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Study for the Verband der Anbieter von Telekommunikations- und Mehrwertdiensten (VATM)

Regulation of markets 1 and 2 as a precondition for sustainable and infrastructure-based services competition

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A. Executive Summary

1. The present study focuses on "infrastructure-based long distance carriers" (also called "interexchange carriers" and subsequently referred to as "IXC"), i.e. the three market areas call-by-call and preselection, value-added telephony services including directory assistance (VATS) and business communication services (access resale and preselection). This study intends to examine and evaluate the possible consequences of a deregulation of markets 1 (access to the public telephone network at a fixed location for residential and non-residential customers) and 2 (call origination on the public telephone network at a fixed location) of the Market Recommendation of 2007 for the business areas of the IXCs, for end users and for competition on the TC market. The study was performed by WIK-Consult during September to November 2013 under contract with the Association of Telecommunications and Value-Added Service Providers.

2. The background for the study is the ongoing paradigm shift in European TC policy which manifests itself primarily on three levels. First, the proposal for a regulation of the European Commission regarding the single European market for electronic communications reflects the (tight) market oligopoly model both in terms of competition policy and market structure with just a few big TC corporations doing business throughout Europe. The European Commission has come to the conclusion that there are far too many network operators in Europe and that it would be preferable to have a market structure like the one in the US and China with 4-5 large operators. Secondly, regulation at the wholesale level will no longer have precedence over any kind of end customer price regulation. Price regulation for end customers has been in effect in mobile communications for some time. The plan is now to bring international call rates to the level of domestic call rates which means that the regulatory paradigm shift will be extended to the fixed network. Thirdly, a revision of the Market Recommendation of 2007 is due in 2014. A study[1] commissioned by the European Commission to address this revision proposes a reduction in the number of TC markets susceptible to ex ante regulation and claims that there is no longer a need for regulating, in particular, present markets 1 and 2. It states that these two markets no longer meet the requirements of the three criteria test since they are moving towards effective competition in most member states.

3. To satisfy the study goal outlined above we will analyze (1) the basics and the importance of infrastructure-based services competition for competition on the TC markets in general and (2) the characteristics of the three market segments mentioned and (3) the specific competitive and regulatory circumstances today. Based on this analysis, we will examine (4) the future importance of and prospects for infrastructure-based services competition in the three market segments

[1] *Cf.* Ecorys et al. (2013).

mentioned above with emphasis on the function and continued need for wholesale obligations on markets 1 and 2 as they are currently imposed by regulation of markets 1 and 2 for the IXC business models. This means that the study is based both on qualitative/analytical as well as empirical elements. In doing so, we did not collect new data; rather, we have drawn on published studies and data sources.

4. The study concludes that the requirements of the three criteria test are met now and for the foreseeable future and that there is therefore a continued need for regulating markets 1 and 2, at least in Germany, for now and the foreseeable future. Viable and effective competition on the TC market is inconceivable without the services competition by the IXCs. That is why policymakers and regulators have to create or maintain an efficient framework for both types of competition. Infrastructure-based services competition, in particular, is able to make the benefits of competition accessible to specific customer groups. This is not possible with pure infrastructure competition which is regional and geared towards a tight market structure without regulated entry opportunities.

5. Carrier (pre)selection continues to be very important for certain market segments. For some customer groups, it continues to be the only way to get access to telephone services competition. The continued carrier (pre)selection obligation has been (and still is) an essential precondition for deregulation of the telephone services markets in the fixed network. Withdrawing the obligation of carrier (pre)selection would run counter to the interests of end users and negatively affect sustainable competition in the telephone services markets in the foreseeable future. Specifically, TDG's market share would probably increase (again) [2] on these markets and TDG could be expected to gain (again) considerable market power on the market for international calls. And finally, the negative effects on price competition in Germany are evident.

6. We cannot see any macroeconomic disadvantages resulting from carrier (pre)selection which could be raised as arguments against the macroeconomic advantages outlined above. To pave the way for and sustain services competition, the entry obligations on market 1 and for call origination on market 2 must continue to be an integral part of German regulatory policy in the future. In this context, it is ultimately irrelevant whether carrier (pre)selection is imposed as an obligation on market 1 or (as is the case in most other European countries) on market 2.

7. Call origination from fixed networks to value-added services including directory assistance as a (regulated) call origination service is an integral part of competition on the VATS market. In its regulatory ordinance, the BNetzA [Federal Network Agency] also assumes that a (satisfactory) voluntary entry offering cannot be

[2] Telekom Deutschland GmbH is abbreviated as TDG in this study. This also includes – to the extent it is relevant in this study – the affiliated companies under the umbrella of Deutsche Telekom AG.

expected. Content providers will therefore have a competitive offering of value-added services available only if and as long as the origination obligation is in place.

8. From our perspective, the prerequisites for a need for regulation also in terms of the three criteria test continue to exist for the transit market to VATS. Providers of value-added services including directory assistance will now and in the future depend on regulated transit services which originate calls from the telephone networks of third parties thereby ensuring the accessibility of services. A direct interconnection between VATS providers and all local loop operators (LLOs) would not be economically feasible and efficient both from the perspective of the LLOs and from the perspective of VATS providers. Moreover, TDG has in effect a non-substitutable market position for a significant part of the traffic when it comes to transit traffic from alternative IXC/VAS networks to alternative destination networks of IXC/VAS providers.

9. As we see it, there have hardly been any changes made to the market structure conditions on the VATS market which the BNetzA identified in its market analysis nor do we anticipate such changes in the foreseeable future. Service providers do not have any economically relevant option to do without the above wholesale services. Whoever calls them into question, also calls into question competition on this market. The market would otherwise turn from a competitive into a monopolistic market.

10. In the business communications services area, the need for solutions providers to offer universal solutions for multinational companies requires the availability of relatively "simple" wholesale services such as the option to resell the telephone connection ("access resale") and to preset access to a long distance carrier (to incorporate small locations in centrex solutions). This is the only way for providers to be able to offer comprehensive services with extensive coverage. Therefore, the regulatory requirements necessary for services competition should apply equally to the business and residential markets. The (regulated) wholesale services from markets 1 and 2 are indispensable for extensive coverage and for competition in the business customer segment.

11. All in all, we believe that the European Commission has not yet presented an adequate rationale for its paradigm shift away from infrastructure-based services competition. There are therefore no convincing reasons for giving up proven regulatory practices. The Federal Government and BNetzA should strongly oppose all tendencies in Brussels to call into question the need for regulating markets 1 and 2. Markets 1 and 2, but at least market 2, should be retained in the Market Recommendation so that the national regulatory authorities have the option of mandating the provision of wholesale infrastructure services that are necessary to continue competition in the carrier (pre)selection, value-added telephony services including directory assistance and business communications areas.

1 Introduction

The present study discusses the importance of services competition for competition on the telecommunication markets. It analyzes in particular the importance of market 1 (access to the public telephone network at a fixed location for residential and non-residential customers) and market 2 (call origination on the public telephone network at a fixed location) of the Market Recommendation of the European Commission of 2007[3] for the business models of the infrastructure-based "long distance carriers (also called “interexchange carriers” (IXC). Within the context of this study, this includes the value added telephony services including directory assistance (subsequently called VATS), call-by-call as well as carrier (pre)selection offerings. All three segments are also collectively called the "IXC business".

The present study is based on the fact that a wide-ranging and sustained paradigm shift is emerging at the level of European telecommunications if the governments of the member states were to follow the new guidelines and reform proposals drafted by the European Commission. This paradigm shift manifests itself in particular (but not only) in the proposal for a regulation submitted by the Commission on September 11, 2013 regarding "Measures concerning the European single market for electronic communications and to achieve a Connected Continent."[4]

Following its model of a European single electronic communications market, the Commission assumes a homogeneous market for telecommunication networks and services. In terms of competition policy and market structure, this model is based on a (tight) market oligopoly with a few TC company groups doing business across Europe. The European Commission does in fact refer to the - in its view - far too large number of network operators in Europe which it contrasts with the preferable market structure in the US and China whose single market (with 330 million and 1.4 billion subscribers respectively) is served by four to five large operators. In comparison, Europe is "*still fragmented into 28 separate national communications market, each with a limited number of players [...], overall more than 200 operators serve a market of 510 million customers [...]. This patchy scenario raises barriers to entry for operators [...] and increases their costs thereby impeding their expansion. [...] Economies of scale and new growth opportunities can improve the returns on investment in high-speed networks and can at the same time drive competition and global competitiveness.*”[5]

The complex regulation proposal of the European Commission is a far-reaching revision of the current European legislative framework for electronic communication markets which cannot be comprehensively discussed and evaluated in this paper. We will only

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3 *Cf.* European Commission (2007).

4 *Cf.* European Commission (2013b).

5 *Cf.* European Commission (2013b), p. 4 *et seq*.

address those aspects which are of particular importance for the infrastructure-based services competition.

It is the Commission's goal to ensure that there are no longer any price differences between domestic and international calls both on mobile and fixed networks. To this end, it abandoned the previous paradigm of European communications policy, namely the precedence of regulation at the wholesale level over any end customer price regulation, and pursued price regulation at the end customer level. The goal is now to transfer this regulatory paradigm shift to the fixed network. International calls are not supposed to be more expensive than domestic calls. This regulatory approach would permanently change and jeopardize the competitive structures in infrastructure-based services competition. The competitive potential currently represented by long distance carriers and utilized for the benefit of subscribers would be noticeably diminished. It is also doubtful whether this regulatory approach would increase customer value. The Commission's approach would lead to a rebalancing of rates which would also include price increases.[6] If the market opportunities of long distance carriers are reduced and restricted at the same time, no correction provided by competition is available to avoid the negative effects on end customers.

This scenario would be especially true and very likely to happen if the Commission would deny the continued need of markets 1 (telephone access) and 2 (call origination) to be regulated in the pending revision of the Relevant Markets Recommendation. This is precisely what was recommended to the Commission recently in a study it commissioned.[7] Should the Commission follow the recommendation of Ecorys et al., infrastructure-based services competition by providers of carrier (pre)selection and providers of value-added telephony services including directory assistance would no longer have a future.

Against this background, the present study illustrates the market significance of infrastructure-based competition in Germany. It concludes that the obligations to provide carrier (pre)selection and call origination to value-added services including directory assistance continue to be necessary requirements so that competition does not diminish and ultimately customer value and economic welfare do not suffer. Also against this background, it is evident that the previous paradigm where regulation at the wholesale level has precedence over any direct intervention in end customer pricing is superior to the Commission's new market paradigm not only as a concept but also with regard to its effect on the market.

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6 The Verbraucherzentrale Bundesverband ("vzbv"), for instance, warns in its press release of September 12, 2013 (http://www.vzbv.de/12233.htm) that the "single market" plans of the EU Commission could lead to higher national average prices at the expense of the average consumer.

7 *Cf.* Ecorys et al. (2013).

The study is organized as follows: In Section 2, we will explain the basics and importance of infrastructure-based services competition. We will describe both the business models of the market participants who are the focus of this study and also the core elements of infrastructure-based services competition. In Section 3, we will present important features of the markets which are the focus of this study. Section 4 discusses the regulatory requirements for effective competition in these markets. Section 6 presents the importance and prospects of infrastructure-based services competition going forward in the form of propositions. And finally, Section 6 offers our conclusions and recommendations.

2 Basics and importance of infrastructure-based services competition

In this section, we will describe in detail the business models relevant to this study which would be especially affected by the withdrawal of markets 1 and 2 and highlight the core elements of infrastructure-based services competition.

2.1 Description of relevant business models

To illustrate the significance of wholesale markets 1 and 2 for carrier (pre)selection, value-added telephony services including directory assistance (VATS) as well as telephone services as part of the offering for business customers (business communication services), we will first explain these three business areas and their organization.

We will discuss specific business models on the market for telecommunication services which are based on the telephony network, i.e. especially those where communication is realized via numbers. While these business models focus on the provision of services to the end customer, they need to make use of a number of infrastructures. To be able to use value-added telephony services including directory assistance or carrier (pre)selection, subscribers must have access to the public telephone network which enables them to initiate or receive phone calls. To do so, the service provider at the wholesale level must also be able to offer its services. This requires call origination, call termination and transit services at the wholesale level since every voice call consists of an outgoing (call origination) and an incoming part (call termination). If a connection has to be terminated at an interconnectable network coupling node other than the one where the call was originated, a transit service is required in addition.[8]

2.1.1 Carrier (pre)selection

The business model of a carrier (pre)selection provider is essentially based on a network infrastructure with the following components:

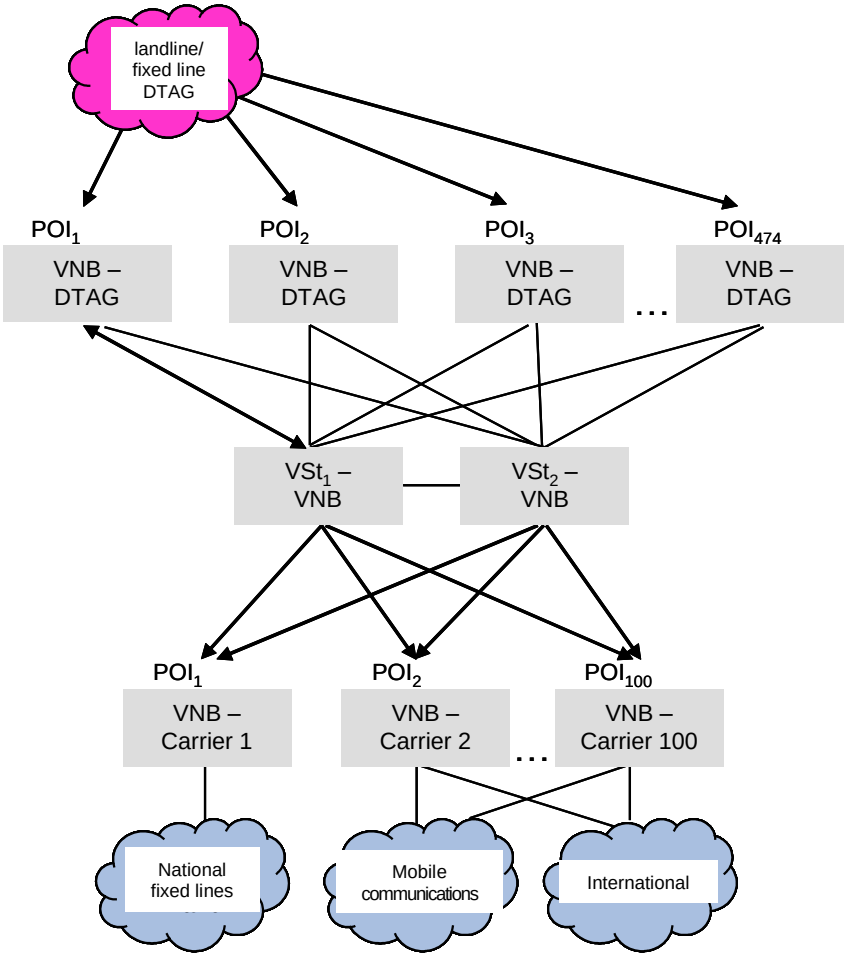
- Points of Interconnect (PoIs) with the incumbent: these are primarily used for call origination, but also for terminating traffic in the incumbent's network; 474 PoIs are currently offered in Germany;
- Interconnection access (ICAs) leased from incumbent;
- Leased lines to connect the PoIs and to establish provider's own network;

[8] *Cf.* Säcker (2013), § 9, margin no. 107.

- Provider's own exchange(s);
- Interconnection points with other carriers: Many carrier (pre)selection providers have additional interconnections with other network operators; there are also leased ICAs of alternative network operators.

The following figure shows a stylized version of this structure.

Figure 1: Basic components of the network infrastructure of a long distance carrier (stylized illustration)



Source: Doose, Elixmann and Schwab (2010).

2.1.2 Providers of value-added telephony services including directory assistance

Following Elixmann and Schäfer (2004), value-added telephony services including directory assistance (VATS) can be described as follows. They include communications

and other application-related add-on services in addition to the original transmission services on telephone networks. These can be realized both interactively as a mutual exchange of information or they can consist of unilateral communication only. VATS can, in principle, consist of voice, data or multimedia contents. The provision of VATS via the TC infrastructure includes both specific technical elements and specific billing processes.

Value-added chain for the provision of VATS[9]

VATS have certain characteristics which differentiate them from other electronic communication services. First, we have to differentiate between services via service call numbers and services specific to mobile communications. Services using service call numbers include basically 0800 free phone services, 0180 service numbers, 0900 premium rate services, 0137-MABEZ services[10] and 118xy directory assistance services. Services specific to mobile communications basically comprise internal mobile premium voice services (22xyz speed dial numbers), internal mobile premium data services via speed dial numbers (subscription use, ad hoc/one-time use) as well as internal mobile payment services via speed dial numbers.

These services all have two service levels in common:

- the telecommunication service (usually a transport service) and
- an additional service (such as directory assistance or weather service) for which the caller is billed together with the telecommunication service.

Conceptually, the provision of VATS is characterized by five different functional value-added levels:

- Local loop networks
- Transit networks
- Destination network (IXC/VAS providers),
- Platform/call center,
- Content.

This is illustrated in the following diagram.

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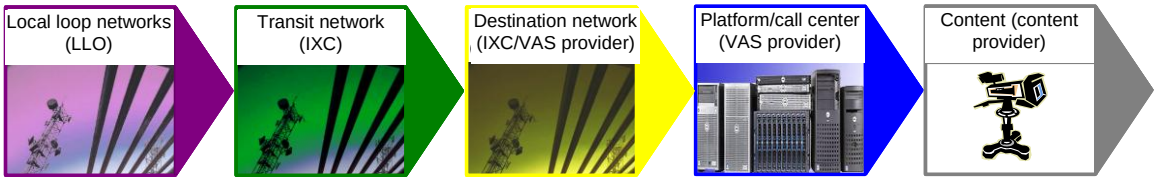
9 The following text of this section is based on Doose, Elixmann and Schäfer (2009).

10 "MABEZ" stands for: Massenverkehr zu bestimmten Zielen [mass transit to specific destinations].

Figure 2: Value-added levels for the provision of VATS



Source: Doose, Elixmann and Schäfer (2009).

The different levels are defined as follows:

- The value-added level "local loop network (LLO)" stands for the "last mile" of the TC network infrastructure; in this context it is used as access to the service.
- The link between local loop networks and the destination network (IXC/VAS provider) is made at the value-added level "Transit Network (IXC)".
- The primary function of the value-added level "Destination Network (IXC/VAS provider)" is to receive the traffic at the PoIs of the IXC/VAS provider and forward it via exchanges within its network to the call destination.
- The value-added level "VAS Platform" comprises the operation, management and programming of the technical platform as well as the operation and management of call centers. This service is typically - but not necessarily - performed by the IXC/VAS provider as well.
- The value-added level "Content" refers to the assembly, production and marketing of contents and the definition of functional requirements for applications on the VAS platform or of requirements for call centers or service providers.

A special feature of the VATS market is that the end customer segment and the content providers mutually affect each other: The residential and business end customers profit from the great number of providers and services on the other side and conversely, the providers of VATS profit from having as many (potential) consumers as possible.

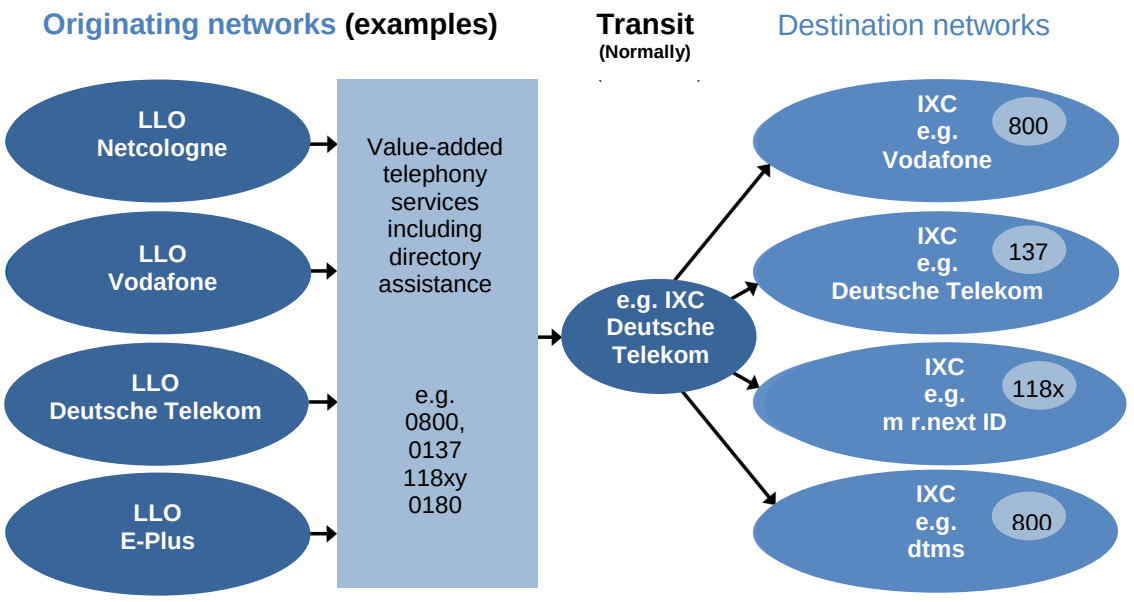
From the perspective of the companies doing business on the market, the individual value-added levels are de facto characterized by different degrees of integration. This ranges from full integration of all functions (particularly for TDG) to the partial integration of only the IXC/VAS levels ("Destination Network" and "Platform") in a single company. From this observation alone, it is evident that not only VATS service providers alone, but many (more or less integrated) companies are de facto involved in the provision of VATS in Germany. In terms of networks, this includes particularly all national and

regional local loop operators and the providers of carrier (pre)selection in Germany. A number of companies have specialized exclusively or primarily on billing and collection of VATS, e.g. mr.nexnet, coeo Inkasso, Dr. Finsterer + Königs Inkasso and ConKred. In terms of content, the companies can be found across all industries.

Interaction of market participants when providing VATS

The above explanations show that the VATS market actually requires the interaction of many market participants. If we want to ensure that all subscribers of all LLOs can access all VATS, the provision of specific wholesale services is essential. This is illustrated in the following diagram.

Figure 3: Origination and transit to value-added telephony services including directory assistance (stylized illustration)



Source: WIK-C based on mr.next id GmbH.

The diagram explains the situation with regard to the potential traffic flow from originating networks to destination networks (IXC/VAS providers) for offers of value-added telephony services including directory assistance. To the left, four German local loop operators are listed by way of example, and on the right side four German IXC/VAS providers. We can state the following:

- The situation where the original and destination network operator are identical – if, for instance, a subscriber originates a call on the TDG network to a VATS on the TDG platform - is unimportant: the traffic remains in the same network.

- Origination from the TDG network to alternative destination networks of IXC/VAS providers is currently made possible by TDG (market 2). It is mandatory because otherwise more than 50% of end users in Germany would not be able to use a complete VATS portfolio.
- The connection of alternative LLO networks with alternative destination networks of IXC/VAS providers usually requires transit agreements (in cases where there is no direct interconnection agreement). In theory, such a connection could be realized both by TDG and via alternative wholesale carriers. However, TDG has actually a non-substitutable market position for a significant part of the traffic when it comes to transit traffic from alternative LLO networks to alternative destination networks of IXC/VAS providers. This is due to the fact that alternative transit carriers can only originate calls from local loop networks with which there is a direct interconnection agreement. Based on our market information, this is true of only a relatively small number of market participants in Germany. Moreover, certain technical requirements would have to be met for an alternative transit carrier (IN query, origin ID) which can, however, not be directly replicated.

These remarks show very clearly that TDG has a central position as a transit carrier for VATS traffic on the German market.

"Functions" of VATS for end customers and content providers

VATS cover a wide spectrum of possible functions. The primary functions for consumers (i.e. end customers) are: Contact channel, "point of sale", channel for the direct provision of a service and means of payment. Primary functions from the content provider perspective are: Sales channel, transport channel, collection channel, contact control and storage medium.

The individual functions listed are defined as follows:

- The "contact channel" function centers around the accessibility of companies (or other economic units) which offer services via VATS. This can be enhanced with additional features as, for instance, voice announcements with information about alternative contact channels or additional product/company information.
- The "point of sale" function focuses on the purchase of products or use of services which are provided via the TC infrastructure. This can be realized in different formats such as voice, fax, data.
- The "means of payment" function deals primarily with the payment for products or services via the telephone bill.

- The "sales channel" function is focused on the sale of products and services and the related conclusion of agreements with end customers, i.e. the focus is not on the subsequent transport of the service sold to the residential customer.
- The "transport channel" function describes the physical distribution path for products and services as part of a mix of transport means and consists of the original transmission service based on the TC infrastructure which takes place after the service has been sold.
- The "collection channel" function centers around (successful) billing and efficient collection, i.e. VATS on the fixed or mobile channel are used as a billing system for VATS for which the end user is charged. This function also includes fraud prevention as well as address and phone number verification.
- The "contact control" function refers primarily to technical functionalities. These include routing functionalities based on parameters such as origin, time, utilization, quota specifications or similar; systems for the automatic handling of calls such as ACD, IVR;[11] differentiated call statistics by characteristics such as quantity, duration, time distribution, geographic distribution or accessibility; (online) control of functionalities linked to a service call number such as change of routing settings; format changes such as Voice2Fax.
- The "storage medium" function comprises basically the storage of contents for distribution to end customers (e.g. information retrieval), information storage as part of the service offered (e.g. mailbox) as well as the documentation of the contract conclusion and use of services (e.g. CDR storage)

VATS application areas

In the aforementioned study, we identified many[12] different delivery and service relationships between business entities in Germany where VATS play a part. It can, in fact, be said that, in addition to the traditional provision of directory assistance, VATS are used as:

- *Sales channel for other products and services*. This refers primarily to time-lagged product delivery or time-lagged receipt of the service. The "added value" for providers and consumers in the *mail order business* is primarily the fact that VATS are a convenient communication and ordering channel and ensure a high level of availability (usually 24/7 service). There is also the option of selectively controlling the interaction with the customer through various phone number ranges and differentiated pricing. Overall, VATS are probably relevant for almost all of the 300 companies that are members of the German E-Commerce and Distance Selling Trade Association (BVH) and additionally for a large number of mail-order firms

11 ACD stands for "Automated Call Distribution" and IVR stands for "Interactive Voice Response".
12 Doose, Elixmann and Schäfer, *loc. cit*.

which do not belong to the trade association. In the *teleshopping* area, the "added value" for providers and consumers is also due to the existence of a convenient communications and ordering channel and a high level of availability (24/7 service). From the consumer perspective, teleshopping may have an added entertainment value ("experience shopping"). From a provider perspective, there is in every case the possibility of optimizing enterprise resource planning processes.

- *Channel for the direct provision of a (media) service*. This channel focuses on simultaneous product delivery or the simultaneous receipt of the service. *Telebanking* also offers an "added value" for providers and consumers, in particular because VATS are a convenient and secure way for banks, etc. and their customers to originate transactions from anywhere at any time (replaces branch network). There is also a high level of availability (24/7 service) and compliance with the strictest security requirements. Finally, VATS permit the development of new customer segments, e.g. of "N-Onliners" (individuals without internet access). With *directory assistance* (incl. forwarding), the "added value" for providers consists primarily in the low access barriers for users, i.e. the accessibility of all consumer groups and simple billing options for the service rendered. We see an "added value" for consumers primarily in the fact that this service is accessible universally from the fixed and mobile networks, that it ensures a high level of availability (24/7 service), permits convenient use also with traditional terminal devices, i.e. no PC/internet access is required, and that an immediate connection to the requested subscriber or service is possible without media disruption and additional cost. In the *adult content/erotic services* and *astrology/life counseling* areas, VATS offer a convenient way for providers or consumers to make available or call up services from anywhere at any time.
- *Customer care channel*. With *technical support,* the "added value" for providers and consumers results from the possibility of receiving professional advice through VAS. With *customer support,* the focus is on the exchange (transport) of relevant information between a company and its customers (customer contact). This means that the "added value" for providers and consumers results from the provision of professional advice and consultation through VAS enabling closer relations between the company and its customers. The *info hotlines* segment performs a marketing function and allows business entities to provide prompt and professional information through VAS.
- *(Micro) payment system*. In the *donations/charity* area, VAS offer charitable organizations (or their "platforms") a convenient means for financing themselves. Micro-donations in particular can be more easily and economically mapped via VAS than via bank transfer or cash deposits. When *paying for online contents*, an "added value" for providers and consumers is the fact that VAS allow anonymous handling (no personal data have to be provided as, for instance, for credit card payments or direct debit). In this area, micro-sums can also be more easily and economically mapped via VAS than via bank transfer or cash deposits.

The above remarks show that the business models or market players described in this section depend on origination directly from the TDG for its subscribers and on transit delivery via the network of TDG as a transit network operator from other alternative local loop networks. The service can only be offered in a competitive manner if the services from the local loop networks are accessible.

2.2 Theory of infrastructure-based services competition

Depending on the extent of their own added value on the market, TC providers are doing business under (pure) infrastructure competition, under access-based competition or under (pure) services competition. Access-based competitors provide their services based on their own network where some of them operate the network infrastructure themselves while others build on the wholesale services of other network operators. With infrastructure-based competition, the competitors have their own network infrastructure and are not dependent on wholesale services of other competitors. The model of (pure) infrastructure-based competition, on the other hand, is based on the concept and business model of a provider with integration across all levels of the value-added chain. These providers create their own infrastructure, render transport and exchange services with their networks, provide their services (today) within the network core as a rule and market these services themselves to end customers.

The characterization of infrastructure-based providers as being independent of competitor wholesale services as outlined above has to be (slightly) modified when it comes to network competition. Network operators who are completely independent of one another could only offer their network subscribers communication options with subscribers of the same network. If this independence continues to exist, this network externality could only be internalized by a monopoly provider. For this reason and to avoid this scenario, local loop operators, i.e. network operators which connect their subscribers directly to their network, are usually required to offer other network operators termination services through interconnections. This permits communication across network boundaries and an end-to-end service offering in a competitive environment.

(Pure) infrastructure competition has relevant competitive effects. Infrastructure competition creates collective alternatives for users in the form of diversified and mutually independent services. Infrastructure competition ensures allocative and productive efficiency. It also generates strong innovative incentives resulting in the selection of the best and most current technologies. Infrastructure competition is also the (only) way to allow sustainable, self-sufficient competition for the long term.

However, these absolute and relative benefits of infrastructure competition compared to services competition also have to be weighed against relevant disadvantages and challenges. Infrastructure investments are associated with large economies of scale.

Competitors, especially new market entrants, first have to grow into such economies of scale. Infrastructure investments also frequently create sunk costs because they cannot be directed towards other productive uses should the market develop differently than anticipated. Overall, infrastructure investments for (new) competitors are associated with relevant risks, not least with the risk of creating overcapacities on the market. Depending on the extent of the economies of scale, efficient production at low cost requires large market shares. This requirement, plus the risks of infrastructure-based market access, can lead to prohibitive economic bottlenecks in some network areas thereby preventing market access and infrastructure-based competition.

Based on the (correct) realization and assessment that with and following the market opening after a 100-year monopoly position, the development of independent fixed networks parallel to incumbent's nationwide network infrastructure cannot be expected, the model of access-based competition has developed as the present model of German and European TC policy. This competitive model is based on the concept that competitors will invest in their own network infrastructure as heavily and in locations where this is reasonable and profitable in micro- and macroeconomic terms. In other network areas where these prerequisites are not in place and which therefore present economic bottlenecks, competitors will obtain access to the network of the incumbent and are allowed to use its network resources. This access results in the purchase of wholesale network services which (have to) be paid for in a commercially reasonable manner. With the access-based business model, a provider renders the end-to-end network service by combining its own (network) services with wholesale services purchased from the dominant network operator. Conceptually, access-based competition is therefore infrastructure-based services competition. Regulatory policy is also based on the expectation that alternative competitors will first pursue business models with little added value creation of their own. As the market develops, they will continue to invest in their own network development and become more independent of wholesale purchases. This market model with movement up the value-added chain is also called the "ladder of investment" concept. This type of competition has permanently shaped market conditions in Germany and the EU and continues to be the dominant type of competition in most member states.

With economically appropriate regulation of wholesale prices, access solutions will neutralize the market power of the incumbent which is the result of its control over bottleneck resources. With purchased wholesale services, competitors will have access to the economies of scale and scope advantages of the incumbent. They are using the bottleneck resources on the same economic terms as the incumbent itself. At the same time, the competitors can differentiate their products from those of the incumbent (depending on the intensity of their own investments). They are producing their own services and qualities.

Access solutions lower or remove economic barriers to market access in the form of economies of scale and scope as well as sunk costs. If regulated appropriately, they will

lead to efficient infrastructure investments on the part of the incumbent and its competitors. Infrastructure-based services competition can be or become intensive. Infrastructure-based services competition is not self-sufficient to the extent it depends on the availability of regulated wholesale services. Access-based competition can be viable in terms of static allocative efficiency and in part also in terms of productive efficiency.

To be able to characterize pure services competition, we first have to define the business model of the service provider. Pure service providers present themselves on the market as resellers or added-value service providers. Resellers do not produce the telecommunication service themselves. Rather, they purchase it as a network service from a network operator. The reseller service is essentially a sales service. The reseller sells the telecommunication service which it did not create in its own name and on its own account usually applying its own pricing models. Pure resellers limit themselves to offering the service purchased by a network operator without making performance or quality changes and without adding added-value components (except those related to sales).

Service providers that have their own services platform and/or add additional service components to the network service purchased from the network operator become value-added service providers.

The contribution of pure services competition to the intensity of competition is naturally smaller than that of infrastructure-based services competition. Pure services competition permits efficiency increases only in those elements of the value-added chain where service providers add their own original value. Opportunities for differentiating products from those of the wholesale provider, usually the incumbent, are small. Services competition by itself does not make regulation obsolete.

These remarks show that infrastructure-based service providers perform an important competitive function and provide value to end customers - just like alternative local loop operators.

3 Market characteristics

3.1 Carrier (pre)selection (call-by-call and preselection)

Since the liberalization of all TC markets in Germany on January 1, 1998, services competition, in particular the call-by-call version, has been synonymous with competition in fixed network telephony.

Call-by-call has been accepted by users surprisingly quickly as an alternative to the previous monopoly offering by Deutsche Telekom. Use of call-by-call especially in connection with billing for calls made as part of incumbent's telephone bill was simple, transparent and resulted in considerable cost savings compared to previous voice call rates. In terms of competition, the call-by-call principle was the tool for breaking up the previously existing monopoly. This rapidly growing business model of long distance carriers dominated the competition for telephony market shares. The business model experienced another growth spurt both in the residential and business customer segment when carrier (pre)selection was extended to local calls in 2003.

In addition to companies which are directly focused on the long distance carrier business, providers of value-added telephony services including directory assistance, "City Carrier", national TC providers as well as companies geared towards large and business customers are using carrier (pre)selection for directing traffic to their networks. Many predominantly medium-sized companies are doing business in this market segment.

As to the market importance of long distance carriers who rely on carrier (pre)selection, the findings of the Joint Market Analysis 2013 of VATM and Dialog Consult[13] are as follows:

- The market shares of pure long distance and local loop operators changed very little in 2013 compared to previous years.[14]
- The voice volume generated by long distance carrier selection (call-by-call or preselection) has stabilized in past years.[15]
- German consumers as a whole used 25 million call minutes via call-by-call or preselection in 2013.

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13 *Cf.* DialogConsult/VATM (2013), p. 12-13.

14 These findings are based on voice call minutes of competitors as a whole.

15 The focus is on voice minutes by long distance carrier selection (call-by-call or preselection) per Telekom fixed network telephone line (without flat rate).

These findings are still true even though the total number of potential users or their use intensity has been trending downward.[16]

Additionally, surveys by the Bundesnetzagentur [Federal Network Agency] (for 2011) show the following[17]

- Carrier (pre)selection still accounts for about 10 billion traffic minutes or 11% of telephone traffic of all competitors.[18] This amounts to about 5% of the overall market.[19] However, relative to the addressable market of TDG phone line customers[20], long distance carriers have a market share of 9%.
- Individual telephony sub-markets are much more differentiated. For calls from the fixed to the mobile networks, carrier (pre)selection accounts for 10% of total market volume, which is above average. Relative to the addressable market, this figure increases to 18%.[21]
- When it comes to international calls, the market success of long distance carriers is even greater. According to our estimates, carrier (pre)selection accounts for 34% of the total number of international traffic minutes. Relative to the addressable market, this figure increases to 50%.[22]

All fixed network telephone line subscribers of the TDG are potential users of carrier (pre)selection. At the current margin, these are just under 23 million subscribers. Carrier pre(selection) is used by subscribers who are using this option only occasionally and subscribers who regularly make a large percentage of their voice calls via this route. We estimate the number of active users of carrier (pre)selection to be about 6 to 7 million subscribers today. This means that almost one third of TDG phone line subscribers are using the call-by-call option. This percentage has remained relatively unchanged over the years. Earlier market research studies show that carrier (pre)selection is used by a disproportionately large number of older persons and users with a migration background. Use of carrier (pre)selection is also still wide-spread among small and medium-sized businesses.

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16 For one, the number of TDG phone lines is declining; these are the only phone lines that permit carrier (pre)selection. Secondly, customers increasingly ask for full-package lines, bundled rates and flat rates for which call-by-call use via national landline calls is less interesting.

17 We are referring to results of the study by Elixmann et al. (2013).

18 *Cf.* BNetzA (2011).

19 As a side note, VATM surveys indicate that carrier (pre)selection accounts for a markedly higher percentage (14%) of competitor traffic volume.

20 If we subsequently talk about the "addressable market" we mean the corresponding traffic minutes originating from TDG phone lines.

21 The higher percentage for calls to mobile networks is due to the fact that only very few of these calls are included in flat rates so that the long distance carriers can better show off their price advantages versus the competition.

22 This large market share is also due to the fact that it affords end-users significant savings and international calls are usually not included in the flat rates for full-package lines.

3.2 Value-added telephony services including directory assistance

As outlined in section 2.1.2, many different value-added telephony services including directory assistance (VATS) are offered on the German TC market which differ from one another, for instance, in terms of the specifically targeted communication purpose, specific number ranges and (possible) end customer prices. The provision of these VATS is of great importance both for the TC market and the economy as a whole.[23]

VATS have to be considered an essential component of value generation and the provision of services in large parts of the economy. In fact, in addition to direct VATS providers and the business entities which provide the actual content, the following areas contribute in a significant way to the provision of VATS: Media (radio, print etc.), advertising industry, technical equipment and system providers (e.g. for IVR platforms, automated call distribution (ACD), audiotex, programming, voice recognition, line suppliers, hardware, RLT), software developers and collection service providers. VATS are an indispensable and essential sales channel for content providers. They create significant value for residential and business consumers. These findings should still be fully valid today.

Current quantitative surveys have not been performed as part of this study. However, our previous study can at least provide reference points in terms of order of magnitude.[24] In this context, a distinction should be made between primary effects (effects directly on the TC market) and secondary/tertiary effects (effects in downstream industries and sectors):

Primary effects (2008)

- *Sales*: In the companies of the TC sector involved in value generation, VATS generate a total market volume amounting to about 2.9 billion euros.
- *Investments*: The companies of the TC sector directly involved in the provision of VATS have an average annual investment volume (with regard to the provision of VATS) in the order of "100 million euros +/-x".

Secondary/tertiary effects (2008)

- *Sales*: Beyond direct VATS sales, indirect sales are realized predominantly via sales activities/payment flows triggered by the use of VATS. This applies in particular to the "mail order business" and "teleshopping" segments. These downstream industries indirectly generate a sales volume of about 14 billion euros, which is almost 4.5 times the original VATS sales volume.

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23 For the following text, we refer to the core results of an earlier WIK study; *cf.* Doose, Elixmann and Schäfer (2009).

24 *Cf.* Doose, Elixmann and Schäfer (2009).

- *Employment*: Downstream industries have about 240,000 people employed in the provision of VATS. This figure is composed of about 200,000 call center employees who process VATS and about 40,000 employees of content providers who are deployed in the strategic and operational control of VATS use in internal/external call centers.
- *Expenditures*: The downstream industries spend in the order of 12 billion euros for the provision of VATS. This figure is composed of expenditures for the provision of VATS in the call center segment amounting to about 8.2 billion euros and expenditures amounting to about 3.5 billion euros for advertising VATS.
- *Use*: Overall, just under 400,000 companies are using VATS in one form or another.

For various reasons, the levels outlined above may since have trended downwards.[25] Nevertheless, we can assume that VATS overall are very important for the TC sector and the economy even today.

This statement is confirmed by a current representative survey regarding the communication behavior of users which was recently conducted for the VATM.[26] It shows that VATS are still firmly anchored in the communication behavior even today. The study centered around the importance of the telephone or the telephone-related service call numbers as a contact channel in the relationship between company and consumer. According to the study, the use of service call numbers (value-added services) is firmly established in human communication. Personal consultation is considered to be the key benefit of service call numbers, especially by younger users. Other benefits are speed, understandability and accessibility. The internet is used by far most frequently for obtaining directory assistance and address information. Still, almost one third of the customers are obtaining directory assistance and address information by phone, even though it is fee-based while internet inquiries are free.

3.3 Business communication services (access resale and preselection)

Starting with the extensive liberalization of the TC markets in 1998, policymakers and regulators have been focusing on services and prices for mass market TC services. These are services which are requested primarily by private households and small- and medium-sized businesses. This market segment has in fact achieved spectacular

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25 We refer to substitution effects from internet-based services (e.g. interactive, web-based TV, mobile internet applications ("apps"), and internet-based payment platforms). Furthermore, there probably are at least some substitution effects due to the migration of subscribers to geographic phone numbers. According to our information, this trend has strengthened with the introduction of the no-charge on-hold loop.

26 *Cf.* Böcker (2013).

success in terms of competition. This focus was based on the expectation that companies, and in this context multinational companies in particular ("business communications services"), had no competitive problems whatsoever. On the contrary, it was assumed that this target group was of particular interest for competition and that there was no urgent need for regulatory action. Until then and during the first liberalization steps at the beginning of the nineties, attention was therefore mainly directed towards TC services which were not requested by companies, particularly multinational companies.

This lack of regulatory attention to business communication services following the general market liberalization is in stark contrast to the macroeconomic significance of these services. This becomes clear to some extent if one looks at the macroeconomic scale of companies which have many locations and/or are doing business as multinational corporations (MSCs/MNCs)[27].

Table 1, based on a 2012 WIK study,[28] shows that these companies only accounted for 2% of all companies at the EU level, but represent 51% of value creation for the economy and account for 43% of all employees.

Table 1: Importance of MSCs/MNCs for the economy (2010)

Category	Total EU27	MSC/MNC	% total
Number of companies	21.4 m	360,000	2%
Employees	138.9 m	60.0 m	43%
Sales	21,600 bn euros	11,500 bn euros	53%
Value added	6,315 bn euros	3,200 bn euros	51%

Source: Eurostat, WIK calculations. Data does not include financial industry.

According to WIK estimates,[29] the value of the communication services requested by MSCs/MNCs throughout Europe is more than 90 billion euros; this is more than 53% of all communication services requested by companies or more than 27% of all requested communication services. While no directly comparable figures are available for Germany, we assume that the relative importance of business communication services in Germany is even greater than in the EU as a whole because of the German industrial and regional economic structure and our position in the European and world economy.

27 MSC/MNC stands for "multi-site corporations" and "multi-national corporations" respectively.
28 *Cf.* Godlovitch et al. (2012).
29 *Cf.* Godlovitch et al. (2012), page 2.

For a significant number of companies in Germany, the option of being able to obtain access via preselection (i.e. a fixed preset code to a long distance carrier) or to use telephone lines through access resale, is still an important component of their communication profile (see also section 4.3).

More than 30% of all companies in Germany (still) do not have a broadband line.[30] It should also be noted that the current quality of TDG bitstream access is often not sufficient to satisfy (all) demands of business subscribers. Branch offices, in particular, demand a company-wide package which includes telephony (fixed and mobile networks), data communication and VATS from a single source. In addition to nationwide availability, service levels also play an important part. To satisfy these demands, alternative providers are almost always forced to purchase wholesale services from TDG so that they can offer a complete service portfolio from a single source. These wholesale services currently cover all possible regulated TDG wholesale products.

30 According to the figures of the Federal Statistical Office, 85% of all companies have internet access About 80% of them are using the internet via broadband access. This means that more than 30% of all companies do not have broadband access; cf. Statistisches Bundesamt (2012). The preselection option combined with access resale permits those business customers to get favorable rates and services tailored to their requirements profile.

4 Regulatory requirements for effective competition

4.1 Carrier (pre)selection (call-by-call and preselection)[31]

Infrastructure-based telephony services competition can only be accomplished with regulatory measures. As the market behavior of LLOs which are not required to provide carrier (pre)selection shows, we cannot expect that this initial prerequisite would be offered voluntarily by a TDG which is not required to do so. The temptation to not have to share the call business with other competitors if you have your own local loops is too great. In an effort to pave the way for and maintain infrastructure-based services competition, the corresponding regulatory requirements have been and (still) are an integral part of German regulatory policy. This is evident from the obligation to provide carrier (pre)selection in market 1[32] and call origination in market 2[33].

In spite of being closely related to the market for call origination (market 2), carrier (pre)selection is imposed as an access obligation on market 1 (access to the public telephone network) in Germany. This is based on the fact that fulfillment of this obligation is access-related. In terms of the regulatory system, it would, however, be entirely conceivable and reasonable to impose carrier (pre)selection as part of the obligations for market 2. This is also how it is done by a number of European regulatory authorities. Since, following the amendment to the Telecommunications Act 2012, carrier (pre)selection is no longer a general, legally mandated access requirement for operators of telephone lines with market dominance, the Federal Network Agency, when considering the continued existence of carrier (pre)selection, will have to determine going forward whether this obligation is reasonable and in the interest of end users and competitors.

Within the context of the market analysis of market 1 and based on its findings and determinations, the Federal Network Agency considers carrier (pre)selection as necessary as it did in earlier decisions. In accordance with the current Relevant Market Recommendation of the EU Commission, market 1 is susceptible to ex ante regulation. Based on the three criteria test, the Federal Network Agency also determined that there is a continued need to regulate the market for access to the telephone network and that TDG has significant market power. Its arguments also strongly support the need for operator (pre)selection.

There is currently much speculation as to whether the present market 1 will continue to be included in the recommendation list of the EU Commission for markets subject to ex ante regulation. Despite current contrary findings of significant market power on market

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31 For more details, see Elixmann et al. (2013).

32 *Cf.* BNetzA (2010).

33 *Cf.* BNetzA (2013).

1[34] in many countries, this market seems to be slated for cancellation. The European incumbents, at any rate, are campaigning for this goal.[35] This market has already been deregulated in some European countries. The European regulatory authorities generally want to completely withdraw from the regulation of end customer markets. Within the regulatory framework, the obligation to provide carrier (pre)selection does not constitute regulation of an end customer business, but ultimately an access regulation which intends to intensify competition on the end customer markets for telephone services and which is a necessary prerequisite for services competition. In this respect, we do not consider it inevitable for regulatory authorities to consider the obligation to provide carrier (pre)selection as unnecessary, even if the need for market 1 to be regulated would no longer be specified in regulations in the future. Please note that we are not making a case for abolishing the regulation of market 1. This requires a thorough market analysis which is not the subject of this study. We are only pointing out that the continued existence of the obligation to provide carrier (pre)selection does not have to be linked to the need for regulating market 1. Within the regulatory framework, this could just as well be an obligation within the framework of market 2. This is also the concept adopted by most of the regulatory authorities in Europe to date.

The reasons given by the Federal Network Agency in its market analysis of market 1[36] as to why the market failure noted cannot be addressed by application of general competition law lead directly to the need for the obligation to provide carrier (pre)selection. In its modified Greenfield observation, the Federal Network Agency sees a risk that without carrier (pre)selection, TDG could transfer its market power in the access market also to other markets, in particular the telephone services market. The Federal Network Agency notes correctly that TDG would not voluntarily make this option available to their access subscribers. This is also confirmed by the market conduct of the local loop operators which are not obligated to provide carrier (pre)selection. By foregoing this option, TDG could strengthen its market position in the telephone services market. It would be the direct beneficiary of the market volume currently attributable to carrier (pre)selection. This market change would be to the disadvantage of competition and end users. The imposition of carrier (pre)selection as a regulatory measure is necessary to avoid the transfer of market power to the telephone services markets. The continued existence of TDG's substantial market power on market 1 makes the imposition of carrier (pre)selection virtually inevitable.

Within the framework of the current regulatory ordinance regarding markets 2 and 3, the Federal Network Agency correctly sees the risk that the competition on the market for international calls could diminish again if the obligations to provide carrier (pre)selection and origination are dropped. This might cancel the prerequisites for abolishing regulation of the end customer call markets. In terms of the regulatory framework, this

34 See also the remarks in section 5.1.

35 *Cf.* the study by Plum commissioned by ENTO (2013).

36 *Cf.* Bundesnetzagentur (2012a).

would lead to a situation where the three criteria test for the international call market would be met again and this end customer market would again be susceptible to ex ante regulation.

The existence of the obligation for carrier (pre)selection in connection with origination obligation has been and is an important requirement for a finding that the end user call markets no longer need regulation. This analysis, with which we agree unconditionally, indicates that the continued existence of the carrier (pre)selection obligation is necessary. If not, you might say that the Federal Network Agency has removed the business basis for its previous decisions retroactively.

The same applies to the consistency of market 1 regulation between the market analysis and the regulatory ordinance for call origination on the public telephone network. The definition of a separate market for call origination with carrier (pre)selection which was reconfirmed just recently and the finding that this market requires regulation would be useless if no obligation to provide carrier (pre)selection is imposed. This would also lead to regulatory inconsistency. We share the assessment of the Federal Network Agency in this context that sustainable competition on the markets for call services requires origination for carrier (pre)selection and consequently carrier (pre)selection itself.

To retain the obligation to provide carrier (pre)selection, the Federal Network Agency, in accordance with Section 21 (1) of the Telecommunications Act (TKG), has to determine whether this will foster the development of sustainably competitive downstream end customer markets and if not, whether this will run counter to the interests of end users. It also has to verify and determine whether carrier (pre)selection is in reasonable alignment with the regulatory goals. Sustainable competition on the markets for voice calls will follow. In particular, this will prevent the transfer of market power to the access market. In this context, it should be noted that about 25% of users live in areas whose main distribution frame is not developed by competitors. These areas usually do not have cable networks or other access infrastructures. The monopoly commission states in its latest special expert opinion that these users do not have the option of selecting other local loop operators. If carrier (pre)selection is cancelled they would additionally lose the option of falling back on a long distance carrier other than TDG for their voice calls. Failure to impose carrier (pre)selection would directly run counter to the interests of these end users. It is also not apparent that an examination of the appropriateness of carrier (pre)selection would yield a negative result given the relevant criteria. This is also confirmed by the fact that the obligation to provide carrier (pre)selection is generally imposed by the regulatory authorities in the EU including countries in which long distance carriers have a lower share of calls than in Germany.[37]

[37] We will present the regulations for carrier (pre)selection in several EU member states in section 5.1.

The threat to infrastructure-based services competition in this market segment is currently highlighted by the fact that a study recently conducted on behalf of the EU Commission[38] recommended to not only delete (previous) market 1, but also market 2 from the list of markets subject to regulation. If the Commission follows this recommendation, it would send a clear signal to national regulatory agencies that carrier (pre)selection is no longer required to create viable competition for telephone calls. The respective national regulatory authorities could arrive at a different conclusion in their own national market analysis based on the three criteria test, but their assessment would have to be justified to the EU Commission as part of the European consultation procedure. The Commission could also veto a corresponding national decision.

4.2 Value-added telephony services including directory assistance

VATS comprise many different services each of which is identified by a special service ID under which these services can be reached throughout Germany.[39] In terms of regulatory law, all such services are defined in section 3 (25) TKG and fall under the definition of telecommunication-based services.

In its market analysis of markets 2 and 3 of 2012,[40] the BNetzA differentiates between the market for call origination to carrier (pre)selection services on the public telephone network and, independently thereof, a "national market for call origination to value-added services". Based on BNetzA findings, this market is also characterized by structural competition problems which can only be solved by ex ante regulation. The relevant market includes origination services which are established by narrow-band lines and by broadband lines (DSL, broadband cable network, IP-based fiber optics network, stationary mobile solutions). Different from earlier market analyses, origination services to online services via primary multiplex connections[41] are no longer considered in need of regulation.

In the market analysis mentioned above, the BNetzA assumes that there are considerable and long-term structural barriers to market entry which result in the continued existence of TDG's dominant position on the market, in particular, because there is no (future) trend towards effective competition in sight. Since market failure cannot be addressed by applying general competition law, the market needs to be regulated in accordance with the three criteria test.

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38 *Cf.* Ecorys et al. (2013).

39 *Cf.* section 2.1.2.

40 *Cf.* BNetzA (2012b).

41 These are lines of telephone installations for business customers with 30 ISDN B channels.

Origination services to value-added services is an integral part of competition in the value-added market. The BNetzA correctly assumes that a service provider will usually only be able to have a market presence if a sufficient number of end customers are able to reach its service and the calls of these end customers will be directed to its network. "Denying access to the origination wholesale products would put the competition out of business."[42] Without origination service, service providers would have to become LLOs to reach their end customers. This option would be economically prohibitive. Since TDG is itself an active provider on the value-added services market, it has no interest in providing origination voluntarily, i.e. without a corresponding obligation to provide access.

In terms of origination to value-added services, the lowest level of traffic transfer can be the area covered by basic services or by value-added services if a query of TDG's Intelligent Network (IN) is required. In that case, transit services are also part of the relevant market and are covered by regulation at all levels.[43] In case of transit, calls are originated not only from the TDG network, but also from third-party telephone networks (with which TDG is directly interconnected). "Origination from third-party networks includes origination from the handover point with the third-party network operator, performing an IN query and transfer to the consumer of the access service."[44] The IN query is used to assign the network operator ID.

To ensure that all subscribers of all LLOs can reach all VATS[45], TDG has been considered as having a dominant position on the national market for the purpose of requiring ex-ante regulation both with regard to direct origination of the telecommunication traffic to the networks of alternative IXC/VAS providers and with regard to origination and transit from alternative local loop networks via market 2.

If transit services did not fall under mandatory regulation, the service providers would basically be forced to directly interconnect with all TC network operators to originate traffic through direct interconnection in order to ensure accessibility of its service across networks. The direct interconnection with all network operators is, in principle, conceivable, but is in reality not economically justifiable in view of the comparatively low traffic volume in the area of call origination to value-added telephony services including directory assistance and in some cases not technically feasible (IN query). Utilization of the fixed components of the interconnection service would be so low as to make the cost disadvantage prohibitive and rule out any competitive market offering.[46] (All) LLOs would also have their own IN functionality to map the national to a geographic telephone number. Only very few have this capability, and setting it up would incur

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42 *Cf.* BNetzA (2012b), p. 145.

43 Cf. BNetzA (2013), p. 18.

44 Cf. BNetzA (2013), p. 33.

45 See also the remarks in section 2.1.2.

46 Providing only directory assistance would require the direct interconnection with more than 50 alternative local exchange carriers.

excessive additional cost. Not only the origination service itself, but also the transit service is essential for the feasibility and functionality of the value-added services market in this respect. To quote the BNetzA: "To be able to have a market presence at all, the market participants depend on using a wholesale product that cannot be duplicated."[47] Here again, the LLOs themselves are the bottleneck. Smaller LLOs in particular often lack the technology for IN queries within their network. As a consequence, the traffic flows both of the originating and the receiving network operator will not have the critical mass which would make a direct interconnection economically feasible.

As we see it, these market structure conditions have not changed nor do we anticipate any changes in the foreseeable future. Therefore, the need to regulate the transit market to VATS persists also in terms of the three criteria test.

We have already amply explained the need for regulated origination services for a competitive VATS market. Withdrawing the call origination obligation as recommended by the Ecorys study (2013) of the European Commission would have similar consequences. The analysis by Ecorys is especially contradictory and inconsistent in this respect[48]. Different from regulatory practice of, for instance, the BNetzA, access to VATS is not analyzed as part of market 2, but as a new market which might be susceptible to regulation. Ecorys does conclude that this market probably meets all criteria of the three criteria test and therefore requires regulation, at least in accordance with the previous reasoning of the Market Recommendation. However, despite this finding, Ecroys concludes that the market for call origination to VATS does not require regulation since regulation does not yield a positive cost-benefit result. However, Ecorys fails to provide any quantitative proof for this proposition. This would introduce a new criterion for determining the need of markets to be regulated which has so far not been part of the European legal framework.

4.3 Business communication services (access resale and preselection)

Large business customers are more interested in communications services than in the underlying technologies. Important criteria desired are availability of service, bandwidth and technical backup, security and adequate service level agreements. These demands can frequently only be met by a bundle of custom-tailored products and solutions.

Our Europe-wide market survey regarding the communications needs of business users has shown that 69% of them prefer to have their communications needs met by a single TC provider.[49] This preference applies to both domestic and international locations.

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47 *Cf.* BNetzA (2013), p.26.

48 *Cf.* the description in section 10.3 of the Ecroys study (2013).

49 *Cf.* Godlovitch et al. (2012).

However, only 53% of these users who prefer to work with one TC provider report that this is in fact a feasible solution for them. More than 50% of respondents report problems with obtaining fixed and mobile network services from a single carrier. In 46% of cases it was not possible to obtain a suitable offering from more than one or two providers. Many large customers had to resort to several providers to meet their communications needs even though they preferred a single provider solution. There is no TC operator covering all of Europe who could meet the communications needs of multinational companies with its own access solutions. TC providers who want to satisfy the demand of multinational companies usually have only a small infrastructure of their own to build on. This is true even of the large TC incumbents. As service providers, they depend on the availability of wholesale services in the form of ULL lines, leased lines and/or bitstream access with an increasing trend towards Ethernet lines and interfaces.

The ability to make universal offers also requires the availability of relatively "simple" wholesale services such as the option to resell the telephone access ("access resale") and the option of presetting a code for access to a long distance carrier. This is the only way for providers of business services to be able to provide a comprehensive service offering covering an extensive area. Therefore, the regulatory requirements necessary for services competition should apply equally to the business and residential markets. The (regulated) wholesale services from markets 1 and 2 are indispensable for an offering with extensive coverage and for competition in the business customer segment.

If we are to assume that a subset of these wholesale services will no longer be offered through the currently defined markets, competitors of the TDG could no longer meet the demands of business customers. This would negatively impact competition on the business customer market. Besides, the pending decision of the BNetzA regarding an obligation to provide access resale at wholesale terms is of particular importance for the business communication services segment.[50]

[50] Such a decision is pending based on the judgment of the German Federal Administrative Court of June 12, 2013; see BVerwG 6 C 10.12, case no. VG 21 K 1142/10.

5 Importance and prospects of infrastructure-based services competition going forward

5.1 Proposition 1: Operator (pre)selection continues to be an indispensable element for customer-focused competition on the telephony markets

Carrier (pre)selection has been synonymous with competition in telecommunications for millions of users since 1998. Six to seven million customers, i.e. almost on third of all line customers of the TDG on the fixed network use carrier (pre)selection despite more common flat rates and lower prices. Beyond and in addition to the direct benefit for these customer groups, carrier (pre)selection makes a significant contribution to telephone services competition. Carrier (pre)selection not only affects minutes-based prices, but also triggers indirect competitive effects on flat rates. The continued existence of the carrier (pre)selection obligation has been (and is) an essential precondition for deregulating the telephone services markets. If carrier (pre)selection is dropped, the market share of TDG would again increase significantly on these markets. The TDG would probably again acquire significant power on the market for international calls. It could extend its existing market power on the access market to the telephone services markets. It can also be assumed that the overall low level of international rates – primarily due to the option of carrier selection – will again trend in the opposite, upward direction, also among alternative competitors, because it is no longer possible to fall back on IXCs. This would be an unwelcome and avoidable market and regulatory outcome. Lifting the obligation for carrier (pre)selection would run contrary to the interests of end users and negatively affect sustainable competition in the telephone services markets. We cannot see any macroeconomic disadvantages resulting from carrier (pre)selection which could be raised as arguments against the macroeconomic advantages outlined above.

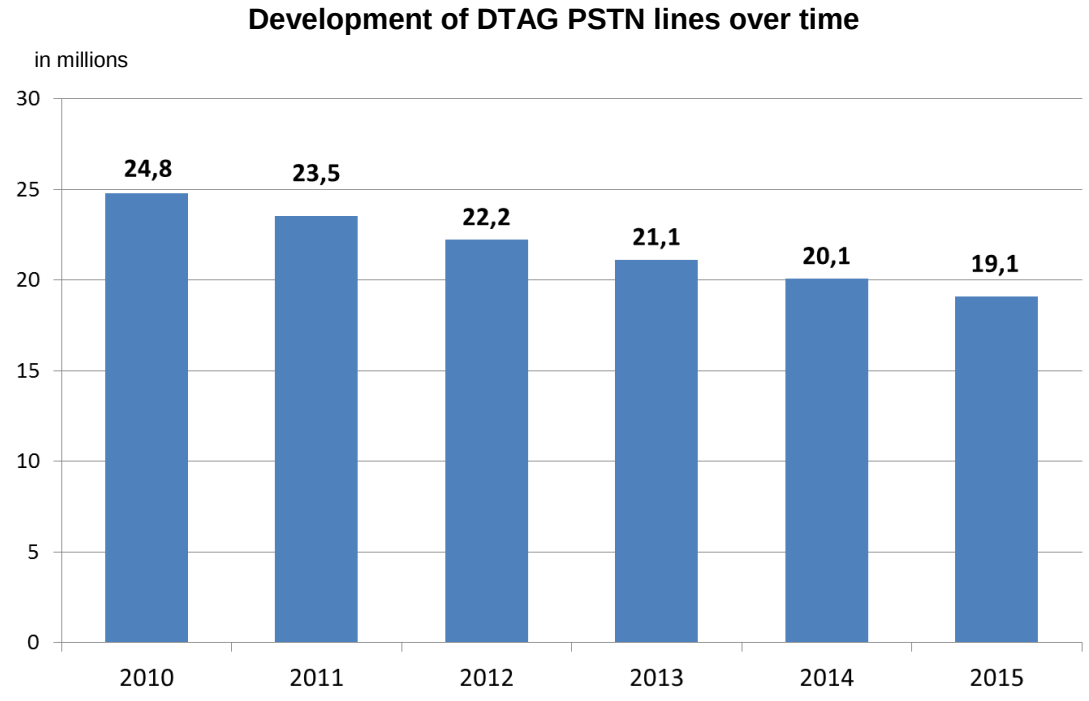
Beyond its significance for across-the-board competition, services competition supports participation of additional specific user groups in competition. Earlier market research studies show that carrier (pre)selection is used by a disproportionately large number of older persons and persons with a migration background. It can also be assumed that low-priced telephone services are important for users with a limited household budget. The discussion about old-age poverty shows that the potential of customers who are "old" and "poor" is trending upwards. Apart from that, it can be assumed that migration to the Federal Republic of Germany will continue going forward (whether migrants are coming to Germany temporarily or permanently is irrelevant to the focus of this study). It is precisely this segment which will have a high preference for "low-priced" international calls in the foreseeable future (making calls to the "homeland"). Products which are realized via carrier (pre)selection are particularly attractive for these customer groups.

The product spectrum of IXCs thus makes an important contribution to inclusion and to the challenges posed by an aging or increasingly international society.

The potential users of carrier (pre)selection basically consist of TDG fixed network subscribers. This means that the basic market potential is defined by the number of TDG lines since these are the only ones that permit use of carrier (pre)selection. "Line" in this context can be both a narrow-band traditional "telephone line" and a "broadband line". As TDG loses these fixed net customers, IXCs are also losing market potential.

Data about the number of fixed network lines are provided by TDG and the Federal Network Agency. Figure 4 provides an overview of the number of TDG access lines for the years 2010 and 2011 (based on Federal Network Agency data) and also an estimate of the anticipated development for years 2012 to 2015 (based on WIK analyses).

Figure 4: Development of the number of TDG lines 2010 – 2015



Source: Bundesnetzagentur (2011); from 2012: forecast by WIK-Consult.

Figure 4 shows that TDG's number of fixed network lines has decreased over time. In 2010, there were still nearly 25 million lines; in 2012, this figure had decreased to 22.2 million. The reasons for the decrease in TDG lines are the success of local loop

operators or cable network operators in marketing their connections and also an increasing number of "mobile only users".

The diagram also shows that the rate of decrease will slow by 2015. Overall we anticipate that over the long term, the TDG will operate about 19 million (fixed network) lines which is still about 50% of all telephone lines in Germany.

This figure of 19 million is the upper limit of the IXCs' market potential. As mentioned above, this figure includes both narrow- and broadband lines.

Excursus: Carrier (pre)selection in the EU member states

The following table of the European Commission is based on the Market Recommendations of 2007 and 2003 and shows in which countries for what markets ex ante regulation is considered mandatory (there is no effective competition), is partially required (there is some competition) or is not required (there is effective competition).

Table 2: Actual regulation of markets which are considered in need of ex ante regulation in accordance with the Market Recommendations of the European Commission of 2007 and 2003 by member states (EU 27) (as of: February 2013)

	Effective competition -no ex ante regulation
	No effective competition - ex ante regulation
	Partial competition - partial ex ante regulation

1	1st round-competition/regulation
2	2nd round-competition/regulation
3	3rd round-competition/regulation
4	4th round-competition/regulation

	2007 RECOMMENDATION							2003 RECOMMENDATION								
	Access to PSTN for res & non-res.	Call orig. on fixed network	Call term. on fixed network	Unbund. access	Broadb. access	Term. segments LL	Voice call term. on mobile networks	Local/nat. call for res.	Internat. call for res.	Local/nat. call for non-res.	Internat. call for non-res.	Retail LL	Transit on fixed network	Trunk segments LL	Access & call orig. on mobile network	Broadcast Transmis.
	Market 1	Market 2	Market 3	Market 4	Market 5	Market 6	Market 7	ex-Mkt 3	ex-Mkt 4	ex-Mkt 5	ex-Mkt 6	ex-Mkt 7	ex-Mkt 10	ex-Mkt 14	ex-Mkt 15	ex-Mkt 18
Austria	3	3	3	3	3	3	3	3	2	3	3	3	1	2	1	2
Belgium	2	1	2	2	2	1	2	2	1	2	1	1	2	1	1	w
Bulgaria	1	2	2	1	1	1	2	1	1	1	1	1	1	1		
Cyprus	2	2	2	3	3	1	2	2	2	2	2	1	2	1	2	2
Czech Republic	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	2
Denmark	2	2	2	3	3	3	3	2	2	1	1	2	1	1	1	1
Estonia	2	2	2	2	2	2	3	1	1	1	1	1	1	2	1	2
Finland	2	2	2	3	3	1	1	2	1	2	1	1	2	1	v	2
France	3	3	3	3	3	2	3	1	1	1	1	2	1	2	w	3
Germany	2	2	2	3	2	1	2	2	1	2	1	2	2	1	1	2
Greece	2	2	2	3	3	2	3	2	1	2	1	2	2	2	1	1
Hungary	4	3	3	3	3	3	4	2	2	2	2	3	2	2	2	1
Ireland	2	2	3	2	2	2	1	2	2	2	2	2	2	2	1	1
Italy	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
Latvia	1	2	3	1	2	2	3	2	2	2	2	3	2	1	1	1
Lithuania	1	1	3	2	2	1	2	2	1	2	1	1	1	1	1	2
Luxemburg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Malta	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Netherlands	3	2	3	3	3	3	2	2	2	2	2	2	2	2	1	2
Poland	2	2	2	2	2	1	3	1	1	1	1	1	1	1	2	2
Portugal	1	1	1	2	2	2	2	1	1	1	1	2	1	2		1
Romania	1	1	2	1	1	1	2	1	1	1	1		1			1
Slovakia	3	3	2	2	2	2	2	2	2	2	2	2	2	1	1	2
Slovenia	2	2	2	3	3	2	3	1	1	1	1	2	2	1	3	2
Spain	3	2	2	2	2	2	3	2	2	2	2	2	2	2	1	2
Sweden	2	2	2	2	2	1	2	1	1	1	1	2	2	1	1	2
UK	2	2	2	2	2	2	3	2	2	2	2	2	2	2	1	1

Source: European Commission; downloadable under: https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/Market_overview_25_february_2013.pdf.

According to this table, the situation in markets 1 and 2 which are relevant for this study is as follows:

- With three exceptions, market 1 is still considered in need of ex ante regulation in EU 27;
- Market 2 is in need of ex ante regulation in all countries of the study

Nearly all national regulatory agencies in Europe usually impose the obligation of both carrier selection and carrier preselection. Despite the declining market importance in most countries which make calls via carrier (pre)selection, regulatory authorities still consider this obligation as essential for competition and customers. This is also true in cases where only a few percent of users do not obtain lines from their local loop operator. OPTA, the regulatory authority in the *Netherlands,* reports, for instance, that only 2% of users fall in this category.[51] Nevertheless, OPTA considered carrier (pre)selection essential as late as 2012 and imposed it on KPN.

Different from Germany, in a number of cases carrier (pre)selection is imposed in connection with market 2 (call origination on the public telephone network) and not in connection with market 1. This is true of, for instance, Austria and Italy. After the regulatory authority AGCOM in *Italy* last imposed carrier (pre)selection in connection with market 2 in 2010, it also imposed this obligation for All-IP connections in a separate decision in 2011.[52] *Switzerland* also requires carrier (pre)selection by law. It has also been applied to ALL-IP connections in a technology-neutral way for several years.

In *France*, imposition of the carrier (pre)selection obligation was last confirmed in a decision of the regulatory authority ARCEP in 2011.[53] In *Finland*, a carrier (pre)selection obligation was imposed in the decision regarding market 1 in 2003. However, the market 1 decision of the Finnish regulatory authority FICORA of 2010 stated that market 1 should be removed from ex ante regulation.[54]

The decision taken by the Austrian regulatory authority Telekom-Control-Kommission regarding market 2 is noteworthy in this context. In this procedure, the commission confirmed a continued carrier (pre)selection obligation for market-dominant operator A1 Telekom Austria. The commission explains this decision as follows:

> "The demand for origination services is derived from the demand for fixed network voice telephony (end customer telephone services markets) at the end customer level: In this segment, the percentage of CPS or CS and CPS connections is still high, particularly in the business customer segment; the

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51 See Commission decision concerning case NL/2012/1306: Fixed Telephony Markets in the Netherlands, SG-Greffe (2012) D/6759 dated April 16, 2012.

52 *Cf.* section B17 of Delibera 128/11/CIR.

53 *Cf.* SG-Greffe (2011) D/11472 dated July 11, 2011.

54 This decision has to be viewed largely against the background that mobile access has to be considered a substitute for fixed network lines in Finland. In fact, as early as 2010, only 1% of households were still fixed network users only, while 75% of households were "mobile only" users. *Cf.* SG-Greffe (2010) D/16179 dated Oct. 5, 2010. Incidentally, market 2 was removed from ex ante regulation for the same reasons in May 2013; *cf*. European Commission (2013a).

> decline in the percentage of CS and CPS connections is much stronger for residential customers than for business customers. There were about 493,000 CPS and CS connections for residential customers and about 231,000 for business customers at the end of 2010. This shows that carrier (pre)selection on the fixed network – particularly for business customers – continues to be very important."[55]

This decision is of special interest in comparison to the German market since the share of traffic minutes realized through carrier (pre)selection in Austria is just under 4% for residential customers and slightly over 5% for business customers. These percentages are considerably higher for international calls (about 17% for residential customers and about 21% for business customers). While both percentages are declining also in Austria, the decline has slowed down for both figures in 2009 and 2010. In the business customer segment, the percentage has almost stabilized towards the end of the period under review.

It should also be noted that the Austrian regulatory authority considers continued existence of carrier (pre)selection as a requirement for deregulating the telephone services markets which is still necessary today. It views carrier (pre)selection as an essential prerequisite for lowering the barriers to market entry and intensifying competition. Without this regulatory obligation, deregulation of end customer markets would have to be called into question. In the Commission's estimation, the carrier (pre)selection obligation is an essential prerequisite for lowering the barriers to market entry and intensifying competition particularly in the business customer segment and for international calls. Without such obligation, self-sufficient competition on these markets cannot be assumed. Without carrier (pre)selection obligation, A1 Telekom Austria would be able to extend its market power to downstream voice call markets. This could result in direct denial of access and also to a margin squeeze or discriminatory practices in terms of non-price parameters. For these reasons, continuing carrier (pre)selection obligation in Austria was never called into question.

5.2 Proposition 2: Comprehensive origination services are a necessary precondition for competition in the value-added telephony services including directory assistance segment

As we explained in section 4.2, origination services for connections from the telephone network – this includes transit services – are an indispensable prerequisite for a competitive market for value-added telephony services including directory assistance. Services competition will not be sustainable without an origination obligation. In its regulatory ordinance, the BNetzA also assumes that the provision of (satisfactory)

[55] *Cf.* Telekom-Control-Kommission (2013), p. 6.

voluntary access cannot be expected. Content providers will therefore have a competitive offering of value-added services available only if and as long as the call origination obligation is in place. The market would otherwise turn from a competitive into a monopolistic market.

Against this background, it is understandable and makes strategic sense that European incumbents deny the (continued) need for regulating call origination. However, this view is not justified from a macroeconomic perspective. The study by Plum, for instance, which was performed for the European incumbents on behalf of ETNO,[56] requires across-the-board removal of market 2 (call origination) from the list of relevant markets for all of Europe. The rationale provided is focused exclusively on the competitive conditions on the market for telephone calls. It is argued that, taken Europe as a whole, more telephone calls originate on mobile than on fixed networks by now. Furthermore, "voice over broadband" has developed into a significant market segment. Regardless of the fact that market conditions in Germany with regard to the voice call market are different from the view of a Europe-wide market - which does not exist - where all countries are lumped together, this view completely ignores the conditions on the market for call origination to VATS. In this respect, this undifferentiated view completely misses at least the market conditions in Germany (as they have also been recognized in regulations).

We share the current assessment of the BNetzA which confirms the existence of barriers to entry to the market for call origination plus transit to VATS. In our view, these barriers will remain for the foreseeable future. Against the backdrop of the situation analyzed in sections 2.1.2 and 4.2, the reasons are first that the alternative network operators cannot be expected to provide the relevant services increasingly on their own by duplicating the TDG infrastructure. Secondly, we do not see a significantly stronger tendency towards direct interconnections between the individual market participants compared to today. The reasons against it are the relatively "high" costs of establishing the infrastructure and interconnections considering the relatively "limited" traffic volume (not permitting economies of scale).

We consider it reasonable that, for instance, the IXC/VAS providers could position themselves on the market such that they restrict themselves[57] to interconnecting with the major "traffic generators" – generally TDG and the four mobile network operators. Additional interconnections with smaller network operator tend to become more complex (transaction costs) with little customer growth.

All in all, there is a risk that some of the VATS telephone numbers can no longer be accessed by end users if the call origination obligation (plus transit) is lifted. This would

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56 *Cf.* Plum (2013), p. 40.

57 An example are network operators who specialize in the provision of specific value-added services (0900, 0137, etc.).

probably affect end users from smaller originating networks most strongly. A subsequent increase in TDG's market share in the end user access segment does not seem unlikely because TDG can provide the "call to all added-value service call numbers" functionality on its own.

5.3 Proposition 3: The market for business communication services needs wholesale products better tailored to its needs

The market for business communication services is becoming increasingly more important.[58]. This is also, and particularly, true of voice services. An important aspect is the integration of fixed and mobile voice in a company-wide, transnational company network to be integrated into a so-called centrex[59] solution in the future which combines fixed network telephony with mobile communications into a uniform voice package using a transnational MVNO approach ("unified communication").

Such solutions for global business customers will be realized by connecting an MNC's locations with many subscribers via fixed lines to the network of the solution provider. For smaller locations with few users, however, dial-up connections with carrier preselection to the centrex provider network will be the only economically efficient solution for voice communication. A 2 Mbit/s (E1) leased line would be vastly overdimensioned, and lower bandwidths are no longer offered. They were removed from the list of mandatory offerings for leased lines. Such a narrow-band leased line would also be overdimensioned depending on the user profile. The data traffic of these locations is typically included using bitstream.

In this area, carrier (pre)selection plays an important part since not all locations of an MNC can be efficiently integrated into a common network via leased lines or powerful bitstream connections.

Carrier (pre)selection is a technically simple, harmonizing solution which is available in all EU countries across PSTN and VoIP platforms. This makes it the only solution with comprehensive coverage that satisfies the national and international needs of business customers. Carrier preselection for telephony could be seen as a bitstream equivalent. In regions where no unbundled subscriber lines can be used, this wholesale service combined with access resale is the highest value-added level for alternative provider on the ladder of investment.

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58 *Cf.* Godlovitch et al. (2012).

59 A virtual telephone private branch exchange across locations will be offered where subscriber can call each other directly using speed dialing (direct dialing).

Waiving carrier (pre)selection even in only a few countries would make implementation of business communications solutions more difficult with negative consequences for provision costs and demand. Besides, this would run counter to the efforts of the political players at the European level to do away with the fragmentation of markets and access conditions in Europe and to create a single market for communication services.

6 Conclusions and recommendations

1. A stronger orientation towards pure infrastructure competition and away from infrastructure-based services competition is noticeable, especially at the European level. While infrastructure competition, where it operates under market conditions, is undoubtedly very productive in macroeconomic terms, regulators and policymakers must not neglect infrastructure-based services competition, since there is no pure infrastructure competition in many regions nor can it be expected in the foreseeable future. Pure infrastructure competition on the fixed network also tends toward a duopoly of two providers or a monopoly with one provider. Both scenarios are (extremely) unsatisfactory in terms of competition policy.

2. On the other hand, the new regulation proposals of the EU Commission to implement an integrated European TC market constitute a twofold paradigm shift. For one, the goal is to permanently worsen the framework conditions for infrastructure-based services competition with the expectation that pure infrastructure competition by cable network operators will take over this function. Secondly, interventions in end customer pricing is intended to ensure customer protection which has previously been provided by competition and regulation at the wholesale level. The Commission did not provide evidence that this twofold paradigm shift will result in similarly good or even better market results than the present regulatory regime. There is therefore good reason to strongly oppose the pending European paradigm shift.

3. The paradigm shift would have a particularly deep impact at the European level if the European Commission were to adapt the market recommendation regarding the markets subject to regulation as has been recommended in a recent study. Although all European regulatory authorities presently still consider the market for call origination (market 2) to be in need of regulation, and almost all authorities consider also market 1 to be in need of regulation, the study recommends a complete removal of these markets from regulation. In this study, we have shown that the conditions of the three criteria test indicating the need for regulation are still met and will continue to be met for the foreseeable future in both markets, at least in Germany. From a German perspective, the European Commission should therefore be expected to not follow the recommendations mentioned above or frame the Market Recommendation in such a way that the national circumstances and specifics can be taken into proper account.

4. Viable and effective competition on the TC market is inconceivable without services competition. That is why policymakers and regulators have to create or maintain efficient framework conditions for *both types of competition*. Services competition, in particular, is able to make the benefits of competition accessible to specific customer groups. This is not possible with pure infrastructure competition which is regional and geared towards a tight market structure without regulated entry opportunities. This is evident in the market segments for telephone connections, value-added telephony services including directory assistance and business communication services which are the focus of this study.

5. Services competition in telephony services, especially the call-by-call version, has long been synonymous with competition in telephony. While the market volume of long-distance carriers which rely on carrier (pre)selection has decreased markedly in past years, carrier (pre)selection continues to be very important for certain market segments. For some customer groups, it still is the only way to get access to telephone services competition. The impact of carrier (pre)selection on price competition is also evident.

6. Carrier (pre)selection still accounts for about 11-14% of competitor telephone traffic in Germany. For voice calls from the fixed network to the mobile networks, carrier (pre)selection accounts for 10% of total market volume which is above average. Relative to the addressable market, this figure increases to 18%. According to our estimates, long distance carriers account for 34% of total traffic or 50% of the addressable market for international calls. We estimate the number of customers actively using carrier (pre)selection to be about 6 to 7 million.

7. Carrier (pre)selection has been synonymous with competition in telecommunications for millions of users. Six to seven million customers, i.e. almost on third of all TDG line customers on the fixed network are still active users of carrier (pre)selection. Beyond and in addition to the direct benefit for these customer groups, carrier (pre)selection makes a significant contribution to telephone services competition. The continued carrier (pre)selection obligation has been (and is) an essential precondition for deregulating the telephone services markets on the fixed network. If carrier (pre)selection were dropped, the market share of TDG would again increase significantly on these markets. TDG would probably again acquire significant power on the market for international calls. Lifting the obligation for carrier (pre)selection would negatively affect sustainable competition on the markets for telephone calls and run counter to the interests of end users. We cannot see any macroeconomic disadvantages resulting from carrier (pre)selection which could be raised as arguments against the macroeconomic advantages outlined above.

8. Beyond its significance for across-the-board competition, services competition supports participation of additional specific user groups in competition. Earlier market research studies show that carrier (pre)selection is used by a

disproportionately large number of older persons and persons with a migration background. It can be further assumed that low-priced telephone services are important for users with a limited household budget. The discussion about old-age poverty shows that the potential of customers who are "old" and "poor" is trending upwards. It is precisely this segment which will have a high preference for "low-priced" international calls in the foreseeable future (making calls to the "homeland"). Services which are realized via carrier (pre)selection are particularly attractive for these customer groups. The product spectrum of IXCs makes an important contribution to inclusion and to the challenges posed by an aging or increasingly international society.

9. Infrastructure-based telephony services competition can only be accomplished with regulatory measures. The obligation for carrier (pre)selection on market 1 and call origination on market 2 have been and are an integral part of German regulatory policy in order to pave the way for and retain services competition. This has to continue going forward. In this context, it is ultimately irrelevant whether carrier (pre)selection is imposed as an obligation on market 1 or (as is the case in most other European country) on market 2. The continued existence of carrier (pre)selection obligation in connection with the call origination obligation has been and is an important requirement for a finding that the end user markets for telephone services no longer need regulation.

10. For the reasons mentioned, the German federal government and the BNetzA should strongly oppose all tendencies in Brussels to call into question the need of markets 1 and 2 for regulation, in particular, with regard to carrier (pre)selection and call origination. Markets 1 and 2, but at least market 2, should be retained in the Market Recommendation so that the national regulatory authorities have the option of mandating the provision of wholesale infrastructure services that are necessary to continue competition in the carrier (pre)selection, value-added telephony services including directory assistance and business communications areas. The European Commission has so far not offered an adequate rationale for its paradigm shift away from infrastructure-based services competition. There are therefore no convincing reasons for giving up proven regulatory practices.

11. The BNetzA has defined a separate market for call origination from fixed networks to value-added services. Subsequent call origination is an integral part of competition in the value-added market. Service providers do not have any economically relevant option to do without this wholesale service. Whoever calls this wholesale service into question, also calls into question competition on this market.

12. The VATS market is characterized by the interaction of many different market players so as to ensure that all participants of all IXCs can reach all VATS. However, value-added service providers cannot directly interconnect with all IXCs. This would not be economically justifiable and efficient both from the IXCs'

perspective and from the perspective of the VATS service providers. That is why the specific call origination services anchored in market 2 from the network of TDG, which is the local loop operator with market dominance, are now and will continue to be essential for value-added service providers: they are especially dependent on a regulated transit service which provides calls from third-party telephone networks. This is the only way to ensure service accessibility across networks.

13. The unitary German public service telephone number (115) is a good example to illustrate the need for transit obligation. Without transit obligation, the competition for implementing the telephone number and related platform services would have been impossible. The public contracting authority required in its public tender for bids that the service telephone number (online billing) has to be accessible *from all networks* starting with the day of operation (November 23, 2008 in this case). Had there been no transit obligation for the TDG, this requirement which the public contracting authority made mandatory for awarding a contract could, with great likelihood, only have been met by single company, namely TDG.

14. Since the extensive market liberalization, policymakers and regulators have focused on mass market TC services. The lack of regulatory attention to business communication services is in stark contrast to the significance of these services for the economy as a whole. Companies doing transnational business with many locations account for about 50% of the value added to the European economy. With €90 billion per year, they account for more than 27% of all communication service requests in Europe. This means that they require more attention by policymakers and regulators.

15. Carrier (pre)selection to the provider's network is the only economically feasible solution for including small locations in centrex solutions for MNCs. Carrier preselection is the voice network equivalent of DLS (narrow-band) bitstream. Therefore, this service has to be retained accordingly.

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