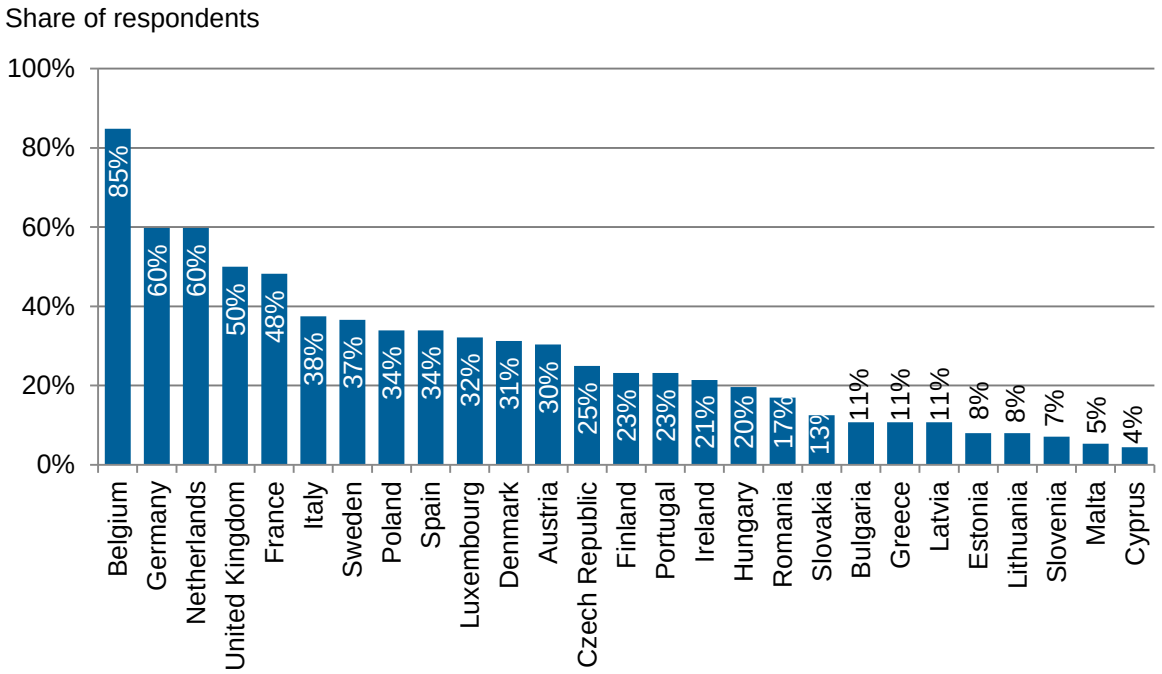
1.3.1 Online-survey

For this study, a specific questionnaire has been developed in order to better understand the mechanisms and reality of BCS for MSC/MNC in the EU27 zone. The questionnaire was entirely online-based, and has been put online in the period of July up to August 2012.

Overall, 112 companies participated in the survey. Their operations cover all countries of the EU27 zone (cf. Figure 1).

13 MSC= multisite companies, MNC= multinational companies

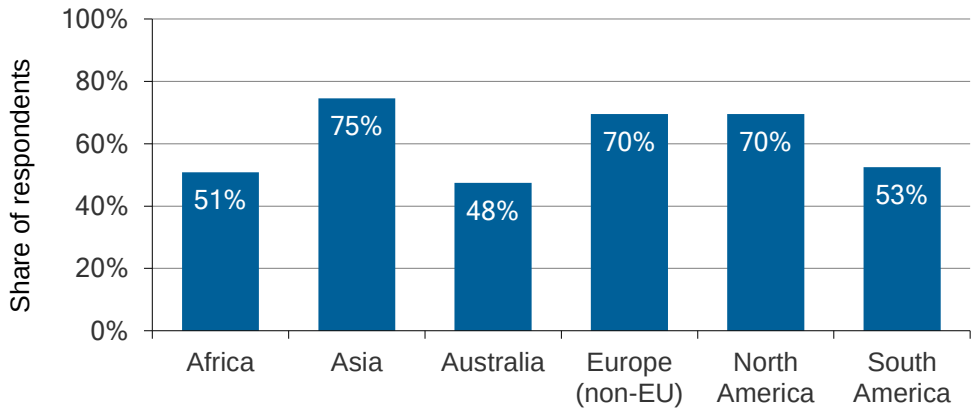
Figure 1: Countries of operation of the surveyed companies



Source: WIK survey.

Moreover, the survey reveals that most MSC/MNC are operating in all major geographical regions (cf. Figure 2). The Asia region is being targeted more than any other region, with 75% of all respondents having operations there. But half of the companies also have operations in Africa, Australia and South America, respectively.

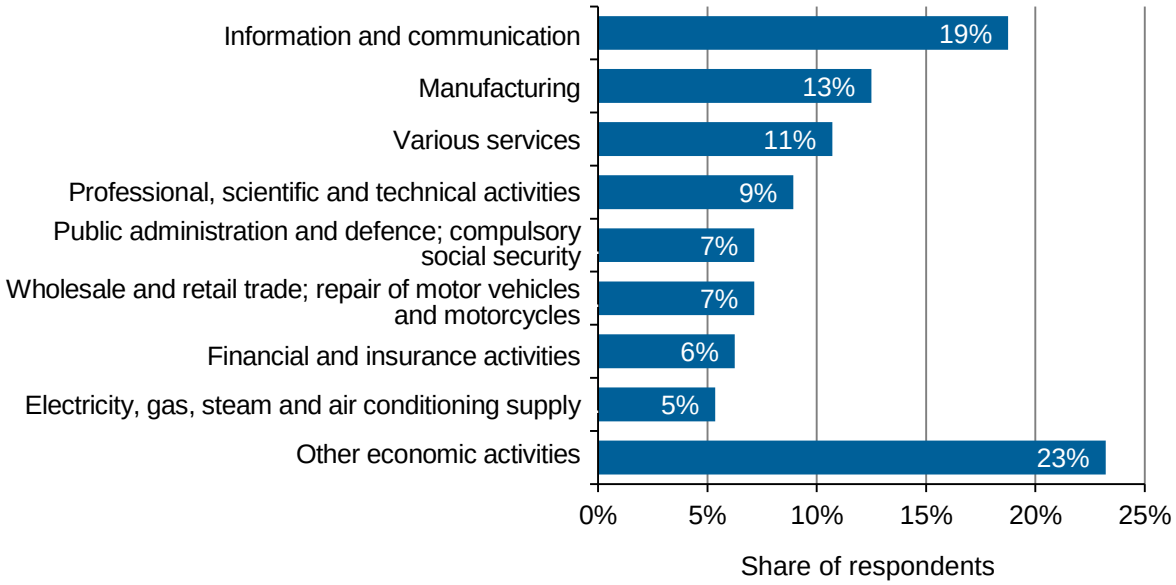
Figure 2: Operations in regions outside of the EU



Source: WIK survey.

The surveyed companies cover a broad range of business activities. The highest share of respondents was generated by the information and communication sector (19%), followed by the manufacturing business (13%) and various services (11%). The remaining companies are distributed across the other business sectors with lower shares (cf. Figure 3).

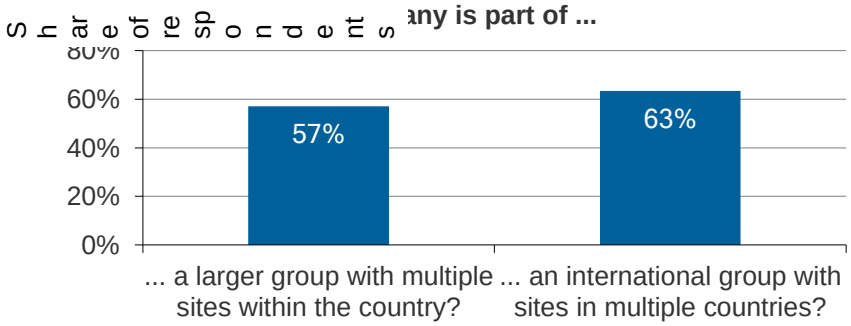
Figure 3: Business sectors covered by the surveyed companies



Source: WIK survey.

About 57% of the surveyed companies are part of a larger group with multiple sites within their country. Even more (63%) belong to an international group with sites in multiple countries.

Figure 4: Role of the surveyed companies within superior corporate groups



Source: WIK survey.

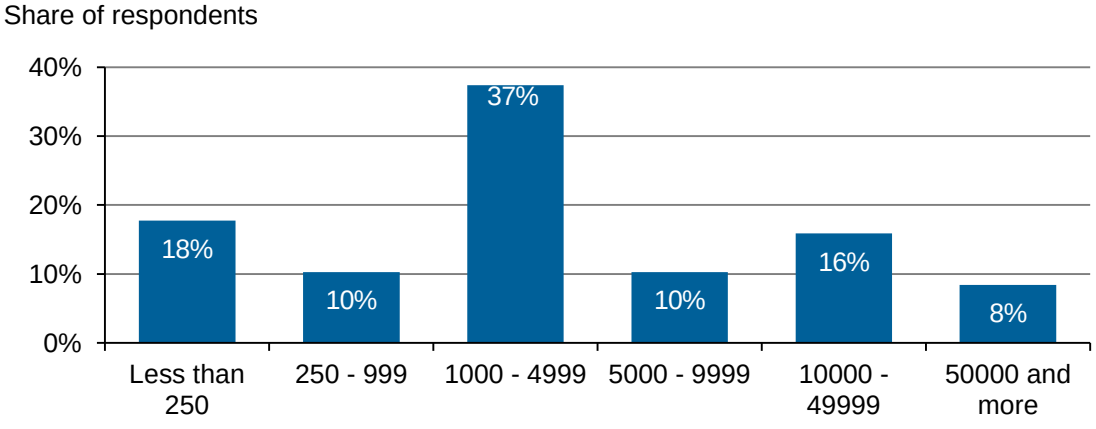
Concerning the exact role of the MSC/MNC businesses in relation to procurement of BCS, most companies procure BCS for multiple sites in multiple countries, with more than 50% of all respondents being in charge for procurement outside their HQ country. Another 35% is responsible for the procurement of communication services for multiple site within their country. Only 15% of the surveyed MSC/MNC procure communication services for a single site.

Figure 5: Role of the surveyed companies with regard to the procurement of communication services in the corporate group

Source: WIK survey.

Regarding the employee structure of the surveyed MSC/MNC, it becomes evident that the majority of the businesses employs a significant amount of workforce. About 35% of the companies are in each case employing more than 5,000 employees at their pan-European sites. Another 37% of the respondents have operations employing between 1,000 and 5,000 people at their various sites across Europe. Only 28% of the surveyed companies have less than 1,000 employees within their EU sites.

Figure 6: Number of employees in the surveyed companies



Source: WIK survey.

1.3.2 In-depth interviews

In addition to the online survey we used direct contacts with MSC/MNC to gather information for the purpose of this study. Beside several minor and more informal talks with representatives of MSC/MNC we conducted four extensive in-depth interviews with participants of the online survey.

The interviewed companies concern multinational groups from different sectors: aviation, environmental industry, chemical industry, and manufacturing. Each of these companies has several thousand employees. Their operation covers most of Europe and they have multiple locations across Europe, in most cases even across the world.

Each interview covered six topics in addition to the answers already given in the online survey:

- Impact of BCS on business processes, productivity, competitiveness and business success of the company.
- Experiences from procurement procedures from BCS.
- Assessment of bids from BCS providers.
- BCS providers and services used by the company.
- Opportunities and threats of changing a BCS provider.
- Future development of demand for BCS.

2 Importance of business communication services

In this first part of the report we will demonstrate the importance of business communication services on an empirical basis. On the one hand, we will describe the business of MSC/MNC with regard to communication services and the role of these corporates for the European economy with regard to specific indicators (e.g. GDP). On the other hand, we will analyse the relationship between the business processes of MSC/MNC and business communication services, as well as the corresponding requirements for these production factors.[14]

2.1 The importance of MSC/MNC for the European economy

2.1.1 Key organizational characteristics of MSC/MNC

There is no basic definition among academic scholars and practitioners of what determines a MSC/MNC, i.e. what main characteristics and elements are essential in order to classify a company as a MSC/MNC. The following study does not attempt to find a solution to this definition problem. Instead, it will make basic assumptions on what MSC/MNC can be and will adhere to these assumptions.

MSC/MNC are incorporated or unincorporated enterprises comprising parent enterprises and their foreign affiliates.[15] Usually, a MSC/MNC is a large company with production plants or other direct investment activities in one (MSC) or more (MNC) foreign countries. Typically, the MSC/MNC are industrial organizations having a wide network of branches, subsidiaries and production facilities spread over a number of countries, where they provide technology, finance capital, marketing skills and offer their products and services aiming for a profitable rate of return. Concerning organizational structures, there are horizontally integrated MSC/MNC (where production facilities and/or branches are located in different countries, producing same or similar products), vertically integrated MSC/MNC (production facilities and/or branches operate out of selected countries producing input factors for establishments in other countries) and finally completely diversified MSC/MNC (where the organizational structure is neither horizontal, nor vertical). Thus, one of the strengths of MSC/MNC which sell more than one product or offer more than one service lies in the fact that they operate in many product lines and have accepted the strategy of product diversification as a main corporate objective, thus truly embracing the potential of a multinational global and specifically a European market.

14 The following section draws on findings of previous older PECS market research studies, such as Indepen (2008) and BT et al. (2007).

15 See UNCTAD (2009), p. 14.

MNC usually include companies or other entities established in more than one country. They are linked in a way that they may co-ordinate their operations in various ways. While one or more of these entities may be able to exercise a significant influence over the activities of others, their degree of autonomy within the enterprise may vary widely from one multinational enterprise to another. Ownership may be private, state or mixed.

Existing data sets and statistics focusing on enterprises usually do not reflect the particular characteristics of MSC/MNC (especially the multi-site characteristic). Thus, in those cases where there are no absolute figures regarding MSC/MNC and related data, we assume a definition of MSC/MNC which can be applied on statistical sources. Since most of entrepreneurial statistics tend to focus on business size, the following definition will be assumed in order to identify MSC/MNC based on company size and employee statistics: 95% of all large companies (with more than 250 employees), 50% of medium-sized enterprises (50-249 employees) and 15% of small-sized companies (up to 49 employees) can be identified as MSC/MNC businesses, especially regarding the multi-site characteristic and the pan-European business scope. This definition will be used throughout the following study and is mainly based on our internal knowledge database and is consistent with other statistical data and publications, as will be shown in the following chapters.

Results: There is no basic definition of MSC/MNC, but usually key elements include being a large company with production plants or other direct investment activities in one or more foreign wide network of branches, subsidiaries and production facilities spread over a number of countries. For this study, a special definition has been adopted in order to better reflect MSC/MNC characteristics within existing datasets.

2.1.2 The economic importance of MSC/MNC

The economic importance of MSC/MNC in a globalized world is underpinned by a number of factors.[16] First of all, MSC/MNC do not constitute the majority of enterprises in Europe. In fact, most of the nearly 21 million companies within Europe are characterized mainly as small or medium sized companies (SME) with a clear local or regional scope of operations, not involving any European business activities and operations with a relatively small number of production sites. However, regarding other economic factors like employment, turnover or the creation of value added, MSC/MNC have a significant share on these indicators within the EU27 zone. The importance of MSC/MNC for the European economy is highlighted by the fact that nearly half of all persons employed in the Eurozone work for MSC/MNC. Concerning the turnover that has been generated by enterprises in the EU27 zone, again nearly half of it stems from MSC/MNC. So does value added, which is an important measure of the economic

16 The following conclusions are based on the results of the subsequent sections within this Chapter 2.1.2.

contribution of corporations. Table 1 gives an overview of those indicators and highlights the role of MSC/MNC in the European economy:

Table 1: Key figures of MSC/MNC (2010)

Category	Total EU27	MSC/MNC	% of total
Number of enterprises	21.4 mn	360,000	2%
Persons employed	138.9 mn	60.0 mn	43%
Turnover	21,600 bn Euro	11,500 bn Euro	53%
Value added	6,315 bn Euro	3,200 bn Euro	51%

Source: Eurostat, WIK calculations. Figures are for non-financial business economy.

Number of MSC/MNC in the EU27 zone

The majority of the Eurostat statistics and market research has traditionally focused on the SME sector, leaving only a small research efforts towards the analysis of MSC/MNC. Also, for most countries, the collection of statistics on the activities of MSC/MNC is a relatively new endeavour. Nevertheless, a growing number of countries are now compiling such statistics as the need for such data is being increasingly acknowledged both by national and international bodies. Overall, there are a few reliable sources to derive the approximate number of MSC/MNC in the EU27 zone. The most appropriate data source is the World Investment Report compiled by the division on Investment and Enterprise of the United Nations Conference on Trade and Development (UNCTAD) which regularly investigates on the total number of companies in the world that can be understood as MSC/MNC.

The latest available report related to MSC/MNC in 2010 lists a total of about 47,000 MSC/MNC which have their headquarters within the EU27 zone.[17] In Addition, there are about 310,000 companies which are foreign affiliates of non-EU MSC/MNC. Altogether, the total number of MSC/MNC yields nearly 360,000 corporations, which is roughly 2% of all the enterprises in the EU27 non-financial business economy (assuming slightly more than 21mn enterprises in 2010 for the EU27 zone).[18] These absolute numbers regarding MSC/MNC in Europe are fairly consistent with our internal assumptions on MSC/MNC distribution (95% of large enterprises are MSC/MNC, 50% of medium enterprises and 15% of small enterprises), as this approach yields a comparable number of companies which can be identified as MSC/MNC.

Employees

The total number of employees in the EU27 zone for the year 2010 was roughly 138.9 mn people.[19] An approximation for MSC/MNC can be derived out of the business

17 See UNCTAD (2011).
18 WIK calculations based on Eurostat (2011), p. 32.
19 WIK calculations based on Eurostat (2011), p. 32.

demography and size class analysis researched by Eurostat in its latest edition regarding key figures on European business.[20] As figures are not specified for MSC/MNC, assumptions have to be made in order to derive an approximation for sectoral distribution of MSC/MNC in the EU27 zone. Taking into account the basic assumption (cf. Section 2.1.1) that 95% of all large companies (>250 employees) and 50% of medium-sized enterprises (50-249 employees) and 15% of small-sized companies (up to 49 employees) count among MSC/MNC[21], the total number of employed persons for the EU27 zone that is employed by MSC/MNC amounts to roughly 60 mn people, that is 43% of total number of employed persons for the EU27 zone.

Total factor productivity and the contribution of ICT to this growth is supposedly quite substantial. Previous calculations show that European productivity growth (for the EU15 zone) has declined, whereas the contribution of the ICT sector has slightly increased over a time span of 25 years.[22] These figures contrast with the development in the U.S., where the contributions of communications and computer services and particularly intensive ICT-using private services have modestly increased since the mid 1990s.

Turnover

Using latest available Eurostat figures split up by company size and sector class, total turnover for the non-financial business economy reached approximately 21,600bn Euro.[23] Taking into account again the basic assumption (cf. Section 2.1.1) that 95% of all large companies (>250 employees) and 50% of medium-sized enterprises (50-249 employees) and 15% of small-sized companies (up to 49 employees) count among MSC/MNC, the total turnover for the EU27 zone that is generated by MSC/MNC amounts to roughly 11,500 billion Euros, that is 53% of total turnover for the non-financial business economy in the EU27 zone.

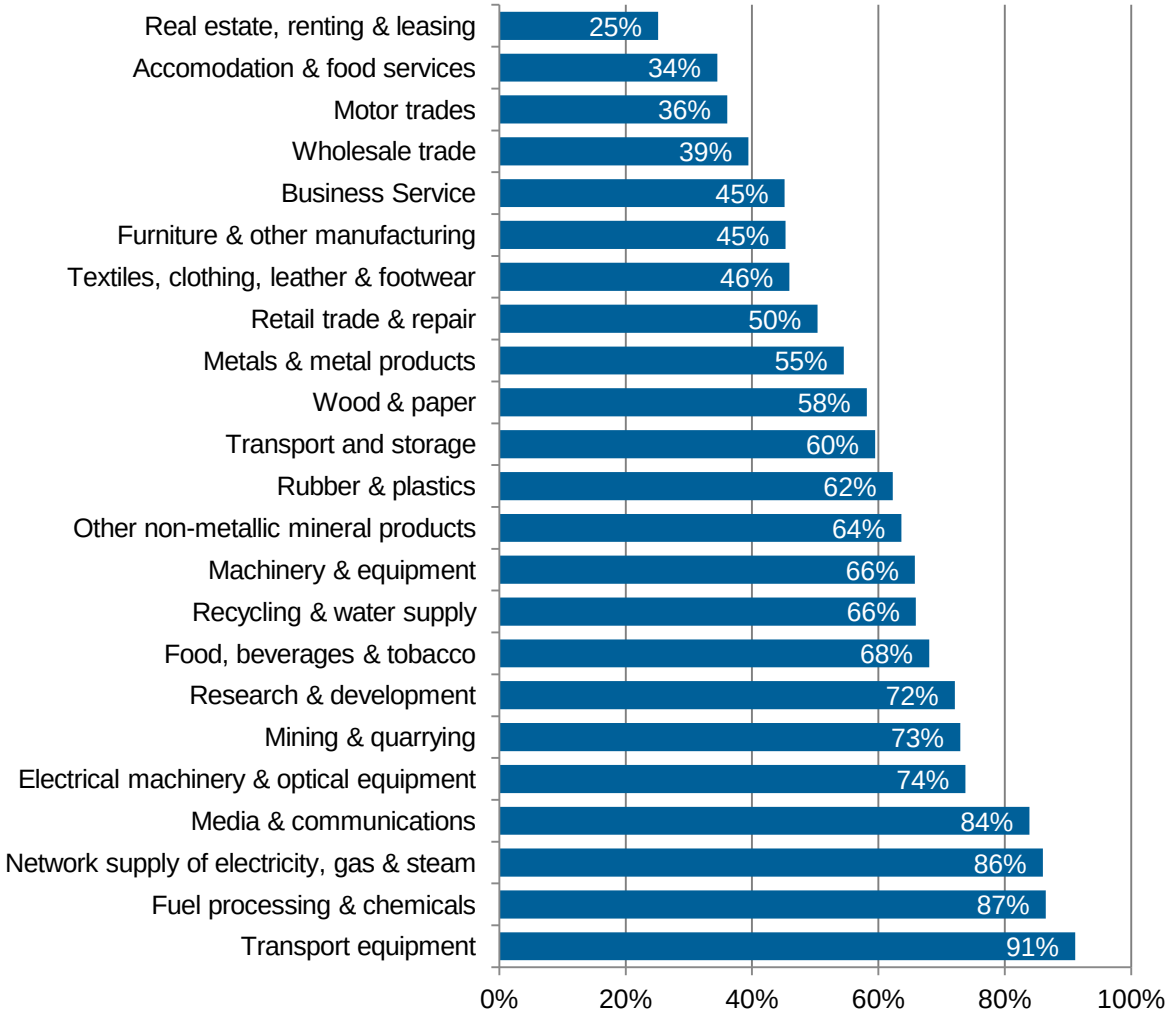
Value Added

The total value added for the EU27 zone in 2010 yields about 6,315 billion Euros.[24] Taking into account once more the basic assumption (cf. Section 2.1.1) that 95% of all large companies (>250 employees) and 50% of medium-sized enterprises (50-249 employees) and 15% of small-sized companies (up to 49 employees) count among MSC/MNC, the total value added for the EU27 zone that is created by MSC/MNC amounts to roughly 3,200 billion Euros, that is 51% of total value added for the non-financial business economy for the EU27 zone. We then proceed to calculate the value added generated within each business sector in the European economy, using the total

20 See Eurostat (2011).
21 Having e.g. at least one cross-border business or production site within the EU27 zone or being a European affiliate of a Non-European company. The assumed percentages are broadly in-line with the number of multi-site companies researched, e.g. for the UK, see Ofcom (2012), p. 18-19.
22 See Indepen (2008), p.31.
23 Reported turnover by Eurostat (2009), p. 19 in 2006 was at 20,712 bn Euro, forecasting this value for the year 2010 via adjustment factors based on turnover development from 2006-2010 leads to an estimated value of 21,600 bn Euro for the year 2010.
24 WIK calculations based on Eurostat (2011).

value added for each sector and applying our basic assumption on MSC/MNC distribution, in order to give a sectoral overview of how much value added in different business sectors is attributable to MSC/MNC activities. The following image details the percentage of value added generated by MSC/MNC in relation to the total value added for that specific business segment for the EU27 zone.

Figure 7: Share of value added generated by MSC/MNC per sector[25]



Source: Eurostat, WIK calculations, sector distribution calculated based on 2006 figures of Eurostat (2009).

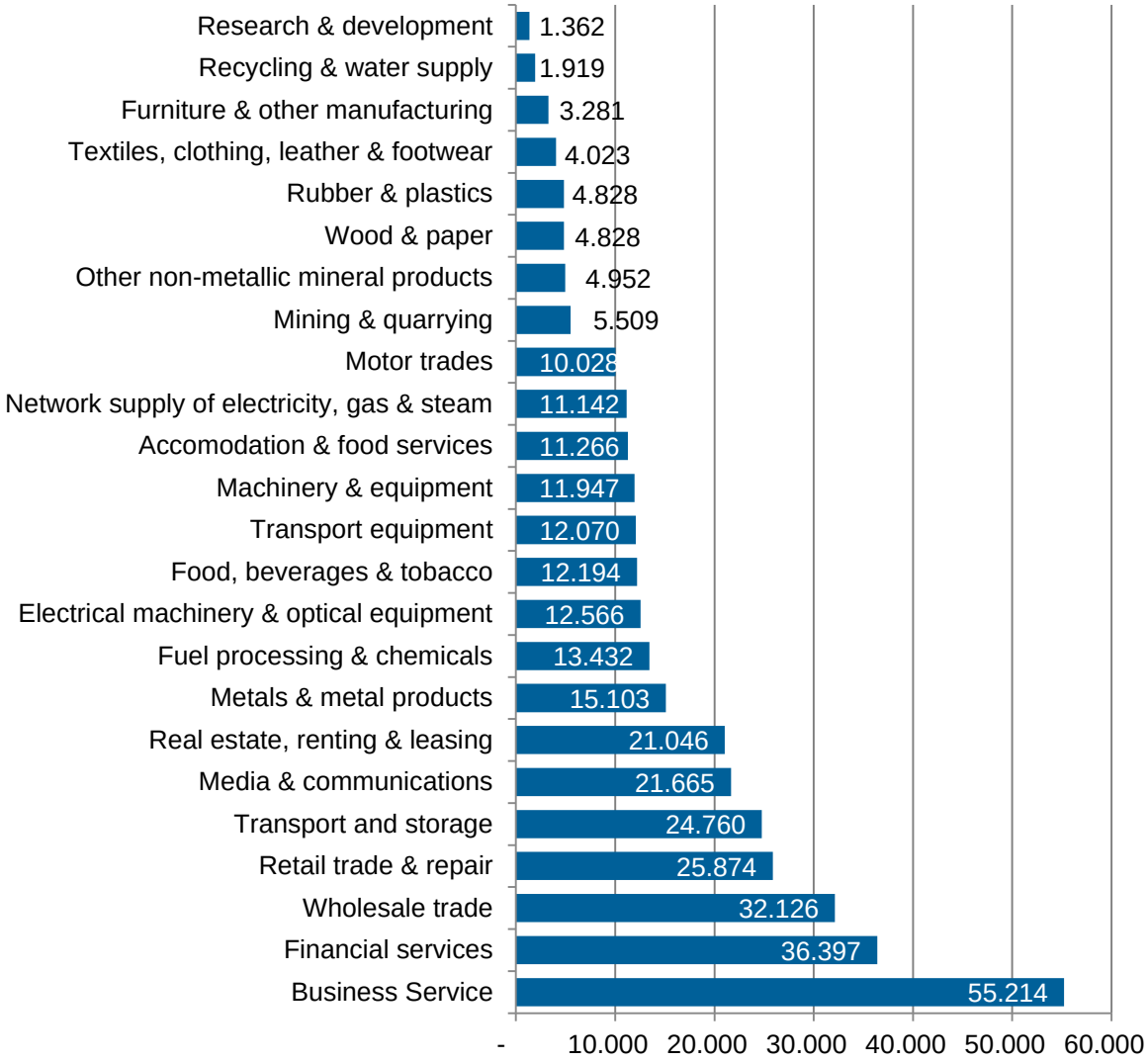
[25] The financial sector is excluded from this and others statistics where only the non-financial business economy is presented, as the relevant KPIs, e.g. value added or turnover, do have a different definition for the those companies that are operating in the financial services and insurance sector, To give an indication about the relevant market volumes, in the year 2007 total net interest and total net commissions in the financial services sector in the EU27 was estimated at 489 bn Euro, total insurance gross premium for life and non-life business was estimated at about 576 bn Euro, see Eurostat (2011), pp. 109-110.

Sector distribution

A precise sector distribution within the EU27 zone concerning MSC/MNC has not been compiled so far. An approximation can be derived out of the business statistics and size class analysis researched by Eurostat.

Again, as figures are not specified for MSC/MNC, building upon on the basic assumption (cf. Section 2.1.1) that 95% of all large companies (>250 employees) and 50% of medium-sized enterprises (50-249 employees) and 15% of small-sized companies (up to 49 employees) count among MSC/MNC, a sector distribution can be derived out of the Eurostat publication “European Business – Facts and Figures”. It becomes evident that the sectors of business services, financial services, wholesale and retail trade as well as transport and storage are the sectors with the highest number of MSC/MNC in the Eurozone.

Figure 8: Number of MSC/MNC and their sectoral distribution for EU27 zone



Source: Eurostat (2009), Eurostat (2011), WIK calculations.

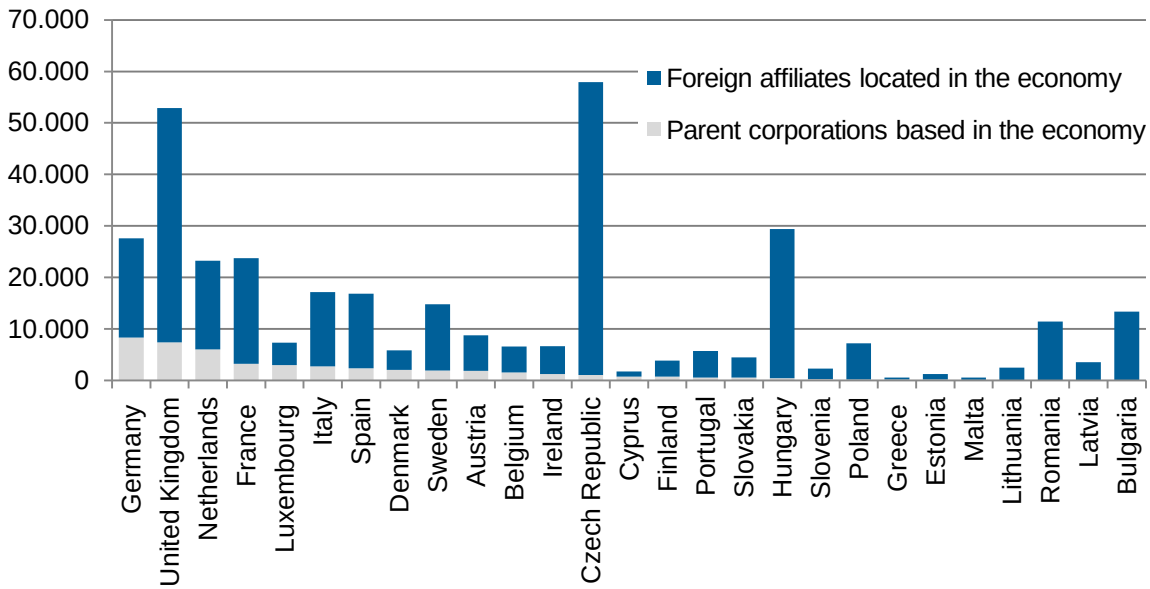
Geographic distribution

It has to be noted that modern production processes can be split and divided into different geographic locations, due to intensifying strategies aimed at outsourcing operations within Europe. The classic model of a single site for production facilities is becoming outdated, and new production processes are being implemented across different industries and sectors: production takes place where the best cost structure and the best market conditions are achievable.

A precise geographic distribution within the EU27 zone has not been attempted so far. Again, an approximation has to be derived out of the business demography and size

class analysis of Eurostat. Assuming that 95% of all large companies (>250 employees) and 50% of medium-sized enterprises (50-249 employees) and 15% of small-sized companies (9-40 employees) can be identified according to the definition of MSC/MNC and have in fact European business activities and thus are demanding communication services, the Eurostat figures for business economy in the EU27 zone can be used. The following image shows the geographical distribution of MSC/MNC, where major European countries like Germany and UK show the highest number of parent corporations in their respective nations. Countries that have joined the EU in recent times, e.g. the Czech Republic and other eastern European countries, tend to have a higher number of foreign affiliates located in their countries. In some cases, this might be explained with special corporate taxation rules, mainly a corporate flat tax, that has been introduced in countries like Romania, Bulgaria and Hungary.

Figure 9: Number of MSC/MNC in 2010 including parent corporation and foreign affiliates



Source: UNCTAD (2011), WIK calculations

Results: MSC/MNC are an essential part of the European economy. About 360,000 companies are responsible for generating nearly half of persons employed and nearly half of business turnover. More than 50% of value added created in the EU27 economy can be linked to MSC/MNC and other multi-site businesses. Companies are creating value added across the complete EU27 economy, securing about 60 million jobs.

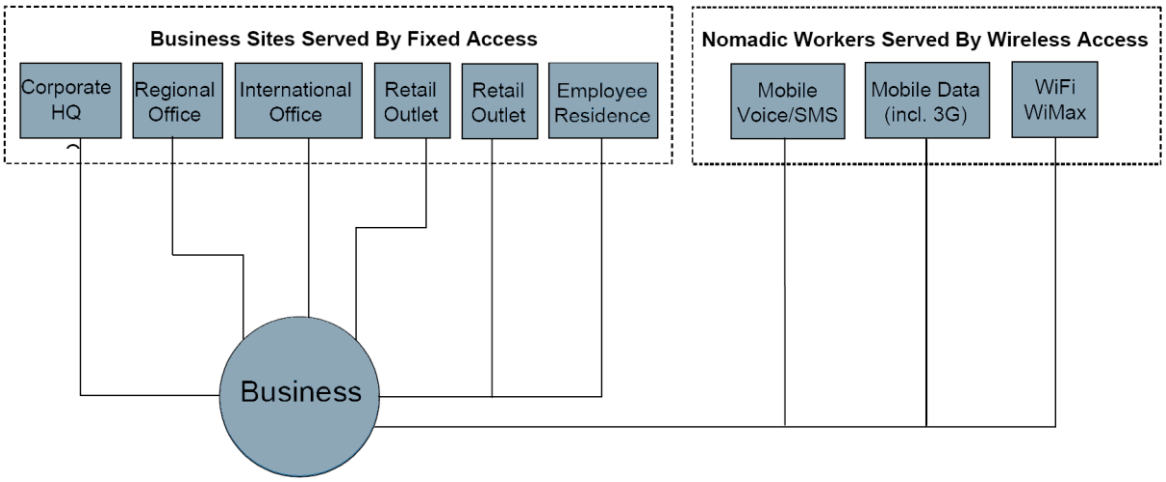
2.2 Role of communication services for business processes of MSC/MNC

2.2.1 Understanding of business communication services

The general trend towards globalization of previously regional or national businesses, leads directly to similar developments regarding business processes and their support by communication services.[26] This disaggregation of value chains and business structures is particularly evident in MSC/MNC across the EU27 zone. Economic advantages that derive from this transformation affect the complete supply chain, including relevant small and medium sized companies in the role of suppliers or allocators of resources. [27]

As stated before, modern companies are triggering the transformation of business and manufacturing processes towards globalization and disaggregation of their operations. Nevertheless, in order to secure productivity and in order to be competitive on a global scale, MSC/MNC need to focus on their most central business processes and reach operational excellence. In the case of ICT systems, multiple (national or international) sites need to be connected with each other and guarantee a reliable service level on a national and international basis. This need has been previously referred as “ubiquitous connectivity”.[28] The following image reflects an example for the requirements in communication access of multi-site businesses.

Figure 10: Example for a multi-site business and its communication access requirements



Source: BT et al. (2007), p. 15.

26 See UNCTAD (2010), p. 154-155.
27 See e.g. Eurostat (2009), p. 11-13, regarding new international structures of economic output in the EU27 zone.
28 See FAC (2011), p.3-4

It becomes evident that typical MSC/MNC operations are split between various business sites, often regional and local offices and branches within different countries, where fixed line access and connection between the whole corporate network is a priority. Furthermore, modern nomadic workforce employed by MSC/MNC requires mobile wireless access to the corporate and business operations, usually via mobile data or WiFi connections. Fixed data and mobile data connections, along with fixed line and mobile telephony, are thus of essential importance for MSC/MNC business operations, as they are the key to achieve the "ubiquitous connectivity" that is paradigm to modern corporate organizations.

In a greater enterprise context, these requirements leads to a broad spectrum of business communication services (BCS) for MSC/MNC. The typical core set of BCS products from the retail perspective of MSC/MNC includes:[29]

- dedicated lines (e.g. traditional and Ethernet leased lines,PPC),
- fixed Internet access (e.g. xDSL),
- telephony services (fixed line, mobile).
- physical infrastructure (e.g. copper and fibre lines),
- mobile data services (e.g. 3G, 4G),

This set of basic communication services is in turn the foundation for various other sorts of corporate services and applications (e.g. VPN, unified communications (carbon footprint, wholesale IP managed services (e-health services), cloud services, …).

These BCS services are typically retail oriented products, as MSC/MNC procure their services from communications providers and thus do not directly demand wholesale oriented products such as WBA (Wholesale Broadband Access) or Wholesale Leased lines. When referring to BCS products in the following study, the retail oriented perspective is always intended.[30]

Results: Modern companies are triggering the transformation of business and manufacturing processes towards globalization and disaggregation of their operations. They need to focus on their most central business processes and reach operational excellence. In the case of communication systems and services, multiple sites need to be connected with each other and guarantee a reliable service level on a national and international basis. BCS comprise dedicated lines (mainly traditional and Ethernet leased lines, PPC), fixed and mobile Internet access as well as telephony services and physical infrastructure

29 See also BT et al. (2007), in the section "Trends in the ICT Environment and Business Customer Requirements for Connectivity", p. 14.

30 In cases where there is a reference to wholesale oriented products (e.g. Wholesale Broaband Access, Wholesale Leased lines), the MSC/MNC is accessing "indirectly" to these services as it relies on the provision of competitive BCS offerings either by the infrastructure carrier or by a BCS provider.

(e.g. copper and fibre lines), . A typical MSC/MNC requires a mix of such BCS services.

2.2.2 Importance of business communication services for companies

Demand for BCS is growing. Several surveys[31] have shown that BCS can potentially lead to substantial productivity benefits. The most striking example of such benefits in well-functioning BCS markets are productivity effects for MSC/MNC as well as for other companies through effective cross-border implementation of ICT solutions. So when it comes to the provision of BCS, virtually all companies are highly dependent on the availability of suitable and appropriate telecommunications services. These inputs need to stretch beyond simple compatibility, as a high degree of interoperability with existing infrastructure and installed system solutions is crucial. MSC/MNC need the possibility to connect different international company systems over existing regional access networks. These access and connection technologies then need to mirror individual production site demands and individual market necessities, so that the provision of products and services is realised under economic and efficient terms. Since MSC/MNC operating out of their respective markets will need high levels of redundancy in their connectivity, those companies will look for different and specific access infrastructures, tailored towards their individual communication needs. In an era of multiple networks, production sites connected via large fibre and other company sites connected via smaller broadband services are the key to the realization of the “ubiquitous connectivity” paradigm. Furthermore, the widespread global workforce depends on the accessibility of communication systems from every company location, be it from a fixed-desk working environment or from mobile office solutions, where mobile infrastructure becomes more important than ever, as empirical evidence has shown during expert interviews.[32] Without proper functioning (mobile) data connections, business models of modern and international MSC/MNC become obsolete, thus putting the existence of the businesses at great risk. Finally, it becomes clear that BCS demand from businesses is highly specific and that the requirements in this business sector differ fundamentally from requirements in the consumer segments of communication products and services, simply because residential and mass market services do not require the scale and scope of BCS services that are important for companies.[33]

Results: Demand for BCS is growing in order to reach ubiquitous connectivity for company workforce and assets. The existence of proper functioning data connection is a key elements for MSC/MNC, which otherwise would endanger the existence of businesses and corporations. BCS products have however

31 See Indepen (2008), p. 13.
32 E.g. load sheets for cabin crew members are not printed out anymore, instead all relevant information regarding the flight are transferred to mobile devices, thus making the whole process more individual as passenger data is digitally available.
33 See FAC (2011), p.5 and see AGCOM (2012), p.7.

significant differences with comparable residential products, making BCS products highly specific.

2.2.3 Business-critical needs in communication services

What are the most important criteria for MSC/MNC when demanding communication services? The following criteria will give a detailed overview of the most pressing needs of MSC/MNC with regard to communication services:

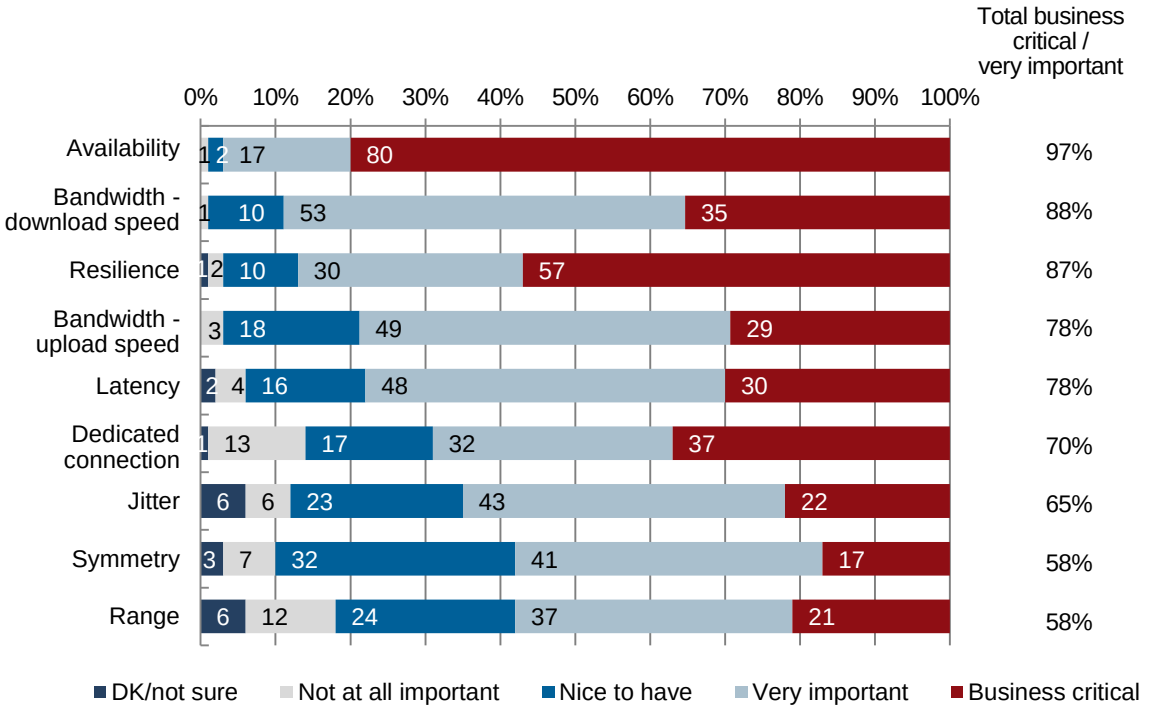
- Security. Above all, a high level of security for company networks is crucial in the digital era, especially given the fact that the trend of cloud computing will form an important part of business processes in the future.
- Access. Businesses require seamless access at high and reliable broadband speeds. Potentially, access to a global IP virtual private network has to be guaranteed from all company sites and from selected homes of employees.
- Traffic. Companies demand communication services that are able to match large amounts of traffic, generated on a constant basis.
- QoS. MSC/MNC demand high requirements concerning service level agreements and their provision, e.g. without interruption of connection. Performance indicators have to be matched at any time under any circumstance, in order not to jeopardize crucial business and production processes. During the expert interviews, the provision and fulfilment of high standards in SLA was considered one of the top priorities for MSC/MNC, including quick reaction regarding repair service issues.
- Bandwidth. Companies need sufficient bandwidth capacity in order to perform and sustain their extensive and large communication services applications.
- Platform integration. Corporations are demanding that their various communication service platform, either fixed or wireless, shall be integrated seamlessly.

In this context, a recent survey of Ofcom (cf. Figure 11) shows that the top 3 requirements rated as either business critical or very important are availability (97%), bandwidth – download speed (88%) and resilience (87%).[34] These are essential communication requirements that are central to the successful operation of businesses. In addition, businesses place greater emphasis than consumers on technical service characteristics such as latency and jitter, which affect service quality and reliability[35].

34 See Ofcom (2012), p. 45

35 Latency is a measure of delay in data transmission. Jitter is the variation in delay in the receipt of packets.

Figure 11: Importance of service characteristics in the UK



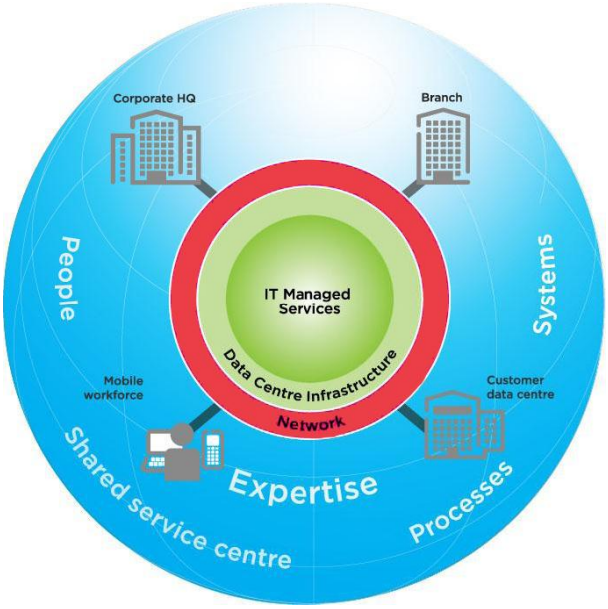
Source: Ofcom, Business Connectivity Market Review 2012, p. 44

So what kind of services are relevant to MSC/MNC for their BCS needs? When demanding BCS products and services, companies are looking for concrete benefits with regard to their businesses:

- First and utmost, BCS services should be able to reduce business and process costs or at least provide for a cost-efficient service.
- Services must lead to an overall improvement in internal and external communication and integration of various enterprise systems.
- When deciding on BCS investments, MSC/MNC are also considering solutions that support the development of new and innovative products and services.
- BCS products and services should integrate within existing communications systems along the supply chain and value chain.

The following illustration (cf. Figure 12) gives an overview of the spectrum of services and products that are at the centre of BCS and their integration into business processes. Within their company structures (headquarters, branches, data centres and mobile and non-mobile workforce) MSC/MNC need to leverage their human and capital assets by integrating their communication needs. Seamless network coverage, scalable network technology platforms, integrated support functions and IT managed services and data centres form the basis of BCS.

Figure 12: Illustration of BCS product spectrum within a multi-site organisation



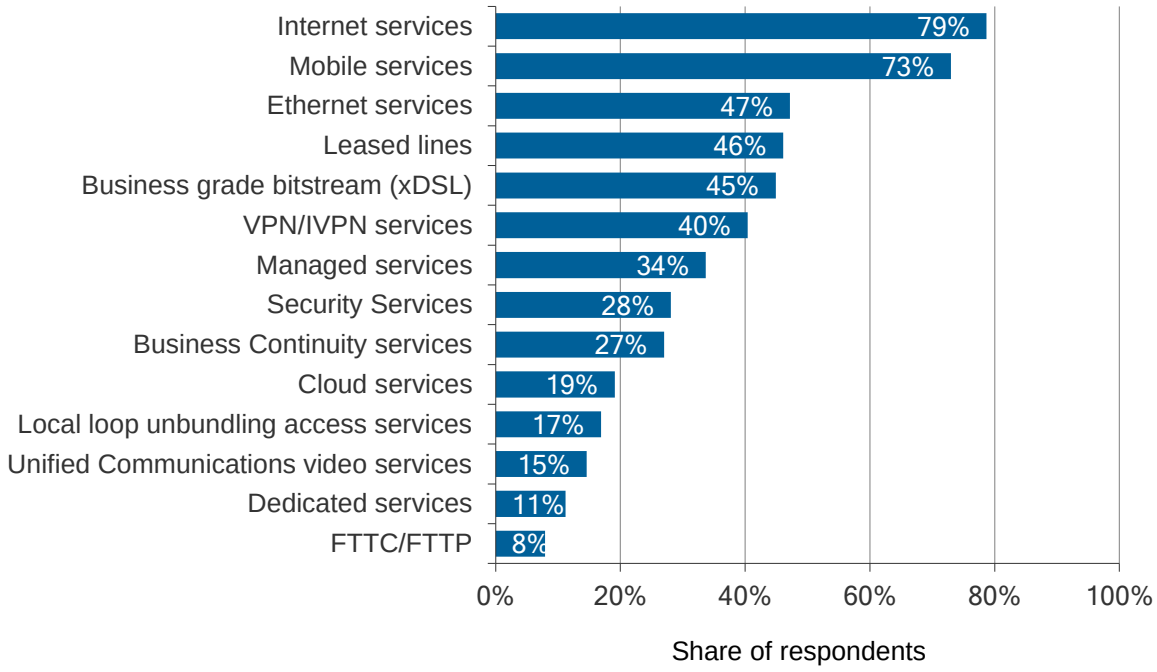
Source: Colt (2012).

In this light, most relevant telecommunication services underlying the BCS, in particular regarding the realization of "ubiquitous connectivity", are Ethernet leased lines or traditional leased lines, optical fibres for fixed broadband connections, advanced DSL technologies and new wireless networks (e.g. LTE). The relevant networks include either wired and/or wireless access options. However, there is no single technical "one-size-fits-all" solution, but rather a series of combination and solutions that satisfy the needs of customers. Other relevant telecommunication services include:

- (managed) WAN services, including Multiprotocol Label Switching (MPLS), IPsec VPNs and Ethernet services, including security applications, which run over reliable access links. Empirical evidence via expert interviews has shown that WAN and IP-VPN services are one of the most important IT resources for companies.
- Voice services, including switched and dedicated voice, Session Initiation Protocol (SIP) trunks and hosted or managed Internet Protocol (IP) telephony.
- Dedicated Internet services, including managed VPN offers and unified communications services.
- Managing and provision of mobile business network solutions, including the integration of internal fixed-to-mobile calls without discrimination regarding termination charges, separated billing for private and business calls, integration of virtual IP centrex solutions and the provision with mobile handsets and finally the opportunity to offer MVNO services.

These aforementioned conclusions, and particularly MSC/MNC's interest in managed "services" as opposed to the underlying building blocks of "access links" are supported by practical evidence gained out our survey results. It becomes evident that the most relevant services for the participating MSC/MNC are Internet and Mobile services (cf. Figure 13). Wholesale access components come lower down the list – starting with Ethernet services and traditional leased lines, whilst unbundled copper loops and FTTC/FTTP access feature rather low on the list of company requirements. Moreover, the results of the survey show that MSC/MNC care more about the "retail" service than the inputs used to create it. This confirms that this is a "value added" business rather than one where the customers pick and choose from amongst the wholesale elements themselves.

Figure 13: Most relevant communication services (multiple answers)



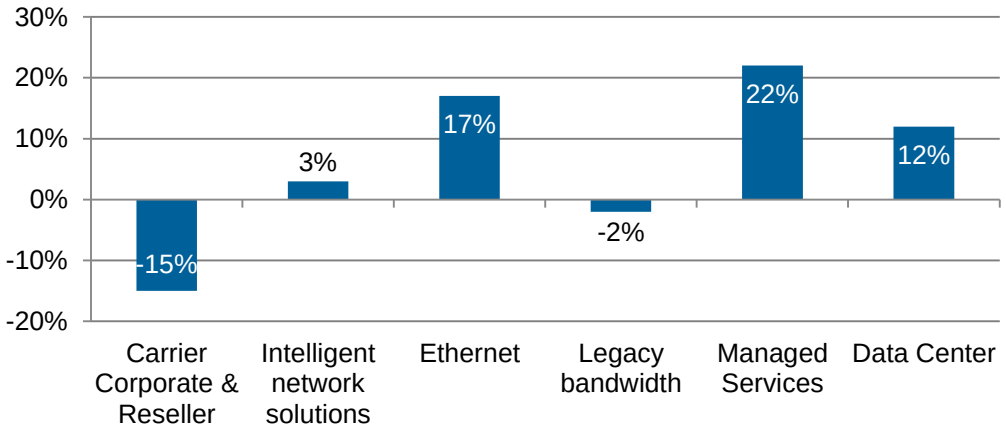
Source: WIK survey.

It is clear that the range of BCS services is much wider and has a greater scope for product differentiation than services aimed at private clients in residential markets. BCS usually constitute a bundle of different products and solutions, ideally tailor-made for the company to satisfy its specific communication needs (e.g. regarding QoS) which significantly distinguish from needs in the residential segment. A major difference between business and residential offers emerges out of the multi-site nature of business services. BCS providers must be able to provide access and system connection at the agreed service levels and at the agreed level of security to all cross-border sites, if the supplier is to make a successful tender. Furthermore, for business

wholesale products special price structures have to be taken into consideration for mobile services and different utilization of spectrum for Ethernet bitstream.

With regard to the future development of demand for BCS forecasts expect a slight decline in revenue growth for spendings in legacy bandwidth products (cf. Figure 14). This effect indicates an shifting in BCS spending as MSC/MNC slowly but steadily reduce their expenses for legacy leased lines, and turn towards Ethernet bandwidth. Traditional voice markets such as Carrier and Corporate Resale activities are expected to lose substantial revenue growth. Other BCS elements such as Managed Services and Data Centre are expected to show double digit revenue growth until 2016, again underlying the big impact that these services have on communication processes of MSC/MNC.

Figure 14: Revenue growth (CAGR) for selected communication services (2012 – 2016)



Source: IDC, from Colt (2012).

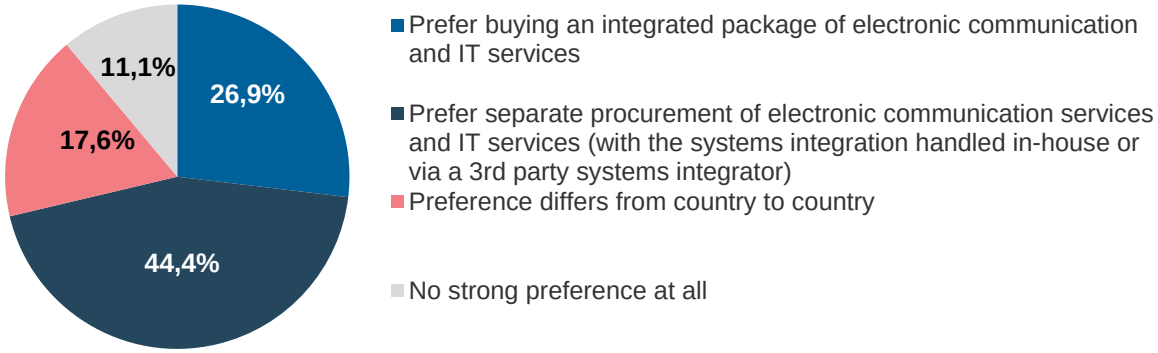
Results: The most important and pressing needs of companies in BCS products are availability, bandwidth and technical resilience, along with security and satisfying service level agreements. Companies primarily focus on the "services" offered – such as managed WAN, voice, Internet and mobile, rather than the technological inputs that make these services possible. Demand for legacy bandwidth will tend to decrease in importance in favour of modern Ethernet technologies.

2.2.4 Demand behaviour and buying preferences for BCS

Our online survey provides useful insights into the buying behaviour and demand preferences by MSC/MNC. Generally, MSC/MNC tend to prefer a separate procurement of electronic communication services and specific IT services (cf. Figure 15). Nearly 45%

of respondents have chosen this as their preferred way in BCS procurement. In contrast, about 27% of the respondents prefer to buy integrated packages of electronic communication and IT services. This is, as empirical evidence has shown via expert interviews, mainly due to the fact that in some cases, an integration of offers and packages is not advisable, as data service providers usually operate globally, but fixed telephony and mobile services are usually rather local markets. It is conceivable that this behaviour could change leading to greater integration of ICT if cross-border barriers to telecoms provision were removed.

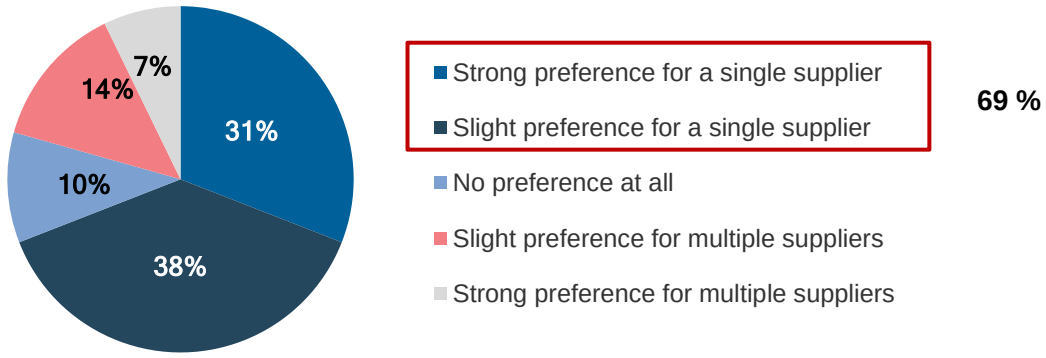
Figure 15: General preference to buy electronic communication services and IT services



Source: WIK survey.

Regarding specific buying preferences of communication services, the survey shows that there is a tendency to have preference for single suppliers of BCS (cf. Figure 16). A combined 69% of respondents shows this preference, whereas only roughly 21% of respondents have a preference for multiple suppliers of BCS.

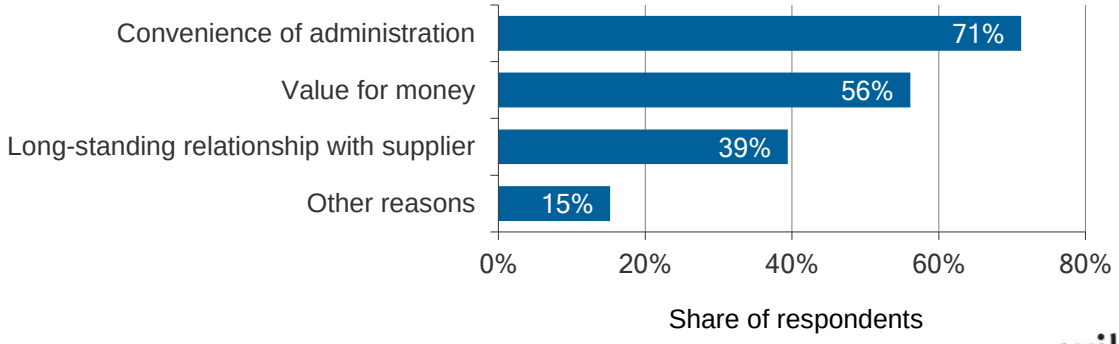
Figure 16: Preference to buy communication services from a single supplier or from multiple suppliers



Source: WIK survey.

The reasons for preferring a single supplier to multiple suppliers mainly stem out of the convenience in reduced and optimized administration (cf. Figure 17). Dealing with only one supplier greatly reduces transaction and administration costs. In fact, more than 70% of respondents chose this reason, along with an improved value for money and the existence of long-standing supplier relationship.

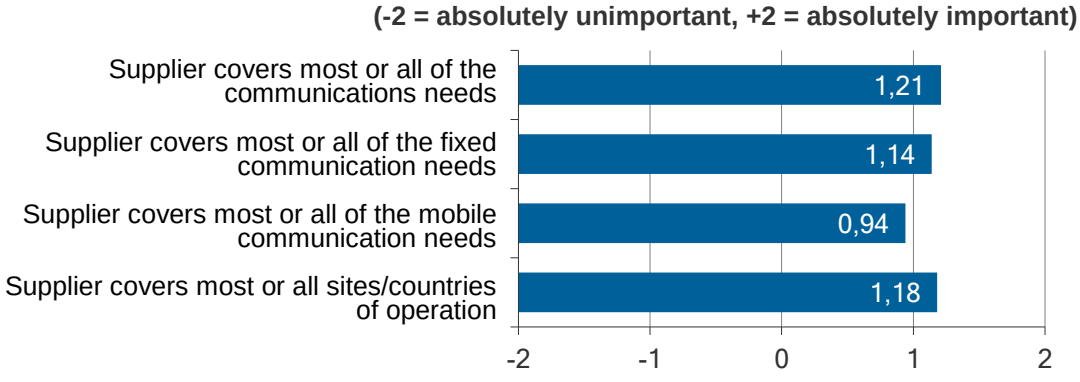
Figure 17: Main reasons for the preference to buy communication services rather from a single supplier



Source: WIK survey.

When assessing a single supplier, MSC/MNC have preferences for suppliers that are able to cover most or all sites of operation and suppliers that are able to fulfil most or all of the communication needs (cf. Figure 18). With a range from -2 (absolutely unimportant) up to +2 (absolutely important), MSC/MNC rate the ability to cover multi-site businesses and all communication needs as the most important criteria.

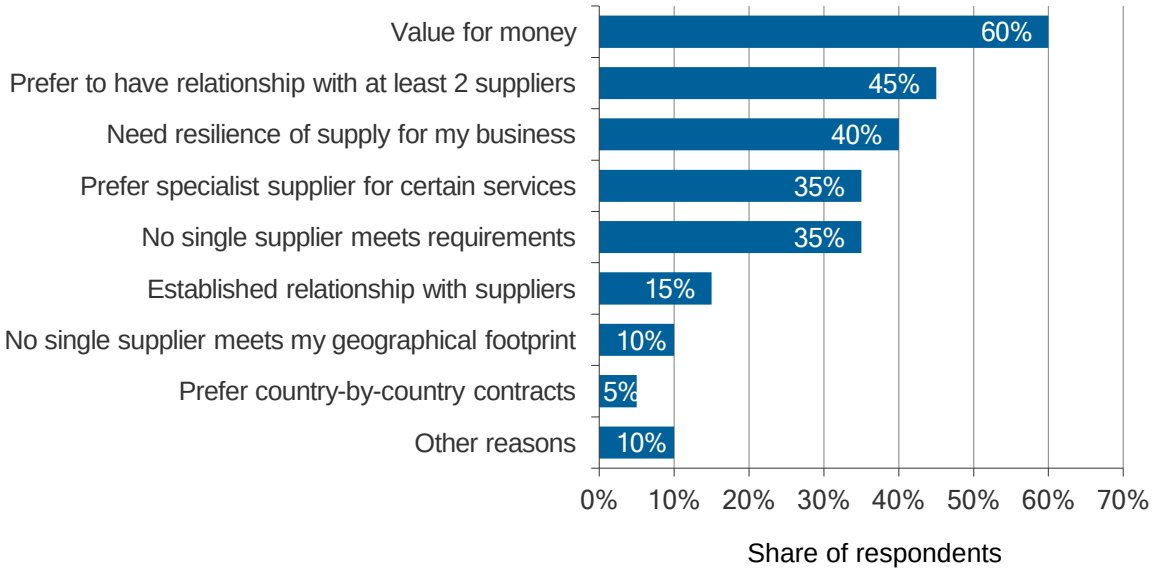
Figure 18: Importance of supplier characteristics with regard to the preference for a single supplier



Source: WIK survey.

In contrast to the preference for a single supplier the main reasons for choosing multiple suppliers for BCS services manifest some interesting differences (cf. Figure 19). While value for money again is rated very high, the responses show there are apparently problems in the market for provision of BCS. The preference is often influenced by the fact that no single supplier meets the requirements or no single supplier meets the geographical footprint. Moreover, it the survey implies that the market for BCS is a pan-European market as only very few respondents prefer country-by-country contracts. Very big customers might tend to have two (or even more) BCS providers at the same time, which may in particular provide resilience as well as flexibility with regard to avoiding possible lock-in effects.

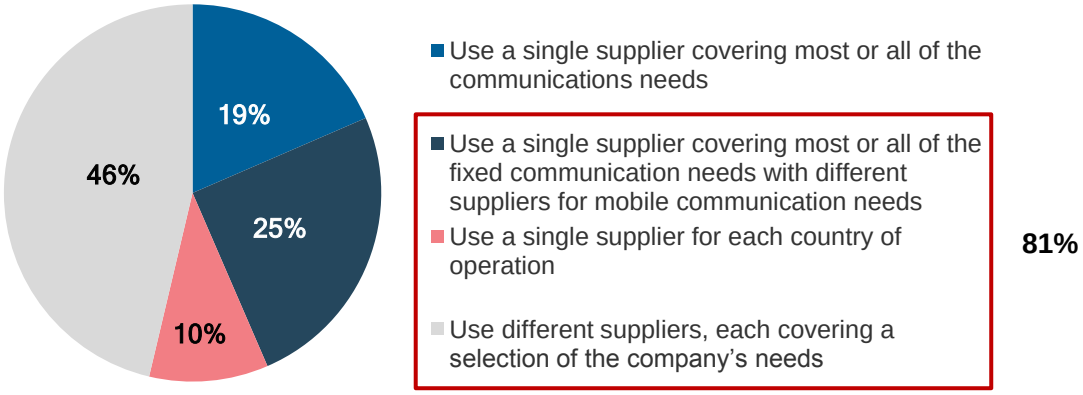
Figure 19: Main reasons for the preference to buy communication services from multiple suppliers



Source: WIK survey.

When confronted with practical aspects and real demand behaviour, MSC/MNC tend to differ from their (theoretical) preferences, and have to respect actual market realities (cf. Figure 20). In fact, about 81% of respondents use different suppliers, each covering a selection of the company's needs or different regions/countries, and only roughly 19% use a single supplier for all their BCS needs (opposite to 69% preferring a single supplier).

Figure 20: Buying behaviour for business communication services in practice



Source: WIK survey.

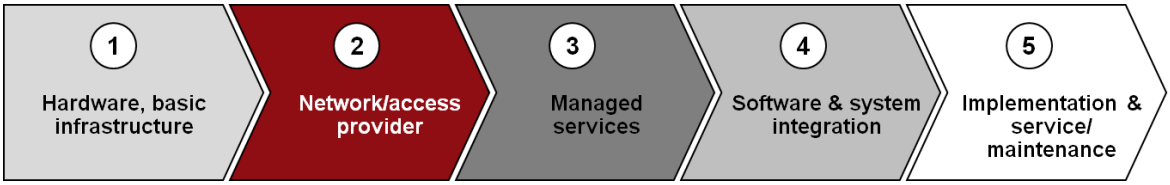
Results: Although MSC/MNC tend to prefer separate procurement of communication services and specific IT services, there is a clear preference for a single supplier of BCS, mainly due to reasons of convenience and value for money aspects. The advantage of a single supplier lies in the fact that the provider is able to acquire experience in providing those services and builds economies of scale and scope via specialization, being able to provide those services to other third parties. When assessing a single supplier, MSC/MNC have preferences for suppliers that are able to cover most or all sites of operation and suppliers that are able to fulfil most or all of the communication needs. Despite an overall preference for using a single supplier, most MSC/MNCs actually use a number of suppliers. This is clear evidence that the market for BCS is not working well, in particular because there are not sufficient suppliers which are able to meet functional and/or geographical requirements of MSC/MNC.

2.3 Service providers

2.3.1 Market mechanisms and value chain

In order to understand the underlying market developments, it is helpful to assess a typical value chain for the BCS market. Figure 21 shows the various steps and processes involving the provision of BCS solutions:

Figure 21: Value chain in the BCS market



Source: WIK.

The value chain in the BCS market can be summarised as follows:

1. At first, the required hardware elements, e.g. cables, switches, lines, need to get acquired in order to build up the desired BCS solution for the customers. Usually, companies operating in this field are OEM manufacturers and hardware manufacturers.
2. As a second step, the required hardware components have to be installed and implemented within a specified network, and finally the network has to be operated. This is usually done by a telecommunication/network operator, who controls relevant network infrastructure components and is able to interconnect its network with other networks.
3. In addition to that, the installed and connected system serves as a basis for value added services, usually operated as Managed Services. With Managed Services, communication technologies are delivered as nearly-finished solutions, managed remotely from a network operations centre. Operators in this field are either telecommunication infrastructure operators like BT or Verizon, or IT service providers like Cisco, T-Systems or IBM, or dedicated data centre and hosting specialists.
4. Furthermore, a typical BCS solution needs to be integrated into existing software and system platforms operated at the business site of the company. This is usually done via programming and integration efforts, performed by specialized software companies or dedicated (cloud) service providers.
5. Finally, the provided BCS solution to companies has to be implemented on a larger scale and service and maintenance have to be secured, in order to optimize the total costs of ownership of the solution. Generally, this is done by either the network operator, the specialized software vendor or the selected BCS provider.

Provision of BCS along the schematised value chain leads to complex and diverse relationships between stakeholders which may have very different business focus. This bears the risk that players who have market power in a higher part of value chain might be able to leverage it to downstream parts of the value chain.

In any case, due to the scope and magnitude of global communication needs, the underlying telecommunications products and services are often not directly demanded and bought by the companies. Instead, system integrators operating usually within the value chain elements 3, 4 or 5, act as buyers for their corporate clients and leverage buying power. These suppliers have to buy several different access components for BCS, e.g. trunk and terminating segments of leased lines, broadband internet access and fixed and mobile telephony, in order to satisfy the needs of MSC/MNC with their multi-site operations. Usually, there is only one supplier which can supply all of these components from within its own resources, namely the national incumbent infrastructure operator. Others may be able to provide some from own resources but can provide all only if they have access to fit for purpose wholesale services (usually of the incumbent) on equivalent terms.

The development of service applications in the BCS sector is particularly R&D intensive, as a high proportion of sunk costs can be generated alongside high business risks. It is for that reason that BCS applications can be developed on an in-house basis by the service providers, just as sometimes the development of relevant BCS products can be outsourced to specialists. Therefore, purchasing access from other infrastructure providers becomes more important than ever before in the market for BCS, i.e. stage 2 of the value chain in Figure 21 may be characterised as a bottleneck in the provision of BCS. In order to overcome this hurdle, there is a need in the market to facilitate cooperation between different elements of the value chain, both vertically and horizontally. There are only very few standardized solutions that are applicable to a large number of clients, so customization becomes very important for business success and thus involves a high amount of fixed costs.

Under these conditions, software development and consulting companies may expand their efforts into BCS by acquiring access infrastructure, or they may cooperate with existing providers and team up in order to share costs and combine their strengths. In the same way, providers of infrastructure can enlarge their product portfolio range by entering into cooperation with application providers and/or software providers, or even buying diverse elements of network infrastructure from other operators in order to extend the own scope of geographical reach, with the ultimate goal to offer a solution to the BCS needs of MSC/MNC.

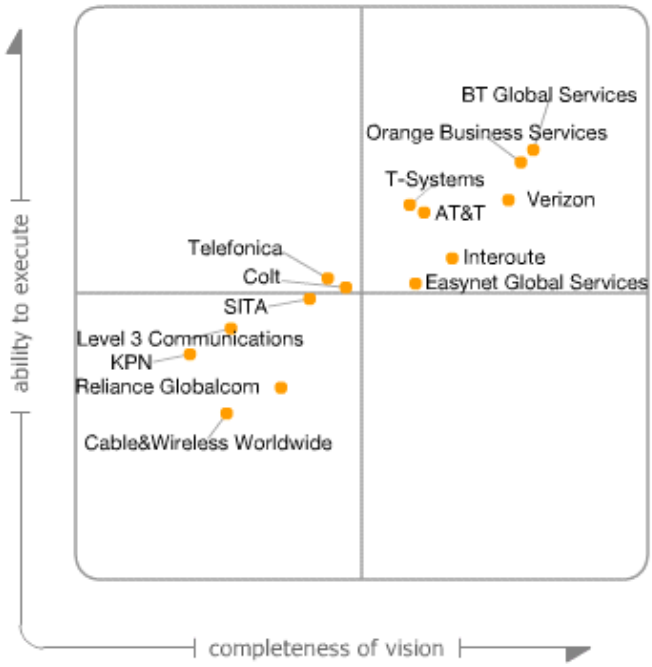
Results: In the BCS market, individual products and services are often not directly demanded and bought by MSC/MNC. Instead, system integrators act as buyers for their corporate clients and leverage buying power. Purchasing access from other infrastructure providers becomes more important than ever before in the market for BCS and thus access is a critical bottleneck in the provision of BCS. A player who owns the most essential bottleneck might be able to leverage its market power to other parts of the value chain and therefore abuse its market power.

2.3.2 Key characteristics of retail providers of business communication services

Business services are typically a “value added” component of the value chain. However, providers of BCS tend to be part of larger vertically integrated companies, which normally include a national incumbent infrastructure provider (e.g. T-Systems). Based on our research we found that this structure may be due to regulatory conditions which favour vertical integration rather than this structure being more effective from an objective perspective. This would imply that companies which are not vertically integrated companies should generally be able to compete in the provision of BCS.

Whilst there is a large number of providers that are identified as addressing BCS, there is no clear distinctive mark and characteristic that defines them all. Rather, there are multi-faceted types of BCS providers operating on the European market. The supplier landscape for BCS includes service providers, systems integrators, and hardware and software vendors. They have emerged from different business backgrounds (incumbents, foreign incumbents, specialized infrastructure operators, regional or local operators) and have different geographical scope and service specialisms. Another possible way to classify relevant BCS operators in Europe, is by assessing them of more “soft” criteria. Gartner has conducted the so-called “Magic Quadrant” research on BCS providers, trying to identify relevant providers and judging them based on a series of criteria (cf. Figure 22).

Figure 22: Gartner Magic Quadrant for Pan-European Network Service Providers (April 2012)



Source: Gartner (2012).

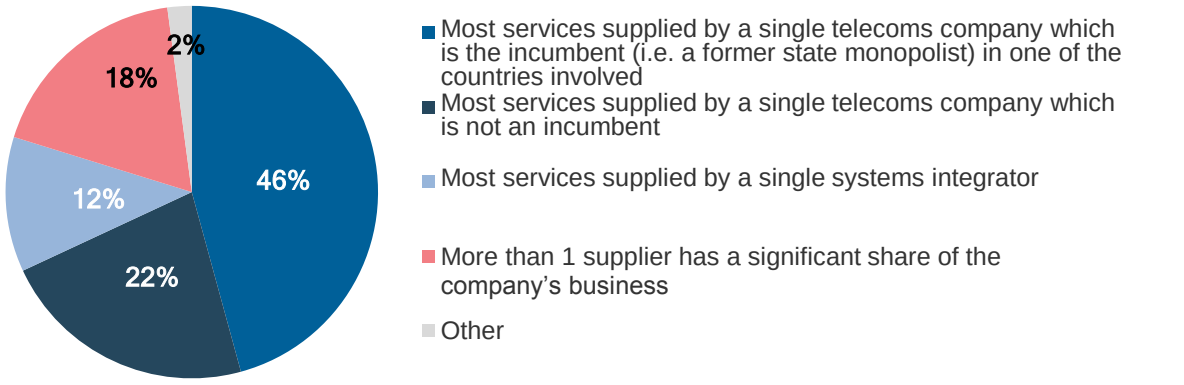
BCS providers included in the Gartner analysis have a defined set of products and services that are offered to MSC/MNC (including managed network services and other value-added services like data centre services). They furthermore have sales and support services to the major European countries (UK, France, Germany, Italy) as well as at least to another European region (e.g. Eastern Europe, Nordic countries, …). They are usually willing to bid for European BCS contracts with a contract sum of at least 500,000 Euros, and need to generate more than 100m Euros in turnover from BCS solutions across the Eurozone. The relevant set of BCS providers is valued according their ability to execute (products, services, responsiveness, execution, operations, …) and their completeness of vision (marketing, sales, business model, commercial strategy, innovation, geographic strategy, …).

All these BCS service providers form an important part of the telecommunication industry. They will invest significant amounts within the next five years in new networks, data centres and product development, in order to build sustainable long term oriented product and service offerings.[36] BCS providers do invest heavily into self-supplying their fibre-optic core and metropolitan area fibre networks and access connections, serving key premises of large businesses and large administrations in dense urban areas, business parks, campuses, etc. This allows each BCS provider to create on-net access to and connectivity between the main locations of large businesses and administrations, often based on self-supply of access lines.[37] However, the reach of their customer base typically extends beyond such locations. This is described in more detail in the sections below.

Our survey on MSC/MNC shows that in most of the cases (46%), the service provider can be described as a single telecoms company which is the incumbent (i.e. a former state monopolist) in the respective country of operation (cf. Figure 23). Service providers which are not incumbents take up nearly 22% of all responses, and systems integrators are sole suppliers to nearly 12% of MSC/MNC respondents. Only 18% of the respondents have two or more suppliers with significant shares in the company's business.

36 See Colt (2012).
37 See e.g. the case in Belgium, FAC (2011), p.9.

Figure 23: Types of telecoms suppliers for MSC/MNC



Source: WIK survey.

Results: There are a large number of BCS service providers present on the market, addressing the needs of MSC/MNC. There are various types of BCS providers operating on the market, including network operators (incumbents, foreign incumbents, specialized infrastructure operators, regional or local operators), service providers, systems integrators, and hardware and software vendors. Emerging out of different business backgrounds they have different geographical scope and product portfolio. The survey on MSC/MNC shows that in most of the cases (46%), the supplier used by MSC/MNC for their communication services can be described as a single telecoms company which is the incumbent (i.e. a former state monopolist) in the respective country of operation. Suppliers which are not incumbents make up nearly 22% of all responses, and systems integrators are sole suppliers to nearly 12% of MSC/MNC respondents. Only 18% of the respondents have two or more suppliers with significant shares in the company's business.

2.3.3 Market volume for business communication services to MSC/MNC and market shares

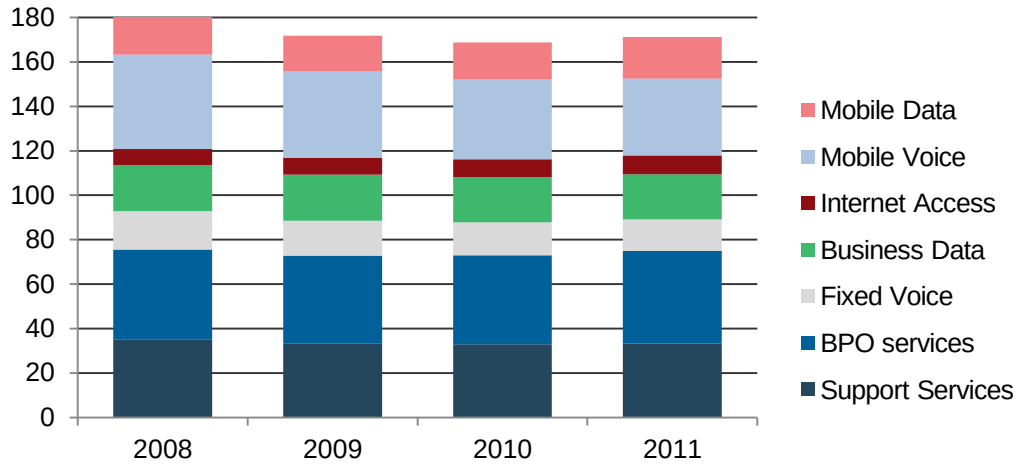
The market segment of business communications services to MSC/MNC is growing faster than the general telecommunications market.[38] As previously stated, the general capabilities needed to satisfy MSC/MNC needs for BCS products have led to a multi-faceted spectrum of various market players in the field of BCS services. Main operators are not necessarily traditional telecommunication network operators, but are to be found among large software and IT service operators like IBM, EDS or Accenture.

38 See Indepen (2008), p. 13.

Worldwide IT spending is expected to total $3,7 trillion (2,8 billion Euro[39]) in 2012, a 2.5% increase from 2011.[40] The worldwide telecom equipment market will likely lead with the strongest growth, spending is forecast to reach $472 billion (357 billion Euro[41]) in 2012, a 6.9 % increase from 2011. This is attributed to the constantly growing mobile devices market as well as a more positive outlook for enterprise network equipment, which is being driven by spending on application acceleration equipment, network security, WLAN and Ethernet switches.[42]

We estimated that the total market for BCS (supplied to all types of business customers) in Europe (mainly consisting of fixed and mobile communication services, support systems for network management, BPO services), reached about 169 bn Euro in 2010. (cf. Figure 24).

Figure 24: Total market volume for BCS supplied to all types of business customers in bn Euro



Source: European Information Technology Observatory (2011), WIK calculations.

39 USD/EUR exchange rate at 0.75 for 31st of December 2012, see www.oanda.com

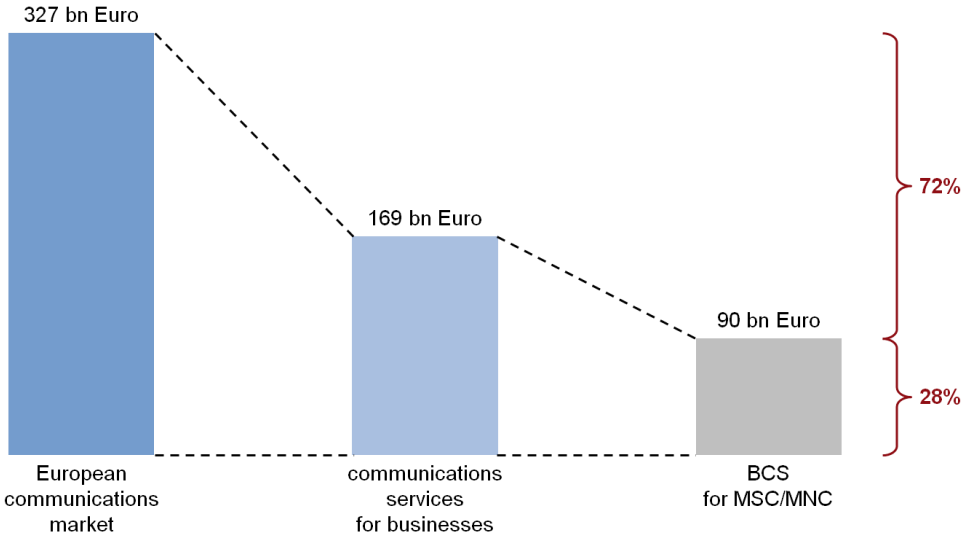
40 See http://www.redfishtech.com/catch_of_the_day/2012/04/gartner-it-spending-forecast-2012/

41 USD/EUR exchange rate at 0.75 for 31st of December 2012, see www.oanda.com

42 See http://www.redfishtech.com/catch_of_the_day/2012/04/gartner-it-spending-forecast-2012/

Assuming that spending of business customers for communication services represent a fixed share of their total turnover one can estimate the market volume for BCS, which is demanded by MSC/MNC. As the share of turnover generated by MSC/MNC equals 53% of the total turnover of all business customers, the resulting market volume for BCS provided to MSC/MNC in Europe in the reference year 2010 yields about 90 bn Euro.[43] Taking the volume of the overall communications market in 2010 which is estimated at around 327bn Euro by the European Commission in its Digital Agenda Scoreboard BCS provided to MSC/MNC account for about 28% of the communications market (cf. Figure 25).

Figure 25: BCS provided to MSC/MNC in relation to the European communications market



Source: Digital Agenda Scoreboard, WIK calculations.

The last few years saw some important consolidation trends within the BCS market. As an example, in the UK market following its acquisition of Energis in 2006, Cable & Wireless acquired Thus Group in October 2008. In March 2010 Cable & Wireless Worldwide demerged from Cable & Wireless plc and in June 2012 was acquired by Vodafone. Separately, Global Crossing acquired Fibrenet at the end of 2006 and merged in October 2011 with Level 3.[44]

Results: Concerning Europe, recent figures suggest that the total market for BCS in Europe (mainly consisting of fixed and mobile communication services, support systems for network management, BPO services) reached about 169 bn Euro in 2010. The estimated market volume for BCS provided to MSC/MNC is determined at roughly 90bn Euro.

43 Digital Agenda scoreboard, http://scoreboard.lod2.eu/index.php
44 See Ofcom (2012), p. 20.

3 Key competition problems for business communication services and their causes

For several reasons, the provision of BCS products and generally the B2B wholesale market has not been at the centre of NRA's attention like the counterparts in the residential market sectors. The market situation was thought to be competitive enough, mainly because NRAs assume that clients in the wholesale business sector would leverage enough negotiation and buying power to spur competitive market forces[45] or believe that the retail value of business communications is sufficient that providers could self-supply lines beyond their existing footprint.

Another reason why the characteristics of multi-national business service communications may not have been fully considered is the national scope of telecoms regulators in Europe and the underlying presumption that markets for communications services are similarly national.

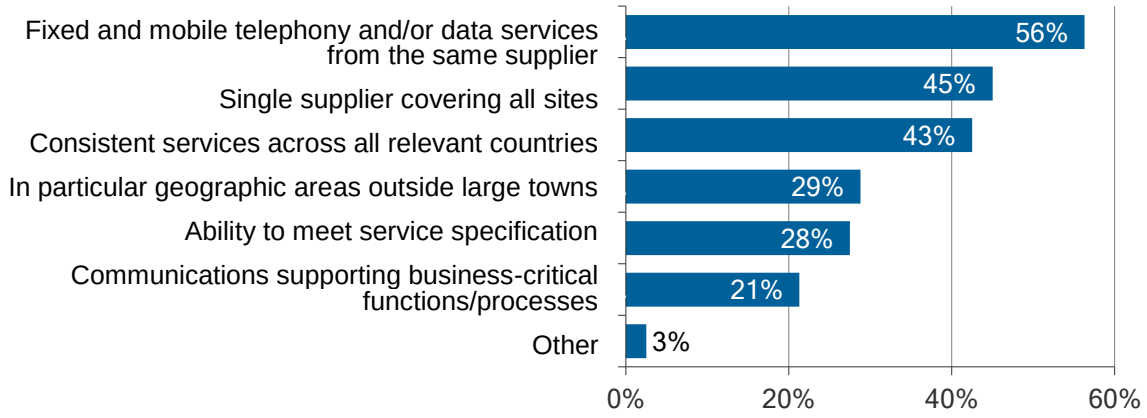
However, the results of our surveys, from both the demand and supply side, suggest that there is a transnational dimension to the provision of communications services to larger businesses and that problems exist in achieving competitive supply, which have not been overcome by any buyer power that large end-customers may be able to exercise.

3.1 Competition problems from an end-user perspective

In the end-user survey, more than 56% of respondents experienced difficulties in securing fixed and mobile telephony and/or data services from the same supplier. More than 45% of respondents encountered difficulties for their suppliers covering all relevant business sites. Consistency of service levels and the ability to meet required service specification levels are also an important source of difficulties of BCS provision.

45 See CMT (2011), p. 4.

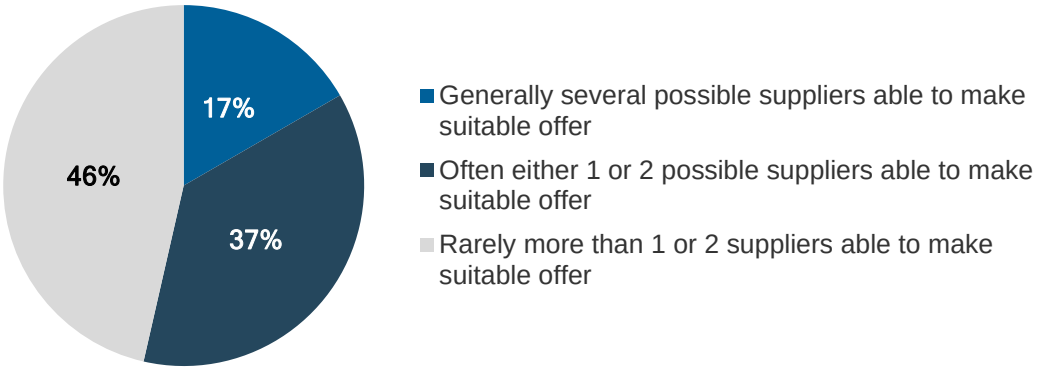
Figure 26: Difficulties in obtaining multiple fit-for-purpose offers



Source: WIK survey.

The difficulties in providing BCS services are also evident regarding the choice of fit-for-purpose offers available to MSC/MNC. Within the survey of MSC/MNC only 17% of the respondents stated that generally several suppliers are able to make suitable offers. In the majority of cases , only 1 or 2 suppliers are usually able to make suitable offers. This is a significant finding, which indicates that the effective choice available in business service markets may often be less than certain residential markets where at least 4 or 5 effective choices may be available.

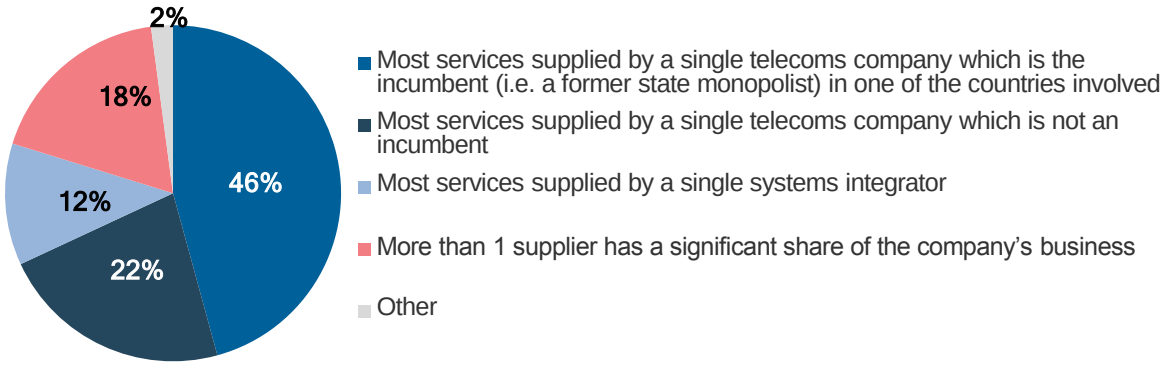
Figure 27: Experiences regarding the number of telecoms suppliers able to make a fit-for-purpose and competitive offer



Source: WIK survey.

The survey on MSC/MNC shows that the most common case (46% of total), is where the service provider can be described as a single telecoms company which is the incumbent (i.e. a former state monopolist) in the respective country of operation. Service providers which are not incumbents take up nearly 22% of all responses, and systems integrators are sole suppliers to nearly 12% of MSC/MNC respondents. Only 18% of the respondents have two or more suppliers with significant shares in the company's business.

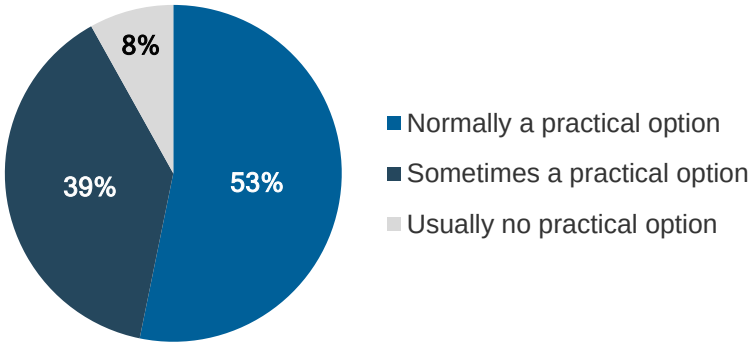
Figure 28: Types of suppliers used by MSC/MNC



Source: WIK survey.

Whilst a majority of respondents expressed a preference for choosing a single supplier, only half of these respondents confirmed that this would normally be a practical option.

Figure 29: Practicability of using a single supplier from the perspective of MSC/MNC

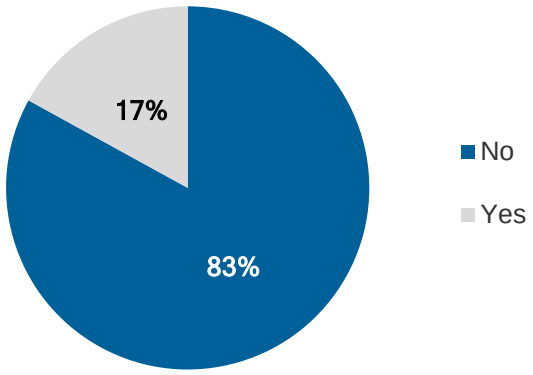


Source: WIK survey.

A further concern, which was revealed in the context of expert interviews, is that there are difficulties in switching associated with the provision of complex business solutions. There are technological aspects (e.g. the need for different DSLAM configurations and generally a broader product spectrum than just the provision of voice/broadband services) that create lock-in effects for MSC/MNC, with the threat of potential quality problems (e.g. when switching from Local Loop Unbundling to bitstream access). Previous investment in BCS might become sunk costs when changing the service provider, thus increasing potential switching costs even further. Switching provider ultimately means that costs associated with number portability have to be incurred. Furthermore, insufficient experience as a system integrator and/or service provider concerning process integration, SLA and customer management services (e.g. helpdesk) can effectively prevent switching providers. The selected technology officers interviewed suggested that there is the tendency to remain with the current BCS provider, unless there is a significant price differential, in order to outweigh the costs associated with switching providers (e.g. WAN outages, SIM card replacement, new phone numbers)

Survey results suggest that respondents do not believe that the current situation will worsen. However, this should not be over-interpreted given that the existing situation is seen by customers as suboptimal.

Figure 30: MSC/MNC having concerns about a less good choice of suppliers for BCS in future



Source: WIK survey.

3.2 Competition problems from a supplier perspective

As shown in the end-user survey, the ability to connect dispersed sites and offer advanced tailored services is important for customers. However, interviews with specialist providers of business communications in the context of this report suggest that, despite the presence of a number of suppliers in the BCS market, they face difficulties in developing seamless and effective offers which meet the requirements of their customers.

BCS providers' primary focus is on backbone networks and value added services, but they need access to the underlying infrastructure to deliver their services, and this constitutes a major portion of their cost-base. Amongst the suppliers interviewed for this report, infrastructure costs amount to around 40-50% of total revenues. Depending on the country, wholesale costs were in some cases even more significant in proportion to revenues.

Due to the need to cover sites which may be widely dispersed in one or several countries and which may change (for example as branches open or are consolidated) BCS providers lack the geographically concentrated scale and customer density that is more typical of residential operators[46]. This means that they are unlikely to be able to rely on self-supply for all but the most major sites. Consequently, they are strongly reliant on wholesale access from other operators. This is confirmed by the expert interviews with operators which suggests that, in countries outside those where they have incumbent operations, a significant proportion of circuits (around 90% on average and closer to 100% for copper-based circuits) are leased from third parties, despite quality and price issues experienced with such circuits.

As noted in the end-user survey, customers demand products with certain "business-level" characteristics, such as throughput, fast repair times or the ability to support multiple VLANs. This implies that, in order to meet their customers' needs, the wholesale access products required by BCS providers must be "business-grade" (both from a technical and service level perspective).

However, interviews with BCS providers suggests that they face problems in acquiring wholesale inputs which meet their needs and those of their customers.

- Relevant business grade access and wholesale products are not available in certain Eurozone regions on satisfactory commercial or regulated terms.
- Demand for traditional "leased lines" (which are regulated in most markets) is gradually declining with increased reliance on Ethernet services and bitstream,

46 The business case for building infrastructure to MDFs to take advantage of Local loop unbundling typically depends on achieving a relatively high market share (e.g. 10%) of an MDF site hosting a reasonable number of lines (e.g. 5,000 lines or more). This case would not normally be met when serving dispersed sites as part of a contract to provide communications to a multi-site corporation.

but the availability of wholesale services based on more modern interfaces is patchy.

- If available, access products may be only available at locations close to the customer requiring a level of infrastructure roll-out that is not economic given the lack of scale economies of BCS providers. [47]
- Incumbent operators, especially when acting as integrated operators, are offering wholesale input resources to BCS providers with product specifications, prices and terms of service that are less advantageous than those offered to their own retail arms. If retail offers by the dominant firm are upgraded, there is often a significant delay before corresponding wholesale offers are available.
- If products and services are available, they are lacking satisfactory QoS levels for business purposes or are not offered with specific technical characteristics that would suit alternative providers (e.g. too much bandwidth bundled with unnecessary additional services).
- There is limited opportunity for alternative providers to "innovate" on service quality, because dominant firms are often reluctant to make available to their wholesale customers, particular service features (e.g. faster repair time) that are not used by their own retail arm. Thus service levels are bounded by the dominant firm rather than subject to competitive pressure.

Business service providers do sometimes rely on wholesale provision from alternative operators (operators other than the incumbent). However, the availability of such competing wholesale offers is often limited. Where wholesale services are available on commercial terms (for example on the basis of unbundling) suppliers are often specialised on the residential segment and therefore do not supply products with business specification or service levels. A further problem is that alternative operators are mostly focused on specific geographic regions, whereas the coverage requirements of a BCS provider may be national (or multi-national). Transaction costs of using different providers in different locations may render this solution unviable and wholesale provision outside major urban centres may not be available from alternative operators at all, leaving the incumbent as the sole potential supplier. From amongst the interviewed firms between 75-80% of the circuits leased from third parties were from a national incumbent.

The perception of availability, quality and price of wholesale inputs in selected countries from the operators interviewed for this report is shown in Table 2 to Table 4 below. This is necessarily subjective and should not be considered as reflecting the actual wholesale obligations applied by NRAs in these countries – which is shown in the later Section 3.3. However, it is indicative of the problems that BCS providers claim to experience when seeking access to regulated wholesale products in order to meet the

47 See FAC (2011), p.9-10.

needs of their retail customers. As Ethernet services and to some extent wholesale broadband access are an evolution from technologies used to deliver traditional interface partial private circuits, there can be seen to be a trend towards less well-specified products over time, from the perspective given by the interviewed business service providers.

Table 2: Partial private circuits: adequacy as perceived by BCS providers

	PPCs effectively available?	Reasonable prices?	Adequate SLAs/KPIs?
Austria	Partially	No	No
Belgium	Yes, but only point to point regulated	Partially - competitors cost-effective but lack Belgacom reach	Not satisfactory
France	Yes	Partially - up to 10Mb	Not satisfactory. QoS major concern
Germany	No	No	No
Ireland	Yes	Yes	No - Active negotiations to improve
Italy	Partially: T&T but not PPC	Partially - from competitors where available	Standard SLA not adequate. Enhanced SL A are expensive
Netherlands	Not currently, but proposed	Partially	Yes
Spain	Yes up to 70km	Yes	Perfect SLA in theory but unfulfilled and KPIs not published
Sweden	Partially - wholesale leased lines (PDH/SDH) available but not true PPCs	Partially	Yes
UK	Yes	Yes, although charges subject to disputes upheld by NRA	Yes

Source: WIK-Consult interviews with multi-national BCS providers.

Table 3: Wholesale Ethernet services: adequacy as perceived by BCS providers

	Ethernet effectively available?	Reasonable prices?	Adequate SLAs/KPIs?
Austria	Partially	No	Yes
Belgium	Yes	Yes	Yes, but very complex
France	Yes but unavailable above 100 Mbits	Relatively expensive and unregulated above 10Mbit/s	Not adequate - QoS major concern
Germany	No	no	no
Ireland	Yes	Yes for Access, excessive prices for core services	No - Active negotiations to improve
Italy	Yes	Partially. High prices for backhaul bandwith	Standard SLA not adequate. Enhanced SL A are expensive
Netherlands	Currently copper only	Partially	Yes
Spain	Yes	Partially	Perfect SLA in theory but unfulfilled and KPIs not published
Sweden	No (only ethernet over SDH)	No	N/A
UK	Yes	Yes, although charges subject to disputes upheld by NRA	Yes

Source: WIK-Consult interviews with multi-national BCS providers.

Table 4: Wholesale broadband access (bitstream): as perceived by BCS providers

	Business-grade bitstream product effectively available?	Reasonable prices?	Adequate SLAs/KPIs
Austria	Partially	No	No
Belgium	Yes	Yes	Yes, but very complex
France	Regulated bistream product only availble on copper (DSL)	High prices	Not adequate - QoS is major concern
Germany	Yes, but not satisfactory	No	No
Ireland	Yes	Yes but margin squeeze concerns against LLU	No - Active negotiations to improve
Italy	Partially - when available from alternative suppliers	Partially when alternative suppliers available. Bitstream ETH offer has still high prices for backhaul bandwith	Standard SLA not adequate. Enhanced SL A are expensive
Netherlands	Yes	Partially	Yes
Spain	Properly defined but implementation is just starting now	Interim prices which are unreasonable	No, but implementation has just started
Sweden	Yes	No	Not satisfactory
UK	Yes, but primary focus on consumer-grade	Regulated only in certain geographic areas	Partially – more suitable for consumer grade

Source: WIK-Consult interviews with multi-national BCS providers.

The cumulative result of these barriers is that BCS providers and alternative infrastructure networks are not always able to provide connectivity to every business site in every EU country, and even where connectivity is possible, it may be available on disadvantageous terms and prices or with patchy quality levels that makes it difficult to offer an effective business-class retail service.

The level of effective competition across the single market in the supply of retail business communications is hard to quantify, but there may be evidence from companies' internal decision-making processes that market failures exist.

In an effectively competitive market where incumbents and cross-border providers of BCS compete with each other for provision of cross-border services to multi-nationals, one should expect operators based in one country to be able to bid effectively in competition with each other regardless of the distribution of sites for the potential customer and of ownership of underlying infrastructure. However, interviews with BCS providers suggest that their decision on whether or not to bid for contracts is influenced by the proportion of sites in different countries. The greater the proportion in countries where infrastructure inputs are not available on reasonable terms, the less likely they are to consider a bid viable.

3.3 Country case studies

There has been no analysis by NRAs or the European Commission to date of the cross-border provision of retail business services, and very few NRAs have examined competition in overall retail provision of business services at a national level (in terms of contract value). However, the limited data available at national level, for example in Germany, Spain and the Netherlands, suggests that the retail market share of incumbents in the provision of business services is higher than would be expected in an effectively competitive market, and often higher than in residential markets. As noted in the *SMP Guidelines*, very large market shares in excess of 50% of the relevant market will themselves usually be indicative of the existence of a dominant position,[48] save in exceptional circumstances. This finding is consistent with the results of the end-user survey and the hypothesis that despite the buyer power of large companies, incumbents have an advantage when competing with other players including foreign competitors for contracts which involve a significant presence in their home territory.

More data on market power exists at the wholesale level. The wholesale markets most relevant to business services under the current European Commission Recommendation on Relevant Markets (2007) are leased lines (market 6 in the EC Recommendation), wholesale broadband access (market 5), and to a lesser extent wholesale physical access (market 4 comprising unbundled loops and duct access).

48 SMP Guidelines, Paragraph 75.

Most regulators have concluded in the context of market 6 that the incumbent maintains an enduring position of market power with market shares typically above 70% at the wholesale level – this market power typically exists both for traditional interface leased lines and successor products such as wholesale Ethernet services. However, a common trend in several countries which have analysed this market is to segment the market definition or remedies so as to exclude higher speed lines from regulation or differentiate the approach taken to such lines. This is for example the case in Germany and Austria, where lines >155Mbit/s are excluded from regulation and Romania, Czech Republic and Hungary, where lines >2Mbit/s are excluded from regulation. Some countries have also geographically segmented the market and excluded certain regions from regulation. In the UK, the segmentation is limited to certain business-dense districts in London, whilst in Austria the segmentation has excluded several major cities from the scope of regulation.

In the wholesale broadband access market (market 5), market power is generally considered to be constrained through the presence of upstream competitors relying on unbundled local loops and/or cable, where present. This has resulted in some regulators, including those in the UK, Portugal and Austria, finding a part or all of this market to be competitive. However, few regulators have analysed the difference between wholesale market shares for the residential and business segments. Where segmented analyses has been carried out, for example in Austria, higher shares were found in the business segment than in the residential segment primarily because cable and mobile services are not generally substitutes for fixed access provision to businesses. Operators using unbundling to offer retail broadband services are also not necessarily present in the business segment or able to constrain the behaviour of the dominant firms in the provision of wholesale services.

Whilst most in-country analyses of business services have focused on fixed markets, there is also evidence from some countries that incumbents also benefit from an advantage in the provision of mobile services to businesses. The incumbent operator is usually the dominant service provider for corporate clients. In Norway, an obligation on the dominant mobile operator to provide MVNO services was specifically justified in part on the basis of its relative strength in business services.

Table 5 and Table 6 below summarise the regulatory approaches taken in markets 5 and 6 as summarised by the European Commission under the article 7 EU Telecoms Framework proceedings. Further detail on certain countries follows.

Table 5: Wholesale broadband access (Market 5)

Country	Bitstream nationwide?	FTTx included?
AT	Yes - separate business market	Excludes FTTH
BE	Yes	Excludes FTTH
CZ	Yes - proposal for segmentation and	Proposal to limit or exclude FTTH

	deregulation on basis of cable + Wifi opposed by Cion	remedies
DE	Yes in principle	Yes
DK	Yes	Yes
ES	Yes for ATM and IP technology, no for Ethernet technology.	Yes, but >30Mbit/s remedies excluded
FR	Yes	Excludes FTTH
HU	Yes	Yes
IE	Yes where rolled out	Yes FTTC (Curb/Cabinet) launch due Feb 2013
IT	Yes, for BS on copper; for BS on fibre, availability depends on TI NGA deployment plan	Yes, but TI RO for bitstream on fibre is still under evaluation by NRA
NL	Yes (business grade – distinct from low quality WBA)	Excludes FTTH
PL	Yes, but remedies geographically segmented (no cost orientation in major cities)	Yes (lack of FTTH cost-orientation challenged by Cion)
PT	Geographically segmented	Existing – no detailed NGA remedies. Proposal – yes, except for excluded areas
RO	No	No
SE	Yes (in theory)	Yes
UK	Markets geographically segmented (no SMP in significant proportion)	Yes

Source: WIK-Consult research.

Table 6: Terminating segments of leased lines (Market 6)

Country	Regulated PPCs available?	Cost orientation?
AT	Geographically segmented with major cities excluded and no regulation >155Mbit/s	
BE	Yes, awaiting BIPT decision following consultation	Yes
CZ	No regulation >2Mbit/s (3 criteria test not met)	No price control
DE	Yes, but no regulation >155Mbit/s	Yes
DK	Yes	Copper <2Mbit/s but not above
ES	Yes (but no lines >70km traditional interfaces or >35km Ethernet interfaces)	Copper traditional, retail minus for Ethernet
FR	Yes	No cost orientation >10Mbit/s
HU	No regulation >2Mbit/s (3 criteria test not met)	No price control
IE	Yes, but no regulation >155Mbit/s for trunk between certain listed cities.	Yes
IT	Terminating segment of leased lines are regulated (but lines to mobile operators	Yes, price cap (less stringent for WES and >155Mbit/s)

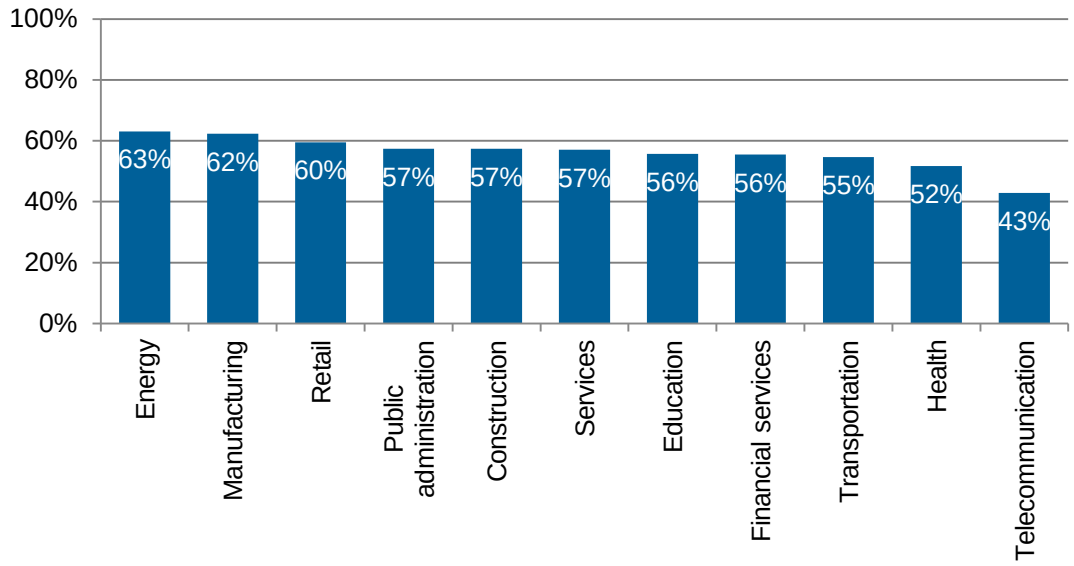
	excluded)	
NL	Yes	Yes
PL	Yes	Yes
PT	Yes	Yes, but not WES (retail minus)
RO	No regulation >2Mbit/s (3 criteria test not met)	No
SE	Yes (proposed up to 30Mbit/s, DWDM unregulated)	Yes (where regulation applied)
UK	Yes (limited geographic segmentation), no remedies >1Gbit/s	Yes

Source: WIK-Consult research.

Germany

The particular market power and the high market shares of incumbent operators are reflected as an example in the German BCS market. Figure 31 shows the market shares for fixed line access of incumbent operator Deutsche Telekom in a series of business sectors for the year 2011:

Figure 31: Market share of Deutsche Telekom



Source: AMA (2012).

It becomes evident that the incumbent operator possesses in nearly every business sector a significant market share of more than 50%. Such powerful market positions in the BCS market clearly reflects the inability of alternative providers to effectively compete for BCS customers.

Concerning regulatory measures, in its analysis of market definitions in 2011, BNetzA defined a technologically neutral market for terminating segments of leased lines (including Ethernet interfaces) and segmented the market according to bandwidth as follows: (i) analogue terminating segments and digital terminating segments with a bandwidth of less than 2Mbit/s; (ii) terminating segments with a bandwidth of 2Mbit/s to and including 10Mbit/s; (iii) terminating segments with a bandwidth of more than 10Mbit/s up to and including 155Mbit/s; (iv) terminating segments with a bandwidth over 155Mbit/s (the latter being termed in the following as "very high bandwidth leased lines"). BNetzA concluded that segments for lines <2Mbit/s and >155Mbit/s were competitive. For the other segments DT was found to have SMP although market shares were not published. Remedies were applied on a technologically neutral basis in 2012 including an ex ante price control and non-discrimination.

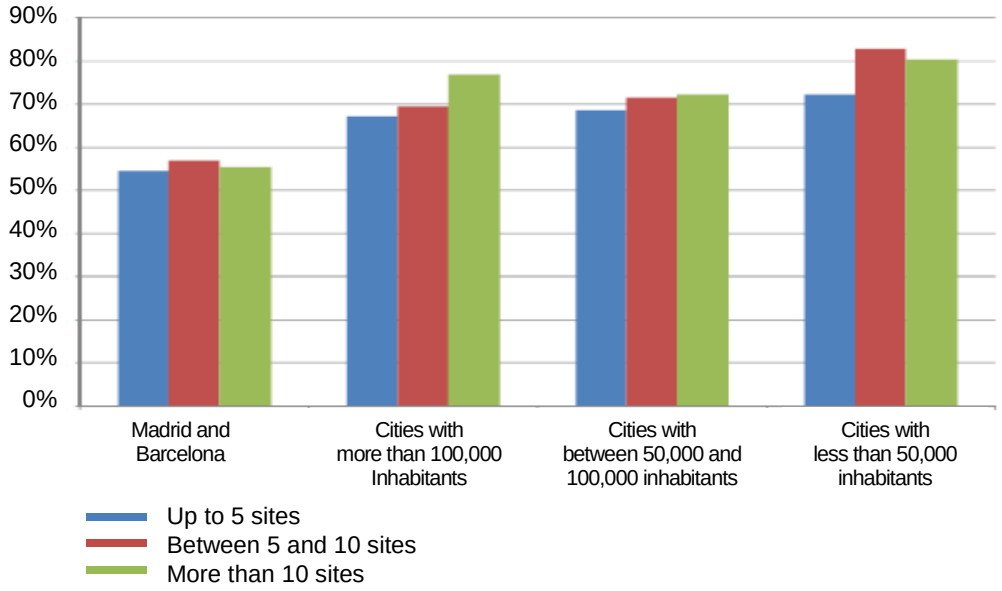
In 2010, BNetzA defined markets for wholesale broadband access which were technologically neutral. Remedies included non-discrimination, accounting separation and an ex post price control.

Spain

The Spanish regulatory authority CMT has identified that, in specific cases, the national incumbent Telefónica has retail market shares of more than 75% and has substantial market shares of above 50% for virtually all business customer types (small and large clients) and market segments.[49] Furthermore, with Spanish multi-site companies, Telefónica enjoys a particular high market share, as these companies tend to orient themselves towards the incumbent when it comes to connect their various business sites in both urban and rural areas of Spain.[50] Finally, some rather aggressive pricing and cross-subsidy strategies have been observed in the market, as the incumbent in many cases is able to counter-offer existing offers from alternative service providers with price levels that competitors cannot match.[51]

49 See CMT (2011), p. 17.
50 See CMT (2011), p. 18-19.
51 See CMT (2011), p. 27-28.

Figure 32: Telefónica's market share depending on number of customer sites and regional distribution



Source: CMT (2011).

In the underlying wholesale markets relevant to business services, SMP was found and remedies applied on Telefónica in market 6 (terminating segments of leased lines) on the basis of market shares of lines and revenues >70%. However traditional interface lines >70km and Ethernet >35km are excluded from the scope of remedies. Ethernet lines are not cost-oriented, but priced on the basis of retail minus. In market 5 (wholesale broadband access), whilst the market was defined in a technologically neutral manner, remedies were restricted to lines below 30Mbit/s.

Netherlands

In a consultation released September 2012, Dutch regulator OPTA concludes that for a retail market, which they define in broad terms as "business network services", incumbent KPN maintains high market shares which have consistently been above 50% and were estimated at between 55-60% in the period from Q4 2010 through to Q4 2011. OPTA estimates that in the absence of regulation, OPTA's retail market shares in the business segment would have been 75%-80%[52] rising to between 80-85% in 2015. Even in the presence of regulation, OPTA expects KPN's retail market share to remain at 45-50% in 2015.

52 Cf. consultations by OPTA regarding FTTO (http://www.opta.nl/nl/actueel/alle-publicaties/publicatie/?id=3650) and WBA/leased lines (http://www.opta.nl/nl/actueel/alle-publicaties/publicatie/?id=3651)

OPTA assesses that the ability of competitors to deliver services based on their own infrastructure without making use of access from KPN or third parties is strongly dependent on the number of sites for which coverage is required. For example, in the table below, an operator covering 50% of the territory would only be able to rely on its own infrastructure entirely in 3% of cases where the customer had 5 sites.

Table 7: Share of own infrastructure of competitors against network coverage and number of customer sites

Number customer sites					
Network coverage	2	5	8	10	50
10%	1%	0%	0%	0%	0%
20%	4%	0%	0%	0%	0%
30%	9%	0%	0%	0%	0%
40%	16%	1%	0%	0%	0%
50%	25%	3%	0%	0%	0%
60%	36%	8%	2%	1%	0%
70%	49%	17%	6%	3%	0%
80%	64%	33%	17%	11%	0%
90%	81%	59%	43%	35%	1%
100%	100%	100%	100%	100%	100%

Source: OPTA Consultation on business services September 2012.

The approach to regulating business service markets is currently under review in the Netherlands, following objections by the European Commission under the article 7 Framework Directive procedure to a previous proposal by OPTA largely to exclude fibre-based services for business from regulation.

However, an interesting aspect of the Dutch proposals, which was not challenged by the European Commission or national courts and is thus likely to be maintained, is OPTA's approach to market definition.

OPTA has concluded that unbundled fibre lines for businesses constitute a separate market from those used for the provision of broadband and multi-play to consumers. This separate market is referred to as "Fibre to the Office". In the recent consultation, OPTA proposed to find KPN to have SMP in this market segment and mandate cost-orientation, non-discrimination obligation to enable competition with high quality WBA and leased lines, price squeeze test and other obligations. However, the details of these measures would be subject to further consultation.

Concerning terminating segments of leased lines and wholesale broadband access used for business, OPTA concludes that these should be considered as forming part of a single business access wholesale market rather than being split across two markets (markets 5 and 6) as is normally the case in other countries. This market would encompass traditional interface leased lines, wholesale Ethernet services and high quality broadband. In its latest proposals, OPTA finds KPN to have SMP in this market and proposes access remedies including cost-orientation, non-discrimination and KPIs regardless of the underlying material for the connection (copper or fibre).

Austria

Austria is unusual in its regulatory treatment of business services in that leased lines have been subject to substantial deregulation on a geographic basis and on the basis of speed, whist regulation was explicitly maintained on wholesale broadband access for business, despite the deregulation of the consumer segment.

In 2009, Austrian NRA RTR concluded that the wholesale broadband access market (market 5) should be segmented between residential and business customers, whilst maintaining the geographic scope of the market as nationwide. Based on the widespread take-up of mobile broadband and on the results of a consumer survey which suggested that consumers might switch to mobile broadband in some circumstances, RTR concluded that fixed and mobile residential broadband were substitutes and that Telecom Austria did not have SMP in this segment. In the business segment, RTR concluded that mobile and cable were not substitutes. TA was consequently found to have a high market share and regulation was maintained in this segment. However, lines based on FTTH were excluded from the scope of the market on the basis that widespread roll-out was unlikely and therefore that substitution with copper lines was unlikely to occur.

In RTR's market ordinance of 2008, the market for terminating segments of leased lines was segmented between lines above and below 155Mbit/s. RTR concluded that lines >155Mbit/s did not pass the first of the 3 criteria test based on the existence of competing networks from alternative operators. For lines >2Mbit/s and below 155Mbit/s RTR further segmented the market excluding 12 municipalities which were deemed to be competitive. The designation of the municipalities was based on population of 15000+ inhabitants, 3 operators, and Telekom Austria market share below 50%.

The combination of these measures has resulted in terminating segments of leased lines being effectively deregulated across a large portion of Austria.

Italy

Italian authority AGCOM has identified for the business connectivity market regarding wholesale broadband access that incumbent Telecom Italia possesses nearly all relevant market shares, both in terms of volumes and revenues (often reaching even

more than 90% of market revenues). The operator has the only nationwide infrastructure and enjoys substantial economies of scale and scope, along with being the only operator on the Italian market to be vertically integrated.[53] In a specific case, the incumbent was reluctant to provide sufficient technological documentation and information to alternative communications providers, while all were participating and bidding on important BCS tenders.[54] This discriminatory behaviour has led to a series of obligatory commitment by the incumbent regarding the non-discriminatory provision of technical characteristics of Telecom Italia's services and of predefined end-to-end assurance services.[55]

UK

Whilst there is limited data about the retail market for communications services to larger enterprises, in its consultation on the Business Connectivity markets, British regulatory authority Ofcom[56] finds that BT holds 68% of the retail market for traditional interface lines <8Mbit/s, with higher market shares for speeds <2Mbit/s. At the wholesale level, BT's market share across a range of circuits is around 60% or higher with the exception of certain areas within London which have been found effectively competitive. Ofcom has also identified several issues that affect a company's ability to switch existing suppliers for communication services.[57] Companies are often locked into long-term contracts with duration of up to 5 years, and some of the companies included in the Ofcom survey have currently installed only single products from single suppliers or stand-alone solutions for their business communications needs, thus limiting the possibility to change to other product solutions.

France

In 2010, ARCEP completed a review of the market for terminating segments of leased lines (market 6). It concluded that the market should not be delineated by speed and found that France Telecom has SMP across the whole territory. However, in defining remedies, cost-orientation was imposed only on lines <10Mbit/s, whilst lines above this speed were subject to an obligation not to charge excessive prices.

Concerning the market for wholesale broadband access (market 5), ARCEP reviewed the market in 2011 and found that FT had SMP. They identified a business segment within the overall market and recognised in this context that offers based on LLU were not present across the geographic territory and such offers were often limited in functionality. They imposed cost-orientation on the basis of high wholesale and retail market shares in this segment. However, the calculation of cost-oriented tariffs included

53 See "AGCOM Provvedimento 6 luglio 2012", p. 4-5.
54 E.g., Italian utilities company ENI, see "AGCOM Provvedimento 6 luglio 2012", p. 13.
55 See "AGCOM Provvedimento 6 luglio 2012", p. 41.
56 Ofcom refers to Business connectivity services as "those services which carry voice and/or data traffic between business sites to enable communication within an organisation", see Ofcom, Business Connectivity Market Review 2012, p. 11.
57 Ofcom, Business Connectivity Market Review 2012, p.7.

an additional “no eviction” margin on the grounds that there was a need for economic space between charges for LLU and bitstream. The evidence supporting this charging mechanism was questioned by the European Commission during the article 7 proceedings on this case.

Norway

In Norway, NPT has designated national incumbent Telenor as possessing SMP in the market for terminating segments of leased lines, mainly due to high market share of more than 70% in terms of revenues and in terms of volumes/number of lines.[58] Control of infrastructure difficult to duplicate, the existence of sunk costs, of economies of scale and scope and finally of countervailing buyer power led to this assessment, which ultimately led to a series of obligations for Telenor, namely price and accounting controls and non-discriminatory access.[59] In addition, Norwegian regulator NPT believes the wholesale market for access and origination on mobile networks is characterized by high entry barriers in the form of very costly rollout, high percentage of sunk costs and substantial economies of scale for already established operators. Incumbent operator Telenor had a market share in mobile at the wholesale level of about 57% based on traffic volume.[60]

The Norwegian regulator NPT has stated that access terms that the established network operators give to competitors who do not have, or to a limited extent have their own infrastructure, will be crucial for developments in the specific analysis case regarding wholesale mobile networks. To ensure that the market has the necessary dynamic that eventually will create sustainable competition, NPT strongly argues in favour of ex-ante regulation and believes that there is a need for extensive and detailed regulation, as well as the opportunity for rapid intervention and especially predictability.[61]

The regulator believes that ownership and control of underlying input factors (infrastructure for leased lines, location sites etc.) by an incumbent give that company advantages in the relevant wholesale market which other vertically integrated providers do not have, and which thereby support the presumption of significant market power.[62] In such cases, one possible regulation instrument is a general access obligation imposed on the incumbent. The company must meet all reasonable requests for access and call origination on its networks. In the specific Norwegian case, requests were made concerning national roaming, co-location and access for mobile virtual network operators (MVNOs).[63]

58 See http://www.npt.no/ikbViewer/Content/137480/Kommentarer%20fra%20ESA.pdf, p.3.
59 See http://www.npt.no/ikbViewer/Content/137480/Kommentarer%20fra%20ESA.pdf, p.3 and p.5.
60 See NPT, Analysis of the market for access and call origination on public mobile telephone networks, p.4-5.
61 See NPT “Analysis of the market for access and call origination on public mobile telephone networks”, p. 75
62 See NPT “Analysis of the market for access and call origination on public mobile telephone networks”, p. 84
63 See NPT „Decision on designating undertakings with significant market power and imposing specific obligations in the market for access and call origination on public mobile telephone networks”, p.4.

Ireland

Regarding the sources of competition problems in BCS, ComReg, the Irish regulator,has stated that significant investment in infrastructure (such as Local Loop Unbundling or other Wholesale Physical Network Infrastructure Access ("WPNIA") inputs) will influence the competitive dynamic in the downstream market for wholesale broadband access and thus for BCS.[64] The regulator regards the role played by investment in Local Loop Unbundling as a key element in securing competition. National incumbent Eircom has more than 90% of market share in the market for wholesale broadband access and has been designated with SMP.[65] Barriers to entry and expansion persist, including sunk costs, economies of scale, scope and density, control of infrastructure not easily replicated, and vertical integration.[66] Similar to developments in Norway, the Irish regulator assessed the access to terminating segments of wholesale leased lines and its implications for the provision of BCS. Comreg stated that " the market for the terminating segments of wholesale leased lines is not tending towards competition"[67], mainly due to very high and enduring market shares (of more than 80%), very limited competition often only consisting in reselling Eircom's products, high sunk costs and economies of scale and very limited countervailing buying power. Thus, the regulator designated the national incumbent as having SMP in that particular market.[68]

Results: The limited data available on business services from market analyses carried out by NRAs suggests that retail market shares (where known) are higher in business services than would be expected in a competitive market and are often higher than for residential services. This is suggestive that national incumbents may enjoy an advantage compared with foreign rivals in serving businesses with a significant footprint in their territory. At the wholesale level, market shares of incumbents in markets specific to business services (terminating segments of leased lines and wholesale broadband access for business) have been consistently high. However, the market definitions and remedies applied by regulators vary widely suggesting that the cross-border dimension of business services has not been taken into account. Particular differences relate to speed caps on leased lines, wholesale Ethernet services and in one case wholesale broadband access. Another key finding is that very few regulators have separately analysed whether a separate business segment may exist for wholesale broadband access and whether competitive dynamics may differ in this segment due to the absence of constraints from cable and LLU.

64 See ComReg, Market Review: Wholesale Broadband Access, 2011, p. 6.
65 See ComReg, Market Review: Wholesale Broadband Access, 2011, p. 10 and p.63.
66 See ComReg, Market Review: Wholesale Broadband Access, 2011, p. 9.
67 ComReg, Market Analysis: Leased Lines Markets Response to Consultation and Consultation on Draft Decision, 2008, p.4.
68 See ComReg, Market Analysis: Leased Lines Markets Response to Consultation and Consultation on Draft Decision, 2008, p.3-4.

4 Identifying the relevant markets for BCS

The case studies discussed above show that regulators already conduct market analyses which are relevant to BCS. However, the approaches taken vary widely, and it is not clear that they are ideally suited to the evolving demands of BCS customers and their suppliers. The analyses are also intrinsically national in scope. In this context, it may be helpful to assess from a more greenfield perspective, what the relevant markets for BCS could be and how this may contrast with the approach taken today.

4.1 Retail market

A key finding from the end-user survey is that a significant portion of demand for communications from larger businesses is for multi-site or multi-national provision and customers typically demand "tailored" or value added services, preferably from a supplier that can integrate a number of different communications services. The specialised nature of services offered to multi-site businesses means that switching provider is costly and it is unlikely that users would find it convenient to switch to multiple suppliers for different sites or countries. The product and geographic dimension differs significantly from the demand characteristics for single site businesses and consumers which are localised and more focused on core services such as broadband Internet.

On the supply side, a number of operators have developed specialisms to cater for the complex needs of multi-site and multi-national customers, and it is recognised, for example in the Gartner report, that the business models of these companies are distinct from those of companies primarily targeting the residential segment. It is increasingly unlikely – particularly as trends in the business market are becoming more rather than less specialised – that residential suppliers would readily be able to develop the capabilities to enter the business segment.

This raises the question as to whether one can define a retail market for business communications that is distinct from the retail markets that regulators are already examining for broadband Internet and voice services. Further work is needed to determine the characteristics of such a market, but it could for example be characterised by:

- Bespoke bundles of services
- contracts above a given value,
- multi-site or multi-national provision, and
- requirements for "business grade" service – i.e. with product specifications and SLAs that exceed those typically supplied for residential customers.

From a demand perspective, the geographic scope of this market could be at least nationwide or multi-national. The scope of retail supply is also typically multi-national as providers seek to match the needs of their customers.

Furthermore, if barriers to competition were removed which hamper the provision of cross-border services, the characteristics of this market would likely become more – rather than less – multi-national. Given the opportunity, BCS suppliers present in particular regions might be able to expand their offerings and address a wider and more geographically dispersed customer base more effectively than today.

4.2 Wholesale market

At the wholesale level, BCS providers rely on a range of inputs including primarily partial private circuits, wholesale Ethernet services and business grade wholesale broadband access. There is some overlap in the capabilities of these services, and it is clear that over time demand will evolve from traditional PPC to WES and from lower speed bitstream, to higher speed bitstream potentially provided via NGA. It is conceivable therefore that the boundaries of wholesale product markets (especially markets 5 and 6) as currently defined in the Commission's Recommendation on Relevant Markets may become blurred.

However, it is relevant to note that market analyses in many countries today do not properly reflect the apparent demand from BCS providers for consistent "business-grade" (technological specification and SLA) wholesale inputs across a range of speeds and including services based on the most modern interfaces. Whether these are arranged across one or more wholesale markets is less relevant than the need for NRAs to ensure that this demand is properly identified and the competitive conditions are analysed in the context of market analyses.

This could be in the context of a single wholesale market for business access as defined in the Netherlands combining market 6 (terminating segments of leased lines) and business aspects of market 5 or a market for terminating segments of lines which includes wholesale Ethernet services and additionally a business segment within the existing wholesale broadband access market, as assessed in Austria.

Another important dimension that should be considered is the geographic scope of the wholesale market or markets relevant to BSC.

Residential markets are often characterised by national operators specialised in marketing and developing services for their local constituency. Indeed, with the exception of Vodafone, there are few alternative broadband providers in residential markets demanding wholesale access which seek to expand their business cross-border.

Conversely, suppliers of BCS are actively engaged in expanding their business cross-border, and because many of their clients are multi-national, they seek wholesale inputs which are inherently consistent in order to meet their customers' demands for seamless connectivity with SLAs spanning the entire business. In this context, the demand for wholesale BSC products could be considered to include or reflect a cross-border dimension. The competitive conditions of supply are also similar across Europe in that NRAs, almost without exception, have concluded that enduring bottlenecks exist in wholesale access for terminating segments (and similar conclusions would also most likely be reached on bitstream if business provision was separately considered). Perhaps the only exceptions would be in specific districts where there is significant business density such as urban centres or business parks.

In an ideal world, in order to limit transaction costs and deliver coherent outcomes in terms of service quality, BCS providers might prefer to negotiate with a single supplier of wholesale inputs covering as many countries as possible. Indeed, where incumbent operators have operations in several countries, it might be preferable for BCS providers to negotiate a single arrangement covering all those countries. However, in practice, regardless of their ownership, incumbents in Europe tend to conclude contracts on a national basis. This makes conditions of supply, perhaps unnecessarily or even artificially, fragmented.

Results: Defining BCS in the context of a market analysis process is not entirely straightforward. However, based on the results of the end-user survey, one could perhaps characterise such services as the provision of high value, non-standard (i.e. bespoke) communications services at business-grade specifications to multi-site and multi-national corporations. Evidence from the end-user survey as well as from examining the business models of suppliers of BCS suggests that the retail market for BCS could be characterised as pan-European or at least as involving a significant cross-border dimension. At the wholesale level, the picture becomes more complex. BCS providers demand similar services in different countries. Prime amongst these are partial private circuits, wholesale Ethernet services and business-grade wholesale broadband access. These could be included within a single product market with a continuum of speeds and technologies or in separate markets. Whilst wholesale demand could be viewed as pan-European, operational realities mean that it is supplied by different incumbents in different countries.

5 Benefits of appropriate wholesale regulation

5.1 Benefits of effective ex ante regulation

It is clear from the above analysis that the only aspect of the provision of BCS which does not have a trans-national dimension is the supply of essential wholesale inputs. The fragmented nature of the wholesale market is essentially a legacy of national boundaries within the EU, which resulted in different ownership of incumbent telecoms operators. Even where this market has consolidated, for example through cross-border acquisitions of smaller incumbents by others, contracts for wholesale services have continued to be offered on a national basis. This could be the result of operational inefficiencies, but it is more likely that it may result from the application of the regulatory framework in Europe which results in different remedies in different countries, and perhaps from strategic choices by incumbents to limit the impact of cross-border competition.

If a consistent approach was taken to wholesale remedies for business communications so that similar and effective wholesale products were available to meet the demand for such products by BCS providers across Europe, the currently fragmented retail market for business communications could become truly pan-European enabling all suppliers of business communications services, irrespective of their ownership of access infrastructure to enter other markets and offer cross-border services – competing on price, quality and differentiation rather than relying more on their ability to leverage bottleneck assets in certain regions.

The benefits of targeted, but effective, ex ante regulation in the residential market are well understood. Increased competition from unbundling of the local loop, alongside competition from cable where present, has had a tangible impact on the provision of multi-play services to consumers as well as on price and service levels. For example, IPTV and higher speeds through enhanced DSL equipment such as ADSL 2+ were offered as an innovation by entrants in countries such as France and Italy.

Consistent and effective ex ante regulation in the business segment could deliver at least as significant if not more significant outcomes for three reasons.

Firstly, the reliance on regulated access to achieve competitive outcomes is arguably greater in the business segment than residential because cable and mobile provide less of a constraint and because multi-site provision will inevitably involve access to areas where only one network is present.

Secondly, because BCS provision is primarily focused on developing “value added” and tailored services, the potential for service differentiation and innovation offered by a genuinely open single market for BCS could be greater than in residential markets. These benefits are less quantifiable, but equally if not more important than the benefits that would also accrue from greater price competition and from efficiency gains (cf. Section 5.2).

Thirdly, suboptimal regulation in one country, particularly if it is an economically significant country, can have a knock-on effect on competition in the provision of cross-border business communications services. The impact of imperfections in regulation on consumer markets, whilst damaging to consumer welfare in the country concerned, is more localised.

In addition, it should be noted that improving the efficiency of organisations through increasing choice and innovation in communications and ICT will not only impact private sector companies but also the public sector. This could directly support efforts by national Governments to streamline public sector operations and reduce budget deficits.

Results: Achieving consistent and effective wholesale remedies for business communications across Europe could enable the emergence of a truly single market for business communications at the retail level in which providers with or without the benefit of infrastructure ownership in particular countries could expand cross-border and compete with each other on an equivalent basis. Attention to regulatory requirements in the business segment could have an even greater effect than those in residential markets because competition in business services is focused on "value added" and innovation, because business markets do not benefit from competitive constraints from cable and mobile, and also because – unlike consumer markets - inadequacies in one country have a knock-on effect in the provision of retail BCS more widely.

5.2 Economic benefits

Beside the more qualitative effects of effective ex ante regulation for wholesale services in the market for business communication services (cf. Section 5.1) there will be even quantitative and measurable impacts. On the one hand, this regulation will generate direct benefits for MSC/MNC. On the other hand, effective regulation would lead to positive effects for the European economy as a whole.

The quantification of economic benefits deriving from improved BCS is based on a bottom-up estimate of potential effects.[69] The modelling approach covers three distinctive types of effects caused by the appropriate regulation:

1. Welfare gains through lower prices for BCS provided to MSC/MNC.
2. Efficiency gains through improvement of internal ICT related processes.
3. Efficiency gains through reorganisation of business processes and value chains.

For each of these effects the modelling approach with its specific assumptions and the results are described in the following sections. Before, some basic characteristics and

69 The approach follows the methodology developed by Indepen (2008), pp. 25

assumptions of the model that have been applied for all three elements above are explained.

The effects caused by an appropriate regulation of the market for BCS will not become effective from one moment to the next. Rather, it will take a longer period until the impact has developed to its full extent. In order not to overestimate the effects the model takes into account this dynamic by assuming a period of 10 years over which the effects are steadily increasing until they achieve their full impact. This means that in the first year only 10% of the complete effect flow into the calculation, in the second year 20%, and so on until in the 10th year the effect achieves its full impact.

The model calculates the effects as a net present value (NPV) over several years. As described before the total development of the effects is assumed to take 10 years. The observation period for calculating the NPV is therefore even longer. This will allow to take into account the impacts to their full extent over a certain time. In order to become not too long-term oriented we limited the complete observation period to 15 years. In addition, we will show the results of the model for interim steps after 5 years and after 10 years.

Calculating an NPV requires assumptions about the discount rate over the relevant period. Due to the economic downturn in the recent past these rate was declining significantly. Following the European Central Bank the discount rate is presently at 1.5%.[70] Unfortunately, there are no projections how the discount rate will develop in the future as this will strongly depend on the economic development as a whole and on political decisions. Our model will therefore cover two scenarios with regard to the discount rate. Scenario 1 (“base case”) keeps the current discount rate of 1.5% unchanged and prolongs this value to the future. Scenario 2 (“economic recovery”) stands for an improvement of the economic situation and uses a higher discount rate of 3%.

5.2.1 Welfare gains through lower prices for BCS provided to MSC/MNC

An effective ex ante regulation for wholesale services in the market for BCS would strengthen the market position of BCS providers. By adequately addressing bottlenecks in the value chain of BCS (cf. Section 2.3.1) such a regulation would lead to a significant improvement of essential wholesale inputs. In particular, BCS providers would be able to get wholesale access services at arbitrary locations, in the relevant quality and at reasonable conditions. Thus, BCS providers can meet the needs of MSC/MNC regarding BCS in a proper and competitive way.

Based on our experience, it is plausible that the effective ex ante regulation will not only enhance the availability of relevant wholesale access services, rather it will also lead to lower prices for wholesale access services required for the provision of BCS and it will

70 Cf. http://www.ecb.int/stats/monetary/rates/html/index.en.html.

reduce transaction costs for BCS providers. Together with an increasing competition among the BCS providers this will lead to lower prices for BCS provided to MSC/MNC. Previous research[71] as well as our interviews with BCS providers suggest that optimal conditions on the wholesale level for BCS could lead to a reduction in the end-user prices for BCS of at least 15%.

Following the concept of price elasticity, a modification of end-user prices for a good implicates a change of the demanded quantities for this good. This means, in case of a negative price elasticity the price decrease for BCS results in an increase of demand in the BCS market. In other words, due to lower prices MSC/MNC would get more services within a fix budget for BCS. This welfare gain can be calculated based on the market volume for BCS (in terms of revenues in Euro) provided to MSC/MNC according to the following formula:

$$welfare\ gain = -\frac{1}{2} \cdot \eta \cdot x^2 \cdot market\ volume\ BCS$$

whereas η = price elasticity for BCS
x = relative decrease of end-user prices for BCS

In order to quantify this welfare gain some further assumptions have to be made:

- The price elasticity for BCS (η) is set to -0.7 based on a review of price elasticities for comparable services.[72] This means that a price decrease of 1% will lead to an increase of demand in the magnitude of 0.7%.
- The relative decrease of end-user prices for BCS (x) amounts to 15% (cf. above).
- The market volume for BCS provided to MSC/MNC is based on the estimation in Section 2.3.3. The respective volume is 90 bn Euro in the starting year.

Based on this approach the welfare gains are calculated for each year of the observation period of 15 years. This calculation takes into account that the benefits will develop uniformly until their full magnitude over 10 years (cf. above). The resulting welfare gains are shown in Table 8 for both discount rate scenarios.

71 See Indepen (2008), p. 29.
72 See in particular Indepen (2008), Ovum (2006), and Aldebert et al. (2004).

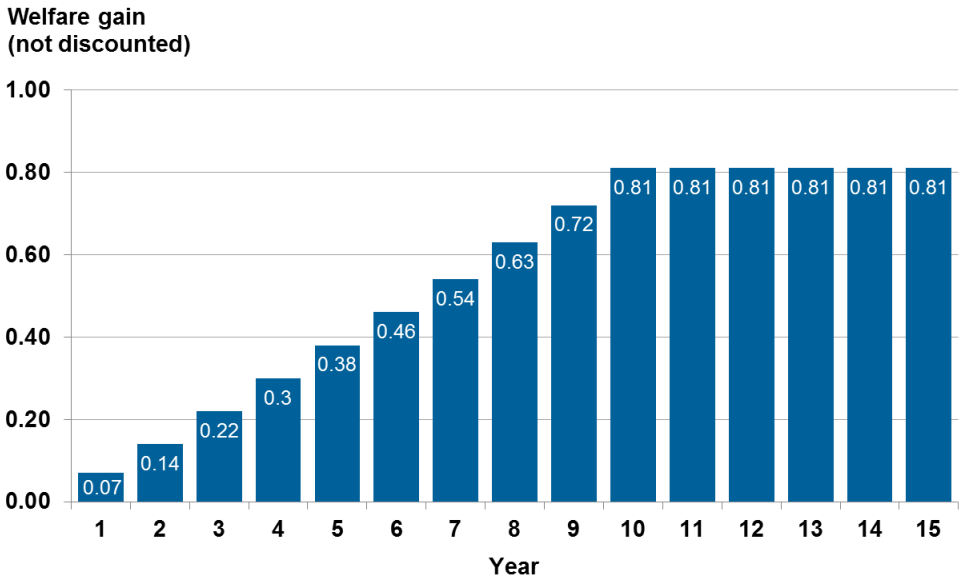
Table 8: Welfare gains (in bn Euro) per year through lower prices for BCS provided to MSC/MNC

Year	Welfare gain (not discounted)	Discounted welfare gain (scenario 1 – base case)	Discounted welfare gain (scenario 2 – economic recovery)
1	0.07	0.07	0.07
2	0.14	0.14	0.14
3	0.22	0.21	0.20
4	0.30	0.28	0.26
5	0.38	0.35	0.32
6	0.46	0.42	0.38
7	0.54	0.49	0.44
8	0.63	0.56	0.50
9	0.72	0.63	0.55
10	0.81	0.70	0.60
11	0.81	0.69	0.59
12	0.81	0.68	0.57
13	0.81	0.67	0.55
14	0.81	0.66	0.54
15	0.81	0.65	0.52

Source: WIK Consult.

The not discounted welfare gains through lower prices for BCS provided to MSC/MNC increase over the development phase up to a value of 0.81 bn Euro per year (cf. Figure 33).

Figure 33: Not discounted welfare gains through lower prices (in bn Euro)



Source: WIK Consult.

In scenario 1 (base case) the welfare gains through lower prices add to NPVs of 1.05 bn Euro over the first five years, 3.84 bn Euro over the first 10 years and 7.18 bn Euro over the complete observationperiod of 15 years, respectively. The respective figures for scenario 2 (economic recovery) are 0.99 bn Euro (NPV_5), 3.47 bn Euro (NPV_{10}) and 6.23 bn Euro (NPV_{15}).

5.2.2 Efficiency gains through improvement of internal ICT related processes

A second impact of the effective ex ante regulation for wholesale services in the market for BCS refers to simplification and improvement of internal processes related to the ICT management in MSC/MNC. As shown by our survey using a single provider for BCS is strongly associated with the opportunity of cost savings (cf. Section 2.2.4). The (pan-European) availability of adequate wholesale access services will allow BCS providers to serve as a single provider for MSC/MNC. In turn, the MNC/MSC are able to reduce their transaction costs associated with handling of BCS operators as well as with network and application management due to less fragmented ICT applications and architectures. The existence of efficiency gains through improvement of internal ICT related processes is also backed up by our in-depth interviews with MSC/MNC.

The calculation of the efficiency gains through improvement of internal ICT related processes is based on the following formula:

$$efficiency\ gain_{ICT} = r \cdot ICT\ cost$$

whereas $r = \text{improvement factor for cost reduction}$

In order to quantify this efficiency gain some further assumptions have to be made:

- Surveys have shown that MSC/MNCs can reduce their ICT costs by 10% to 20% if they can optimise their internal ICT related processes by using a single supplier for BCS.[73] Our experiences from the in-depth interviews with MSC/MNC suggest a similar range. In order to be not too optimistic we assume the value of 10% for the improvement factor for cost reduction (r).
- The ICT cost of MSC/MNC are deduced from their overall turnover which is estimated in Section 2.1.2. The respective volume is 11.500 bn Euro in the starting year. We assume that MSC/MNC spend a certain share of their turnover on ICT services per year. Based on our research taking into account EITO statistics[74] we set this share to 2,3%. This share remains stable over the observation period in order to produce a conservative estimation of the benefits.

73 See Indepen (2008), p.30.
74 See European Information Technology Observatory (2011).

Based on this approach the efficiency gains through improvement of internal ICT related processes are calculated for each year of the observation period of 15 years. This calculation takes into account that the benefits will develop uniformly until their full magnitude over 10 years (cf. above). The resulting efficiency gains are shown in Table 9 for both discount rate scenarios.

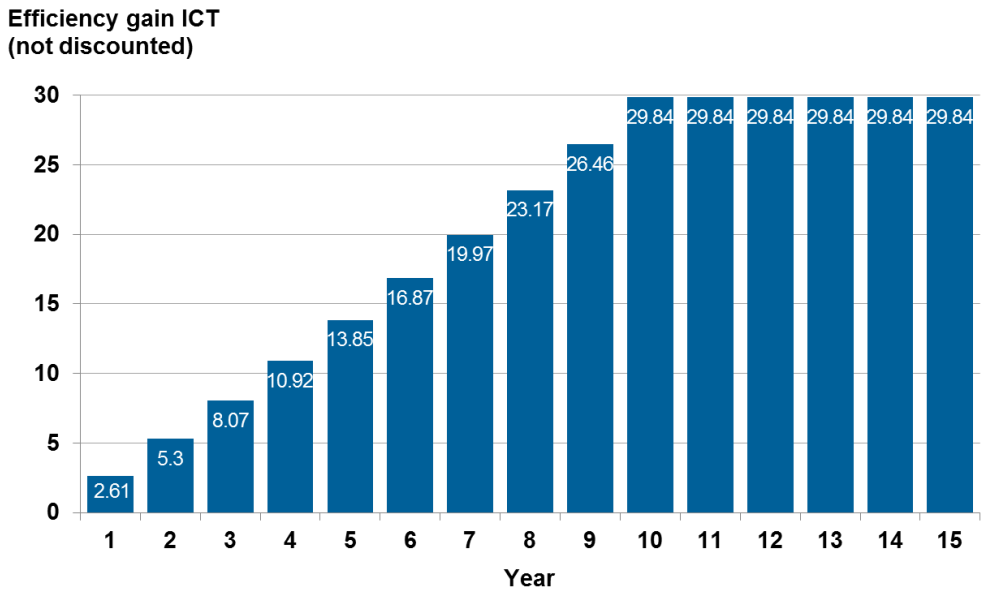
Table 9: Efficiency gains per year through improvement of internal ICT related processes

Year	Efficiency gain ICT (not discounted)	Discounted efficiency gain ICT (scenario 1 – base case)	Discounted efficiency gain ICT (scenario 2 – economic recovery)
1	2.61	2.57	2.53
2	5.30	5.14	4.99
3	8.07	7.71	7.38
4	10.92	10.28	9.70
5	13.85	12.86	11.95
6	16.87	15.43	14.13
7	19.97	18.00	16.24
8	23.17	20.57	18.29
9	26.46	23.14	20.28
10	29.84	25.71	22.20
11	29.84	25.33	21.56
12	29.84	24.96	20.93
13	29.84	24.59	20.32
14	29.84	24.22	19.73
15	29.84	23.87	19.15

Source: WIK Consult.

The not discounted efficiency gains through improved ICT processes increase over the development phase up to a value of 29.84 bn Euro per year (cf. Figure 34).

Figure 34: Not discounted efficiency gains through improved ICT processes (in bn Euro)



Source: WIK Consult.

In scenario 1 (base case) the efficiency gains through improvement of internal ICT related processes add to NPVs of 38.57 bn Euro over the first five years, 141.41 bn Euro over the first 10 years and 264.37 bn Euro over the complete observation period of 15 years, respectively. The respective figures for scenario 2 (economic recovery) are 36.55 bn Euro (NPV_5), 127.69 bn Euro (NPV_{10}) and 229.37 bn Euro (NPV_{15}).

5.2.3 Productivity gains through reorganisation of business processes and value chains

An effective ex ante regulation for wholesale services in the market for BCS will not only lead to lower end-user prices for BCS and to decreasing ICT-related transaction cost on the level of MSC/MNC. As our interviews with operators suggest, BCS will be available to MSC/MNC across Europe as a whole and moreover, enhanced and innovative BCS are likely to emerge.

MSC/MNC can benefit from this development in several ways as previous research[75] and our in-depth interviews with MSC/MNC show. On the one hand, they are able to streamline their business processes by an integrated use of BCS in all (or at least most) parts of their companies. On the other hand, interaction with other entities upstream or downstream of the value chain (e.g. supplier of inputs, distributor of products) may be

75 See Indepen (2008), p.18.

consistently supported by BCS. In any case, internal and external collaboration will be lightened, accelerated and improved. Overall, this will lead to an increased productivity in MSC/MNC and even in the other entities involved in their value chains.

Moreover, innovative or modified BCS may evolve new business models which would not have been possible before. In our modeling approach for the estimation of productivity gains we will focus on improvement and reorganisation of business processes and value chains. Further benefits arising from new business opportunities are not quantified within this model.

The calculation of the productivity gains through reorganisation of business processes and value chains is based on the following formula:

$$productivity\ gain_{reorganisation} = p \cdot v \cdot GDP$$

whereas p = improvement factor for productivity
v = share of GDP attributed to value creation of MSC/MNC

In order to quantify this productivity gain some further assumptions have to be made:

- Prior research related to MSC/MNC[76] has lead to overall productivity gains of on average 2.2%. Contrasting this figure with experiences from own analysis[77] and with information from market experts[78] we conclude that this value tends to overestimate the effects on productivity. Therefore, the improvement factor for productivity (p) is assumed at 1,5% which approximates the anticipated effects in a more realistic way.
- The value added of MSC/MNC is estimated in Section 2.1.2. The respective volume is 3.300 bn Euro in the starting year. This leads to a share (v) of 26% with respect to the GDP which can be attributed to the value creation of MSC/MNC.
- Data for GDP in EU27 as a whole is based on Eurostat statistics and forecasts for the years up to 2014.[79] The GDP for the remaining years of the observation period is based on a report of the European Commission, DG Economic and Financial Affairs[80] and the CAGR of 1.5% for the GDP in this report.

76 See Indepen (2008), p. 28.
77 E.g. Micus/WIK-Consult: The Impact of Broadband on Growth and Productivity, Study for the European Commission, 2008.
78 In particular in the course of the "Study in support of a Future Internet Public-Private Partnership" on behalf of the European Commission in which WIK-Consult was involved in the project consortium (2010 – 2012).
79 http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tec00001&language=en, retrieved on 15 November 2012.
80 European Commission: The 2012 Ageing Report: Underlying Assumptions and Projection Methodologies. Joint Report prepared by the European Commission (DG ECFIN) and the Economic Policy Committee (AWG), April 2011.

Based on this approach the productivity gains through reorganisation of business processes and value chains are calculated for each year of the observation period of 15 years. This calculation takes into account that the benefits will develop uniformly until their full magnitude over 10 years (cf. above). The resulting productivity gains are shown in Table 10 for both discount rate scenarios.

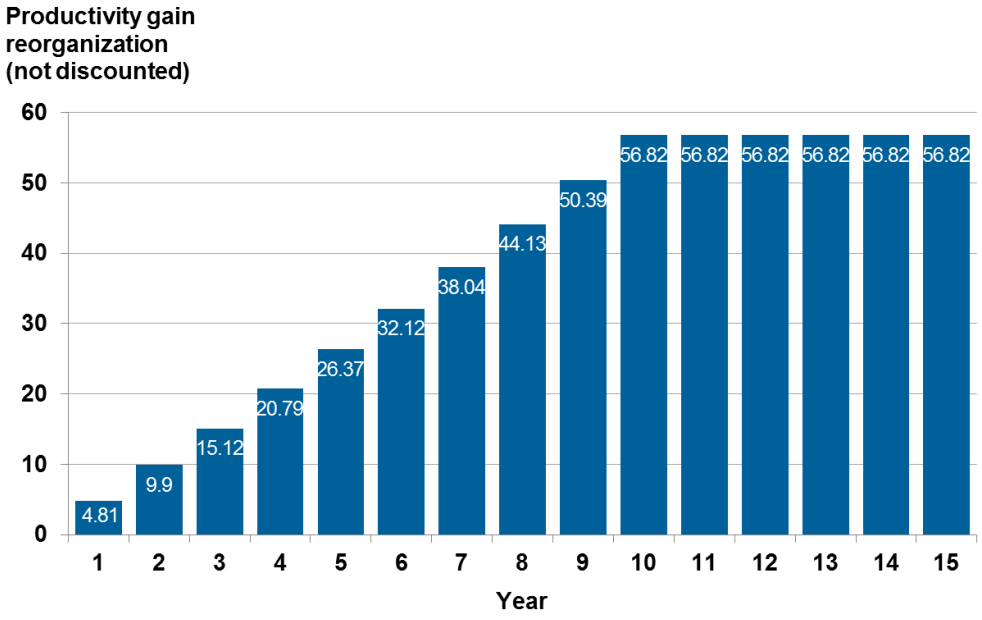
Table 10: Productivity gains per year through reorganisation of business processes and value chains

Year	Productivity gain reorganization (not discounted)	Discounted productivity gain reorganisation (scenario 1 – base case)	Discounted productivity gain reorganisation (scenario 2 – economic recovery)
1	4.81	4.74	4.67
2	9.90	9.61	9.34
3	15.12	14.46	13.84
4	20.79	19.59	18.47
5	26.37	24.48	22.75
6	32.12	29.38	26.90
7	38.04	34.27	30.93
8	44.13	39.17	34.83
9	50.39	44.07	38.62
10	56.82	48.96	42.28
11	56.82	48.24	41.05
12	56.82	47.53	39.86
13	56.82	46.82	38.69
14	56.82	46.13	37.57
15	56.82	45.45	36.47

Source: WIK Consult.

The not discounted productivity gains through reorganisation of business processes increase over the development phase up to a value of 56.82 bn Euro per year (cf. Figure 35).

Figure 35: Not discounted productivity gains through reorganisation of business processes (in bn Euro)



Source: WIK Consult.

In scenario 1 (base case) the productivity gains through reorganisation of business processes and value chains add to NPVs of 72.88 bn Euro over the first five years, 268.73 bn Euro over the first 10 years and 502.90 bn Euro over the complete observation period of 15 years, respectively. The respective figures for scenario 2 (economic recovery) are 69.06 bn Euro (NPV_5), 242.62 bn Euro (NPV_{10}) and 436.26 bn Euro (NPV_{15}).

5.2.4 Total economic benefits

The total economic benefits of an effective ex ante regulation for wholesale services in the market for BCS are calculated as the sum of welfare gains through lower prices for BCS provided to MSC/MNC, efficiency gains through improvement of internal ICT related processes, and productivity gains through reorganisation of business processes and value chains. Based on the results of the previous sections this leads to the figures shown in Table 11 for both discount rate scenarios.

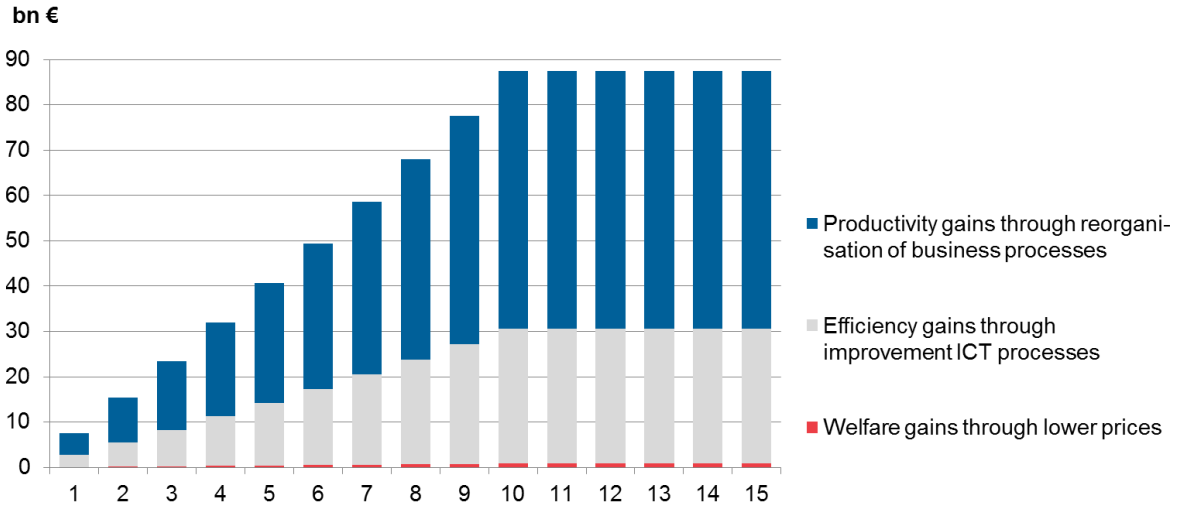
Table 11: Total economic benefits (in bn Euro) per year

Year	Not discounted	Discounted (scenario 1 – base case)	Discounted (scenario 2 – economic recovery)
1	7.49	7.38	7.27
2	15.35	14.90	14.46
3	23.41	22.38	21.42
4	32.00	30.15	28.43
5	40.60	37.69	35.02
6	49.45	45.22	41.41
7	58.56	52.76	47.61
8	67.92	60.30	53.62
9	77.56	67.83	59.44
10	87.47	75.37	65.09
11	87.47	74.26	63.19
12	87.47	73.16	61.35
13	87.47	72.08	59.56
14	87.47	71.01	57.83
15	87.47	69.96	56.14

Source: WIK Consult.

The not discounted total benefits increase over the development phase up to a value of 87.47 bn Euro per year (cf. Figure 36). 65% of these benefits derive from productivity gains through reorganisation of business processes, another 34% are caused by efficiency gains through improved ICT processes and the remaining 1% comes from welfare gains through lower prices for BCS.

Figure 36: Total economic benefits (not discounted) differentiated by source



Source: WIK Consult.

In scenario 1 (base case) the total benefits add to NPVs of 112.49 bn Euro over the first five years, 413.98 bn Euro over the first 10 years and 774.45 bn Euro over the complete observation period of 15 years, respectively (cf. Table 12). The respective figures for scenario 2 (economic recovery) are 69.06 bn Euro (NPV_5), 242.62 bn Euro (NPV_{10}) and 436.26 bn Euro (NPV_{15}).

Table 12: Total economic benefits (NPV in bn Euro)

Period	NPV (scenario 1 – base case)	NPV (scenario 2 – economic recovery)
Up to year 5	112.49	106.60
Up to year 10	413.98	373.78
Up to year 15	774.45	671.86

Source: WIK Consult.

Contrasting the total benefits with the GDP in EU27 shows that over time the magnitude of the total benefits equals up to 0.6% of the GDP (cf. Table 13).

Table 13: Total economic benefits (not discounted) in relation to the GDP in EU27

Year	GDP in EU27 (bn Euro)	Benefits (bn Euro)	Benefits (relative to GDP)
1	12,278	7.49	0.06%
2	12,649	15.35	0.12%
3	12,875	23.41	0.18%
4	13,274	32.00	0.24%
5	13,473	40.60	0.30%
6	13,675	49.45	0.36%
7	13,880	58.56	0.42%
8	14,089	67.92	0.48%
9	14,300	77.56	0.54%
10	14,514	87.47	0.60%
11	14,732	87.47	0.59%
12	14,953	87.47	0.58%
13	15,177	87.47	0.58%
14	15,405	87.47	0.57%
15	15,636	87.47	0.56%

Source: WIK Consult.

6 Options to achieve a harmonised market for BCS

The analysis in this report has shown that one could characterise the retail market for bespoke business service communications as cross-border, or at least as comprising a significant cross-border element. Supply at the retail level could also be characterised as cross-border, due to the presence of specialised providers aiming to meet the needs of customers which prefer a "single supplier". BCS providers demand consistent wholesale products in order to deliver seamless services to retail customers cross-border. However, the cross-border aspect of the market breaks down when considering operational realities of wholesale supply. Due to the history of European telecoms markets, wholesale supply is typically offered under separate contracts by national incumbents on a national basis, even when controlled by the same group.

In this situation, it is clearly desirable to ensure that wholesale inputs are treated consistently in different markets in order to enable the creation of a competitive single market for BCS at the retail level. It is worth in this context examining the options and instruments available from a legal perspective.

Option 1: Commission Decision on cross-border market

The current EU Telecommunications framework makes provision in article 15(4) Framework Directive for the European Commission to adopt a Decision identifying trans-national markets which may be susceptible to ex ante regulation. In accordance with article 16 (5) Framework Directive, relevant NRAs should jointly analyse such markets and decide on the imposition of any regulatory obligations.

Ostensibly the retail market for BCS could be characterised as cross-border. However, it is not this market which is susceptible to ex ante regulation, because – in the presence of effective wholesale regulation of essential inputs – this market should present few barriers to entry and would tend towards effective competition.

The underlying wholesale inputs are likely to meet the conditions requiring ex ante regulation as enduring SMP has been found in most countries across Europe for terminating segments of leased lines, and arguably enduring SMP would also be found if a business segment for wholesale broadband access were identified in which LLU, cable and mobile did not provide a competitive constraint. However, the wholesale markets are not cross-border due to differences in the supplier depending on national boundaries.

One might argue that this outcome is a consequence of ownership and regulatory fragmentation and that in a pure greenfield scenario, the wholesale market might also have evolved as a cross-border market. Theoretically, where SMP operators in different countries are part of the same Group, a cross-border reference offer might have emerged if NRAs had not mandated reference offers and calculated charges within national boundaries. Competitive conditions at the wholesale level are also similar in

many countries – particularly those with developed infrastructure. In this greenfield scenario, perhaps business wholesale markets could have extended beyond national boundaries. However, given the complexities and inherent theoretical nature of viewing the market in this way, it is not clear that this would be a practical approach in ensuring the harmonised treatment of bottlenecks in business access across the EU.

It seems consequently, that a Commission Decision identifying a cross-border wholesale market for business communications, is not a realistic option based on the current EU communication framework.

This could be viewed as a flaw in the EU Telecoms Framework, since an instrument designed to enable the competitive provision of retail cross-border services, proves not to be effective in this case. One conclusion that could be drawn is the need, at the next appropriate opportunity, to review the relevant provisions in the EU Framework Directive for electronic communications to ensure that a Decision could be issued by the European Commission identifying relevant wholesale markets in cases where the associated retail market is cross-border and consistent wholesale regulation is needed to achieve effective competition at the retail level.

Option 2: Recommendation on relevant markets with complementary guidance on remedies

In October 2012, the European Commission opened a consultation on the review of the Recommendation on Relevant markets. This raises the question as to whether the treatment of business services within the Recommendation could be revised in order to reflect the bespoke nature of these services and the cross-border dimension.

In the current 2007 version of the Recommendation[81], there is only limited discussion of retail provision of business communications and where reference is made, it seems to relate to the purchase of individual lines.

The primary discussion of business services concerns dedicated capacity or "leased lines"[82]. This is characterised as a service that "may be required by end-users to construct networks or link locations or be required by undertakings that in turn provide services to end-users." The Commission working document concludes that "it is therefore possible to define retail and wholesale markets that are broadly parallel."

Similarly, the Commission working document discusses non-residential retail fixed access (line rental)[83], but concludes that this is similar in character and competitive

81 Staff working document for Recommendation on Relevant Markets 2007 http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/sec2007_1483_final.pdf
82 Section 4.2.3 Dedicated connections and capacity (leased lines)
83 Section 4.2.1 Public telephone services provided at fixed locations

conditions to services provided for residential users. By implication therefore, the presumption is that the service is demanded on a line by line basis.

Concerning retail broadband access[84], the retail market associated with wholesale markets for local physical access (unbundling) and wholesale broadband access, the underlying presumption seems to be that broadband services are primarily demanded by consumers. Business use of such lines is not discussed in detail and the residential character of the analysis is confirmed by the presumption in the staff working document that retail demand for broadband might also be satisfied by cable or wireless technologies.

The existing Relevant Market guidelines conflict with the findings of this report in a number of ways. A key conclusion from the end-user survey included in this report is that demand from larger businesses is not typically based on individual sites and is characterised more in terms of services (e.g. Internet, mobile services) than on specific types of connection (such as leased lines). Moreover, interviews with BCS providers suggest that there is wholesale demand for bitstream (wholesale broadband access within the scope of market 5) on a nationwide, and even Europe-wide basis.

On the basis of the findings from this report, it could be appropriate to revise the Recommendation on Relevant markets and associated guidelines in the following ways:

At the retail level, the Commission could issue guidelines identifying a cross-border market consisting in the provision of bespoke communications services to multi-site businesses. Such services would include bundles of fixed voice and data. It should be further considered whether mobile should also be included with the scope of this retail market.

At the wholesale level, the Commission could include one or more national markets for business connectivity, which should:

- be technologically neutral insofaras technologies are capable of delivering business-grade capabilities (This would tend towards market definitions which encompass the most modern technologies including FTTC/VDSL and FTTH and interfaces such as Ethernet, whilst excluding wireless technologies that may not be able to guarantee the same service quality);
- not be delineated as regards speed;
- encompass both symmetric and asymmetric bandwidth;
- enable the provision of business services without restriction including multiple VLANs.

84 Section 4.2.2 Access to data and related services at fixed locations

Given the transnational dimension of the retail market and the existence of cross-border demand for business wholesale services, it is important that guidance should also be provided on the geographic scope of the wholesale market/s for business access. Following the logic of the European Commission 2010 NGA Recommendation paragraph 22[85] adapted to businesses, it could be suggested that business access markets should be defined on a nationwide basis, unless there are specific business-dense regions in which there are several FTTx infrastructures in place and business-grade wholesale products are supplied to meet the demands of BCS providers.

In order to ensure harmonised outcomes at the wholesale level, changes to the Recommendation on Relevant Markets would need to be complemented through guidance on remedies.

This could be achieved through a request to BEREC to issue a common position on the harmonised application of remedies applicable to business communications. If this proved not to be feasible or agreement amongst NRAs could not be reached, alternatively the European Commission could consider issuing a Recommendation on harmonised remedies applicable for business services.

This option would be unlikely to result in the adoption of relevant instruments until 2015, unless a Recommendation on business remedies was developed in tandem with the European Commission relevant market recommendation, in which case a Recommendation might be achieved in 2014. Following its adoption, implementation would be dependent on the market review cycle in individual member states and the outcomes would require close monitoring under the article 7 process in order to achieve effective harmonisation.

Option 3: Regulation on business communications

There is a clear preference, for reasons of predictability, to apply regulation to the telecommunications sector through the EU Framework wherever possible. However, in certain circumstances, regulation has been applied outside the Framework. The two main examples are the Regulation for Unbundling of the Local Loop[86] and more recently Regulations on mobile roaming. Whilst in the case of roaming, a Regulation was used because it proved difficult to address the problem under the EU electronic communications Framework, in the case of Local loop unbundling, the concern was over timing, and the need to swiftly address specific bottlenecks preventing the emergence of competition in broadband in advance of a review of the telecoms framework (completed in 2002) which allowed those issues to be addressed more systematically by NRAs. Arguably, the issues raised in the context of business services,

85 NGA Recommendation para 22
http://eur-lex.europa.eu/LexUriServ/%20LexUriServ.do?uri=OJ:L:2010:251:0035:0048:EN:PDF

86 December 2000
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:336:0004:0004:EN:PDF

are similar to those which were raised in the context of the local loop unbundling Regulation – with an added cross-border dimension. In particular, one could conclude, as with local loop unbundling, that there are bottlenecks in the access network which are largely consistent across the EU, but which cannot be coherently addressed within the current EU telecoms framework. In this case, it is due to legal uncertainties surrounding the provisions which enable the Commission to issue Decisions on cross-border markets and ensure the harmonised application of wholesale remedies. In the case of unbundling, there was uncertainty surrounding provisions on access in the Open Network Provision (ONP) Directives in place at that time.

Should completion of the single market for business communications be considered a priority from a political perspective therefore, a case could be made to introduce a Regulation mandating the consistent treatment of remedies for business services.

Pursuing this approach would require political agreement by member states and the European Parliament. However, it would result in a binding instrument which would be directly applicable in all member states, and if – like previous EU Regulations – a first reading could be reached in the European Council and Parliament, the instrument could be in place by 2014.

In this scenario, just as with the Roaming Regulation, it is probable that guidance on the application of remedies would be needed, for example from regulators' group BEREC, to ensure that they were specified in sufficient detail.

7 Conclusions and recommendations

Conclusions

MSC/MNC make up a significant proportion of the EU economy contributing to more than 40% of jobs and 50% value added. They demand sophisticated, tailored services which deliver seamless connectivity across multiple sites nationally and often cross-border. Communications are integral to these businesses and essential in enabling them to operate productively.

Many regulators have assumed that such businesses have sufficient negotiating power to protect their own interests when buying electronic communications services. However, a survey of business users reveals that their needs are not being effectively met. The findings from this survey – in particular concerning end-users' demands for a single supplier delivering comprehensive solutions including cross-border solutions, and the lack of effective choice for end-users, are similar to those from the survey carried out by the European Regulators' Group (ERG) in 2009[87].

A significant number of telecoms providers have developed expertise in serving the large corporate segment. Ostensibly, this market should be characterised by intense competition. However, in reality the market is more fragmented than may be at first apparent with different companies having different strengths geographically and in the types of customers they address. This may explain why there is a perception amongst end-users that when tendering for services, there are often not more than one or two providers that can meet customer requirements.

A sample of four multi-national and two nationwide business service providers interviewed for this study note that they are impeded in their ability to meet customer needs and compete on a level playing field across Europe by the absence of effective and consistent (business grade) wholesale inputs.

Regulated access is essential for these business service providers because – as they are specialised in "value added" services across a wide geographic area – they lack the economies of scale to build their own infrastructure to all sites. Bottlenecks in one or more countries can then affect their ability to effectively serve multi-national customers.

Evidence from the end-user survey and user and supplier interviews suggests that at the retail level, business communications has a cross-border dimension both on the demand and supply side. Demand for business grade wholesale inputs from the interviewed providers is also cross-border in nature. However, the fragmented nature of ownership of bottleneck assets and of approaches by national regulators to mandating access for business services, has impeded the emergence of an effectively competitive single market for business communications at the retail level.

87 Cf. ERG (2009).

The benefits of achieving a single market for business communications could be significant, including greater innovation and competition boosting the internal processes of multi-site and multi-national businesses. In quantitative terms, we estimate benefits of 112.49 bn Euro over the first five years, 413.98 bn Euro over the first 10 years and 774.45 bn Euro over the complete observation period of 15 years, respectively However, achieving these benefits would require the consistent regulation of business grade wholesale access products used for business service provision across the EU.

Recommendations

There has been a tendency for policy-makers to focus attention and set targets relating to residential communications services. In view of the economic significance of electronic communications provided to businesses, policy-makers at EU and national level should revise this approach and also acknowledge the importance of achieving competitive markets for communications in the business segment. A key requirement in delivering this objective would be the consistent treatment of business grade wholesale access for business service provision.

The current EU Framework for electronic communications makes provision in article 15(4) Framework Directive for the European Commission to adopt a Decision identifying trans-national markets which may be susceptible to ex ante regulation. In accordance with article 16 (5) Framework Directive, relevant NRAs should jointly analyse such markets and decide on the imposition of any regulatory obligations. In principle, such a provision would seem to be relevant to the problem identified in this case. However, whilst the retail market for bespoke communications to MSC/MNC may be characterised as cross-border, this market is not susceptible to ex ante regulation in itself, because regulation of upstream wholesale markets would be likely to render the market effectively competitive.

Meanwhile, due to the fragmented nature of provision of wholesale inputs for business services which results in different suppliers in different countries (although the competitive conditions are similar), it appears that the wholesale markets which would be susceptible to ex ante regulation, could not be characterised as cross-border. As a result article 15(4)FWD appears not be applicable based on the current EU communications Framework.

This could be seen as a flaw in the current EU communications Framework. During the next revision of the Framework, one option could be for the European Commission to make proposals to amend the provisions such that they could issue a Decision requiring a co-ordinated approach amongst NRAs to market definitions and remedies in any case where the relevant retail market is cross-border and consistent application of wholesale remedies are needed to achieve effective competition. This would seem to be the ideal long-term solution in addressing national fragmentation which impacts the delivery of pan-European services.

In the meantime, the European Commission could consider interim solutions. These could include:

- Relevant Market Recommendation: In accompanying guidance to the review of the relevant market recommendation, the European Commission could usefully describe the retail market for bespoke business communications to larger businesses and identify this as a cross-border market. It could also acknowledge that demand for business service inputs may be cross-border and highlight in this context, that there may be merit in identifying a common approach to defining the relevant wholesale markets and defining remedies. This common approach to SMP remedies would need to be elaborated either through a Commission Recommendation or guidance from BEREC. It is important to note that the harmonisation of SMP-related remedies for business access (including partial private circuits, WBA and wholesale Ethernet services) would be in addition to and separate from any ongoing efforts to achieve technical standardisation of products used for business purposes.
- Regulation on business communications: Whilst regulation should normally be applied in accordance with market analysis principles under the EU Framework for electronic communications, there are precedents in which a directly applicable Regulation has been used in order to address perceived short term gaps in the Framework (e.g. the Local Loop Unbundling Regulation) or longer term market failures which are not easily addressed through ex ante regulation or competition law (the Roaming Regulation). Business services could be characterised as a short term problem affecting the ability to reach a single market, and requiring resolution ahead of the review of the telecommunications framework. However, this solution would require political consensus with the European Council and Parliament.

Addressing these issues via Commission Recommendations could achieve some degree of harmonisation, but it is unlikely that the effect would be visible much before 2016 given that following the adoption of a Recommendation, individual NRAs would need to consider and take account of these provisions in national market analyses. Addressing the issue through an EU Regulation would require political support from both Member States and the European Parliament, but could achieve a binding outcome within a shorter timeframe if a first reading agreement could be reached.

Defining a common approach

Benchmarking of regulatory conditions shows that there are widespread variations today in the treatment of wholesale access products used for business services. Meanwhile, the end-user survey and interviews in this report together with the analysis on economic impact appear to suggest that a more harmonised market definition and remedies for business access would be beneficial in meeting the demands of large corporations.

One key aspect would be to identify a common definition for the retail market for high-end business communications (i.e. distinct from single site SMEs) which could be applicable across Europe and potentially beyond. The scope of such a market would need to be further elaborated but could involve:

- bespoke bundles of fixed voice and data,
- multi-site/multi-national provision and/or contracts of a minimum value, and
- business-grade specification for example through premium SLAs and technical requirements.

It could be further considered whether mobile forms part of this market in light of user preferences and behaviour.

Concerning wholesale markets, the following principles could be considered, based on best practice amongst EU NRAs – that the wholesale market or markets for business access should

- be technologically neutral, but sensitive to the need for technologies to meet business-grade service specifications (This would suggest markets which encompass the most modern technologies including FTTC/VDSL,FTTH and interfaces such as Ethernet, but in general exclude technologies such as wireless and cable which do not provide the requisite service levels or resilience demanded by business users when compared with xDSL/FTTx technologies);
- not be delineated as regards speed, since speeds are often a function of rapidly evolving technologies rather than implying significant differences in underlying costs;
- encompass both symmetric and asymmetric bandwidth, because end-user and supplier demand exists for both – often in combination for different sites;
- enable the provision of business services without restriction including multiple VLANs in order to foster retail innovation.

Given the transnational dimension of the retail market and the existence of cross-border demand for business wholesale services, it is important that guidance should also be provided on the geographic scope of the wholesale market/s for business access, and in particular cases in which markets may be geographically segmented. In this regard we would recommend following the logic of the NGA Recommendation para 22[88], adapted to the business context. This would mean that in principle business access markets should be defined on a nationwide basis, unless there are specific business-dense regions in which there are several FTTx infrastructures in place and business-grade wholesale products are supplied to meet the demands of BCS providers

88 NGA Recommendation para 22
http://eur-lex.europa.eu/LexUriServ/%20LexUriServ.do?uri=OJ:L:2010:251:0035:0048:EN:PDF

Key elements of a common approach to business remedies could include:

- Non-discrimination in provision of wholesale services for business. Wholesale products including those with more modern interfaces and/or with enhanced SLAs should be launched 6 months in advance of retail launch.
- Business-grade SLAs and associated KPIs (to be published) by which the fulfilment of SLAs may be measured. Penalties for failure to meet SLAs should have deterrent effect.
- Technical characteristics of wholesale broadband access which satisfy the needs of business providers and end-users such as low contention rates or uncontended products, capability to offer multiple VPNs.
- Connection points aggregating sufficient customers to be viable for business providers covering wide geographic areas.
- Requirement to meet reasonable demand from wholesale customers for enhanced services, whether or not the SMP operator plans to offer such services at retail level.

Separately from guidance concerning appropriate remedies for SMP operators, given that the same inputs are demanded by cross-border communications providers, there would be benefits to defining common technical standards for wholesale products to facilitate the interoperability of such products across the EU, enabling the provision of seamless cross-border retail services.

Annex

Annex A.1 Abbreviations

Annex A.2 References

A.1 Abbreviations

ADSL	Asymmetrical Digital Subscriber Line
AGCOM	Autorità per le garanzie nelle comunicazioni (Italian NRA)
BCS	Business Communication Services
BEREC	Body of European Regulators for Electronic Communications
BIPT	Belgian Institute for Post and Telecommunications
BNetzA	Bundesnetzagentur (German NRA)
BPO	Business Process Outsourcing
BT	British Telecom
CAGR	Compound Annual Growth Rate
CMT	Comisión del Mercado de las Telecomunicaciones (Spanish NRA)
ComReg	Commission for Communications Regulation (Irish NRA)
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DWDM	Dense Wave Division Multiplexing
EC	European Commission
ECTA	European Competitive Telecommunications Association
ERG	European Regulators Group
EU	European Union
FAC	Fixed Alternative Carriers
FTTB	Fibre to the Building
FTTC	Fibre to the Curb
FTTH	Fibre to the Home
FTTP	Fiber to the Premise
FTTx	Fiber to the x
GDP	Gross Domestic Product
HQ	Headquarter
ICT	Information and Communications Technology
INTUG	International Telecommunications User Group
IP	Internet Protocol
IPTV	Internet Protocol Television
KPI	Key Performance Indicator
KPN	Koninklijke PTT Nederland
LLU	Local Loop Unbundling
LTE	Long Term Evolution
Mbit/s	Megabits per Second
MDF	Main Distribution Frame
MNC	Multinational Companies
MPLS	Multiprotocol Label Switching
MSC	Multisite Companies
MTR	Mobile Termination Rate
MVNO	Mobile Virtual Network Operator
NGA	Next Generation Access
NPV	Net Present Value

NPT	Norwegian Post and Telecommunications Authority
NRA	National Regulatory Authority
OEM	Original Equipment Manufacturer
Ofcom	Office of Communications (NRA of the UK)
OPTA	Onafhankelijke Post en Telecommunicatie Autoriteit (Dutch NRA)
PPC	Partial Private Circuit
QoS	Quality of Service
RTR	Rundfunk und Telekom Regulierungs-GmbH (Austrian NRA)
SIP	Session Initiation Protocol
SLA	Service-Level-Agreement
SMEs	Small and Medium Enterprises
SMP	Significant Market Power
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
VDSL	Very High Speed Digital Subscriber Line
VLAN	Virtual Local Area Network
VPN	Virtual Private Network
VULA	Virtual Unbundled Local Access
WAN	Wide Area Network
WES	Wholesale Ethernet Services
WBA	Wholesale Broadband Access
WIK	Wissenschaftliches Institut für Infrastruktur und Kommunikationsdienste (Scientific Institute for Infrastructure and Communication Services)
WLAN	Wireless Local Area Network
WPNIA	Wholesale Physical Network Infrastructure Access
xDSL	Generic term for different types of DSL

A.2 References

Aldebert, Marc et al. (2004): Telecommunications demand and pricing structure: An econometric analysis, Telecommunication Systems, vol. 25, n. 1, 2, 2004.

AGCOM (2012): “Adunanza del 19 giugno 2012”, retrieved on 25th of October under: http://www.agcm.it/trasp-statistiche/doc_download/3249-a426-provvchiusura-6-lug-2012.html

AMA (2012): Voice-Provider – Marktstrukturen & Marktbewegungen im Detail, Whitepaper (in German), April 2012.

Analysys Mason (2010): “Europe’s digital deficit: revitalizing the market in electronic communications”, study on behalf of ECTA, March 2010.

BEREC (2010): “Report of the consultation on the ERG Report on the regulation of access products necessary to deliver business connectivity services ERG (09) 51”, March 2010.

BT et al. (2007): “The Economic Benefits from Providing Businesses with Competitive Electronic Communications Services”, June 2007.

CMT (2011): “Informe de los Servicios de la CMT sobre la situación competitiva en el segmento empresarial”, MTZ 2011/652, retrieved on 25th of October under: http://www.cmt.es/c/document_library/get_file?uuid=14c04bbf-6a38-4ab2-b265-fa6ce453d69c&groupId=10138

Colt (2012): “Colt Group S.A. Capital Markets Day, 2 May 2012) retrieved on the 25th of October 2012 under: http://www.colt.net/uk/en/news/colt-group-sa-capital-markets-day--2nd-may-2012-en.htm

ComReg (2008): “Market Analysis: Leased Lines Markets Response to Consultation and Consultation on Draft Decision”, retrieved on the 25th of October 2012 under http://www.comreg.ie/_fileupload/publications/ComReg0863.pdf

ComReg (2010): “Market Review: Wholesale Broadband Access “, retrieved on 25th of October 2012 under: http://www.comreg.ie/_fileupload/publications/ComReg_1081.pdf

Ecorys/TU Delft/TNO (2011): “Steps towards a truly Internal Market for e-communications”, November 2011.

ERG (2009): “Report on the regulation of access products necessary to deliver business connectivity services”, ERG (09) 51, December 2009.

European Information Technology Observatory (2011): EITO Report including Consumer Electronics, June 2011.

Eurostat (2009): “European Business. Facts and figures”, KS-BW-09-001, retrieved on 25th of October 2012 under: http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-BW-09-001

Eurostat (2011): “Key figures on European business with a special feature on SMEs”, KS-ET-11-001-EN, retrieved on 25th of October 2012 under : http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-ET-11-001/EN/KS-ET-11-001-EN.PDF

FAC Fixed Alternative Carriers (2011): “Preserving and Enhancing Competition in Belgium on Markets for Telecommunications Services specific to Professional Users”, retrieved on 25th of October 2012 under: http://www.bipt.be/en/408/ShowDoc/3456/Consultations/Reaction_of_FAC_to_the_consultation_on_the_draft_d.aspx

Gartner (2012): “Magic Quadrant for Pan-European Network Service Providers”, April 2012, retrieved on 25th of October 2012 under: http://www.gartner.com/id=1993015.

Indepen (2008): “Productivity, growth and jobs: How telecoms regulation can support European businesses”, study on behalf of BT/EVUA/INTUG, April 2008.

NPT (2010a): “Analysis of the market for access and call origination on public mobile telephone networks”, Annex 1,

NPT (2010b): “Draft decision on designating undertakings with significant market power and imposing specific obligations in the market for access and call origination on public mobile telephone networks (former market 15)”, retrieved on 25th of October 2012 under: http://www.npt.no/marked/markedsregulering-smp/marked/marked-15/_attachment/2692?_ts=139d85bd569

Ofcom (2012): “Business Connectivity Market Review. Review of the retail leased lines, wholesale symmetric broadband origination and wholesale trunk segments markets”, retrieved on 25th of October 2012 under: http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/

OPTA (2011): “OPTA Market Monitor 2011)”, retrieved on the 25th of October 2012 under http://www.opta.nl/en/news/all-publications/publication/?id=3580

Ovum (2006): Review of the Regulatory Framework for fixed mobile convergence in Hong Kong, Annex 9, April 2006.

UNCTAD (2009): “UNCTAD Training Manual on Statistics for FDI and the Operations of TNCs”, Volume II, retrieved on 25th of October 2012 under: http://unctad.org/en/docs/diaeia20094_en.pdf

UNCTAD (2010): “World Investment Report 2010”, retrieved on 25th of October 2012 under: http://unctad.org/en/Docs/wir2010_en.pdf

UNCTAD (2011): “World Investment Report 2011”, retrieved on 25th of October 2012 under: http://www.unctad-docs.org/files/UNCTAD-WIR2011-Full-en.pdf