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## Triple and Quadruple Play Bundles of Communication Services

OECD

# TRIPLE AND QUADRUPLE PLAY BUNDLES OF COMMUNICATION SERVICES

## FOREWORD

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## MAIN POINTS

This report examines the provision of multiple communication services over broadband access networks, a phenomenon known as “bundling”. It highlights that care should be taken to ensure that such offers do not unreasonably constrain competition or bind consumers to a single provider in a manner that decreases welfare.

Bundles of services have become more widespread in OECD countries as broadband speeds increase and, due to convergence over the Internet Protocol (IP), more services can be provided over those networks. Bundling allows operators to allocate fixed costs across a range of services and can have beneficial effects, such as the convenience of unified billing, new possibilities for innovation and discounts for consumers and business. Traditional telecommunication and cable television networks provided the first wave of bundled offers, which included triple-play services (telephony, data and pay-television services). This was followed by the emergence of quadruple-play offers, as wireless broadband networks enabled operators to add mobility to the previous services as well as a range of new services (e.g. navigation).

The provision of bundled communication services can increase competition if it brings more choices, higher quality, or lower prices to consumers from the facilities-based networks providing bundled offers. On the other hand, it may also lead to increased consolidation between fixed and mobile network providers and result in less competition in wholesale and retail markets. This raises a variety of issues with respect to market structures, especially the marginalisation of some players either because they cannot offer some part of a bundle given that they lack access to networks or content, or because they cannot include all services in their bundled offers on reasonable and competitive terms.

Communication regulators and competition authorities have been confronted with various challenges in their aim to apply conventional market definition and analysis to bundles of services. While bundling services may make economic sense for communication providers, economic literature provides evidence that bundles can be used to substantially limit competition: some market players may face constraints to replicate products and services if they do not have access to some important inputs that act as network bottlenecks or content (e.g. local loops, wireless access, competitive interconnection or the most popular television content, such as the rights to offer sports and movies).

Standard practices for market analysis and definition should be applied to bundles and, if needed, to the imposition of remedies by regulators to tackle insufficient competition or by competition authorities to tackle anticompetitive conduct. Market definition processes should include a tool to control whether bundling products play a substantial role in a specific market and to what extent such role has implications for competition dynamics. In particular, the Small but Significant Non-transitory Increase in Prices (SSNIP) test (a form of the hypothetical monopolist test, a conventional tool to assess market definition from the demand perspective), should be fine-tuned to capture bundles of communication services. Communication bundles may, however, not have any significant effects on the obligations imposed, especially if those relate to wholesale markets only, as a proper wholesale market analysis could well deliver satisfactory results.

The benchmarking of prices for communication services needs to take into account the practice of bundling. This is not because stakeholders can, as yet, ignore single-play offers that still play critical roles to meet the demands of some consumers, but rather because it is vital to be able to compare bundled offers on a like-to-like basis. While the adoption of communication bundles varies to a great extent across countries, the OECD basket methodologies could be adapted to include double-, triple- and quadruple-play

bundles. Taking different elements from existing OECD baskets (fixed telephone, broadband and mobile baskets), this report constructs a set of proposed “bundle baskets”, which enable the benchmarking of prices across countries.

In this document prices are compared for twelve large OECD economies: the prices of “basic” triple-play bundles vary from USD 30 and USD 80 and those of “premium” triple-play bundles are between USD 50 and USD 195. Quadruple-play bundles, which include entry-level (“basic”) or unlimited (“premium”) mobile services can be purchased from USD 35 to USD 120 (“basic”) or from USD 80 to USD 250 (“premium”).

In addition to improved service provision of broadband Internet access, pay-television, telephony and mobile communications, fixed broadband operators are starting to include innovative services in their bundles, either at no extra fee or optionally involving a subscription costs. The report looks at innovative bundles of services, such as those resulting from partnerships with over-the-top (OTT) providers (e.g. Spotify, Netflix, Deezer) as well as those in the areas of home monitoring, e-learning applications, computer security, and cloud storage services.

An alternative, or rather complementary approach, for comparing the prices of communication bundles is the use of hedonic price analysis. Given the inherent complexity of this analysis, future work will provide an assessment of the advantages and challenges of hedonic price analysis, and for this reason it has not been included in this report.

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## INTRODUCTION

Although bundling of several communication services has been common, for many years, such as when incumbents offered network access and services as part of a package, market liberalisation and technological convergence have played a key role in increasing the range of services offered in these bundles (OECD, 2014). Multi-purpose IP-based networks have enabled the provision of different services over the same network. For example, services such as telephony, video, data, which were previously provided by separate networks (e.g. PSTN, cable networks, dedicated corporate links), can now be provided by the same platform. In the case of pay-television services, satellite technology (Direct Broadcast Satellite, DBS, or Direct-to-home, DTH) remains an important platform.

“Bundling” is not straightforward to define. Some authors define bundling as “selling goods in packages” or “selling two or more separate products in one package” (Adams and Yellen, 1976; Stremersch and Tellis, 2002), whereby the term “separate” may have different implications and “products” is understood to refer to both goods and services. More generally, economic literature uses “pure bundling” or “tying” for the sale of two or more goods or services jointly, without the possibility of purchasing the products independently, whereas “mixed bundling” allows the purchase of the independent products separately. Under “unbundling”, firms sell only the products separately, not in a bundle. For this report, which focuses on communication services, the term “bundle” of services will be used when two or more services can be purchased jointly (at one joint price), or separately, but a discount is provided if two or more services are acquired. These services may or may not be technically integrated (e.g. unified billing, technical convergence). Triple-play services refer to bundles of fixed voice, broadband and pay-television services, and quadruple-play services to triple-play bundles plus mobile services, whether mobile voice, data or both.

As a result, most OECD countries have witnessed a trend in which technological convergence has encouraged competition between services and platforms. The latter translates into commercial offers based on bundles, and consequently these offers have become pervasive. For example, nearly half of households in the European Union purchase communications services as part of a bundle (46%), and in particular, Internet access purchased through a bundled offer represents 64% of all Internet connections in the EU (European Commission, 2014). The pervasiveness of triple play bundles has increased, and in particular, the bundle “broadband-fixed telephony-pay television” has become increasingly popular: it was purchased by 4% of European households in 2007 and grew threefold by 2013 (i.e. 8% in 2009 and then up to 12% in January 2013). By way of example, the proportion of households in the United Kingdom that purchased bundles grew from 29% in 2005 to 53% in 2011 (and the triple-play bundle mentioned above grew from 9% to 24%).

This report undertakes a survey of operators that provide triple- and quadruple-play services. The number of operators providing quadruple-play bundles is significantly lower than for triple-play, which also reflects that the starting point for this comparison is the broadband component. The results may have varied if mobile operators had been considered first, following with an examination of which of them also provide fixed services.

Thus, as bundles become ubiquitous, they play an essential role in the dynamics of telecommunication markets. The effects of bundles on competition dynamics in communication services has already been addressed in previous OECD work (OECD 2006, OECD 2011 and OECD 2013a). On the one hand, bundling can be pro-competitive if it enhances consumer choice, but on the other hand, it may raise competition concerns to the detriment of consumers. In addition, bundling allows pricing discounts that reflect that fixed costs such as network provision or customer care can be shared across multiple services. In broad terms, policy makers should seek to foster competition in bundled services, for example by

increasing bill transparency, by avoiding consumer “lock-in” and by preventing that large operators use these bundled sales to leverage their market power (OECD, 2013a).

The first section of this report provides a set of indications on how regulators and competition authorities should take into account bundles to improve market definition and analysis processes. In particular, they should assess whether bundles should be considered a relevant market and to what extent. The latter translates into examining whether different remedies in the absence of sufficient competition should be implemented or, alternatively, whether wholesale remedies need not change.

This report also contains a methodology proposal to include communication bundles in the broader OECD price benchmarking methodologies, used since the 1990s to compare prices of communication services across countries (Section 2). These baskets rely on empirical evidence from regulators and, especially, communication operators about what services are actually being demanded and consumed by consumers and businesses. Given the intrinsic challenges of reaching an agreement on standardised bundles of communication services that can be compared across countries, this report puts forward a proposal and tests it with actual data from 38 operators in the twelve largest OECD economies: Australia, Canada, France, Germany, Italy, Japan, Korea, Mexico, Netherlands, Spain, the United Kingdom and the United States. This exercise relies to a significant extent on existing OECD communication price baskets and proposes a way to combine the different services to form triple- and quadruple-play bundles.

The report also includes Section 3 on innovative services that communication providers are increasingly including in the bundles they provide, such as enhanced hardware devices, home security services or various over-the-top applications, either provided by the operator or in partnership with third-party providers. These developments show that bundles may be used to promote innovative services and create new business opportunities and value for consumers.

Various workshops have been organised by the OECD, in addition to the regular work on communication indicators, in order to develop a wide set of indicators on broadband infrastructure and services (Washington, D.C., October 2011, London, June 2012). One of the recommendations suggested by the participants to these workshops was to undertake exploratory work on the appropriateness of using hedonic price regression analysis to understand trends in broadband pricing. These recommendations already anticipated that the use of hedonic economic models would rather complement the benchmarking role of the OECD baskets, rather than put forward an alternative approach. In this sense, a future OECD report on hedonic price analysis will complement the basket analysis of communication bundles included in Section 2.

## SECTION 1: IMPLICATIONS OF COMMUNICATION BUNDLES FOR COMPETITION

Consumers can benefit from bundles to the extent it allows them to purchase several services with a significant discount over the sum of prices for stand-alone equivalents (OECD 2011, OECD 2006). In addition, bundles may reduce complexity (e.g. in France the triple-play bundle is the standard service, complemented by *à la carte* options) or, on the contrary, may complicate choices for consumers by increasing complexity, thus making price comparison more difficult, and reducing bill transparency. In competitive markets, operators may try to attract customers by simplifying the plans advertised. Other benefits for consumers may arise from the integration of services and the possibility to use one service in many devices.

Since consumer bills may also become more complex and less understandable, some policy makers and regulators have sought to increase bill transparency by issuing regulation that requires operators to disaggregate the prices of each service component in the bundle. Likewise, when operators sell mobile devices and communication services as a package, some regulators force operators to make explicit the amount of the bill that corresponds to the handset (e.g. Canada). These practices are in line with what is set out in the OECD Consumer Toolkit and its application to communication services (OECD, 2008; OECD, 2010; OECD, 2013b). In 2010, the Body of European Regulators of Electronic Communications (BEREC) invited regulators to ensure that consumers of bundled services can switch providers with ease (BEREC, 2010a).

From an operators' point of view, there may be an incentive to provide bundled services if it involves cost savings, such as the use of a sole technology platform (i.e. a high share of costs are fixed). Bundling services can also facilitate price discrimination. Cost savings may arise via economies of scope and scale or simplified distribution and marketing. An example of cost savings are set-top-boxes, continuing with the example of France, where providers offer triple play bundles over the same device (OECD, 2011). With regards to price discrimination, traditional economic literature sustains that operators bundle services together as it allows incumbents to recuperate consumer surplus without lowering prices too much (McAfee, McMillan, and Whinston 1989). Bundling can also reduce the variation in consumers' willingness to pay, hence facilitating price setting (Crawford, 2008).

Bundles could also reduce consumer choices because, as in the case of pure bundling or tying, bundled packages may include one or more services which the consumers may not value. For example, some operators may tie broadband to fixed telephony which increases switching costs for consumers. Regulators may seek to reduce this type of tying with the aim of fostering competition. In any case, bundles are becoming increasingly popular in most OECD countries as many operators discourage the purchase of standalone services by pricing bundles in more advantageous terms.

In addition, the provision of standalone broadband may become important for those customers who wish to subscribe to over-the-top (OTT) services. This becomes crucial in countries or geographic areas in a country where competition is limited (e.g. only served by one or two Internet Service Providers (ISPs)). In this case, OTT services may play a role in offering other services such as voice and video, in which case standalone broadband would play an important role to increase competition (OECD, 2011). Of course, as highlighted in many recent policy debates, the quality of broadband connections (e.g. speeds, latency) remains crucial for these OTT services to become viable options for consumers and thus enhance competition.

A list of specific policy recommendations to increase bill transparency, reduce switching costs and foster competition in bundles has already been covered in an OECD report on broadband bundling (OECD, 2011). The next section focuses on competition concerns recently raised by regulatory and competition authorities and provides an overview of the main challenges faced when defining relevant markets in the presence of communication bundles.

### **Anti-competitive behaviour based on bundling**

Operators may use bundles to leverage market power or increase switching costs for consumers. In addition, bundles may mitigate the ability to compete for rivals offering standalone services only (OECD, 2011). Nalebuff (2004) points out that bundling can be an effective entry deterrent if the rival sells only the standalone good (compared to the bundled offer by the incumbent). Thus, if most users buy triple play bundles, entry may depend on the ability of new competitors to provide these packages, where access to all relevant wholesale inputs (e.g. television content, local loop, airtime for mobile services) becomes vital for successful retail competition.

Rey and Tirole (2006) say that firms may choose to bundle a “competitive” final good with a “bottleneck good” (i.e. the standalone good where the firm dominates the market) to engage in horizontal foreclosure.<sup>1</sup> In this sense, this behaviour can be considered predatory because, even if it involves offering the bundle at a discount and lowering current profits, the firm is seeking to lower competitor’s profitability so it eventually exits the market, taking advantage of its dominant position in one market (“the bottleneck good”). Furthermore, operators may artificially alter prices charged for each of the stand-alone services (e.g. by selling them below average costs), which may lead to price squeeze or lack of replicability of the bundled offers by potential competitors.

In addition, vertical foreclosure (i.e. denying competitors full access to a “bottleneck” input, as defined by Rey and Tirole, 2006), could also arise if alternative service providers cannot access all wholesale inputs necessary to deliver the bundled service. In this sense, the owner of the inputs (e.g. television content, local loop, mobile airtime, etc.) would be in a position to defend its market power over adjacent service markets.

Thus, in order to secure a level playing field in telecommunication markets, it is essential that enough competitors have access to wholesale inputs in order to provide bundled offers to end-users. In this sense, the Danish regulator, the Danish Business Authority (DBA), in the context of its decision concerning regulation of the market for wholesale broadband access (WBA) in December 2008, defined the market of WBA not only as bitstream access via copper networks, but also as including fibre and cable television networks. The significance of this decision was that it justified additional obligations while examining bitstream remedies, such as multicasting, which would allow rivals to replicate the bundled retail offers of the incumbent.<sup>2</sup>

Many European communication regulators have expressed concerns about the lack of replicability of bundles by all players. In fact, the European Regulators Group (ERG) document on the replicability of bundles (ERG, 2009a) already mentioned that video content and services were the main elements raising doubts about the replicability of these packages (55.6% and 44.4 % respectively).<sup>3</sup> In 2007, Oxera prepared a report for the Irish regulator Comreg, which included a decision framework for regulators to assess whether bundles would be replicable through retail-minus wholesale inputs (Oxera, 2007). In addition, the BEREC report on the impact of bundled offers on retail and wholesale market definition (2010) mentions that regulators consider that the most likely source of competitive distortion in bundles is when rivals don’t have access to television content and are thus unable to offer triple play (BEREC, 2010b). For example, some competition authorities and regulators in OECD countries (e.g. France, United Kingdom and the

United States) have recognised the importance of access to television content as an input in order to foster competition (see Box 1).

### **Box 1. Access to television content as a competition bottleneck**

#### **France**

*In 2012, the French Competition Authority (AdC - Autorité de la Concurrence) re-issued the CanalPlus/TPS merger decision; following the withdrawal of the 2006 merger authorisation for lack of compliance with the conditions imposed. Among the obligations imposed in 2012, CanalPlus had to provide a wholesale reference offer so that rival platforms could access its content (i.e. must offer obligations). In addition, CanalPlus was obliged to include up to 55% of independent channels in its offers (i.e. must carry obligations).<sup>4</sup>*

*Another case that attracted much attention from French authorities was the entry of Orange to content for pay-television in 2008 (seeking upstream integration). In 2009, the French Competition Authority strongly advised against allowing Orange to offer its sports channels (i.e. Orange sports) only to its broadband customers (Autorité de la Concurrence, 2009). The French Competition Authority was concerned that this “double exclusivity” (i.e. exclusive access and distribution of content) by Orange would, despite introducing competition in the pay-tv market, seriously undermine the currently competitive broadband market (and the future fibre broadband market). This case was brought to court, and in 2010, the Tribunal de Commerce of Paris ruled that Orange should not be allowed to tie Orange sports to its triple-play offer, as it represented disloyal competition.<sup>5</sup> After several appeals, the highest court for this matter (Cour de Cassation) vacated this decision and allowed Orange to keep its double exclusivity.<sup>6</sup>*

#### **United Kingdom**

*In 2012 the Competition Commission of the United Kingdom, while analysing the effect of Sky Movies on the pay-television market, concluded that the fact that Sky had the first window to major Hollywood movies was not a sufficient driver of consumer’s choice as to harm competition. The main reasoning behind it was that the launch of improved OTT services by Online Video Distributors (OVD), like Netflix and LOVEFiLM, offered viable alternatives that drove consumer’s choice increasing competition. In contrast, in the case of Sky Sports, the communication regulator Ofcom imposed in 2010 a must-offer wholesale obligation on Sky, meaning that it had to offer these sports channels to retailers on non-Sky platforms.<sup>7</sup>*

#### **United States**

*In 2011, extensive conditions were imposed on Comcast/NBCU when these companies merged, by the Federal Communications Commission (FCC) and the Department of Justice (DOJ). Comcast, the largest cable-television and broadband provider in the United States, merged with NBCU, owner of broadcast television stations (NBC), cable programming and movie content (Universal Pictures, Focus Features) and has a share in Hulu, a popular video OTT.*

*The authorities imposed non-discrimination obligations against non-affiliated pay-television providers, “must-carry” obligations and limits on exclusive dealing. Some of these conditions also affect video OTTs (online video providers), which highlight the importance of OTT providers for increased competition in video markets.<sup>8</sup>*

As bundles become more and more common, assessing the effects they have on competition becomes increasingly challenging and important for regulators and competition authorities. Some countries have already tried to provide a roadmap on how to assess bundles from a competitive stance. For example, the Australian Competition Commission (ACCC) established in 2003 decided that, when assessing bundles, it would first consider whether the bundle in question involves leveraging market power from competitive to non-competitive markets, or increases barriers to entry. Second, it would consider whether bundles enable predatory pricing or price squeeze (ACCC, 2003).

Similarly, BEREC (ERG *Report on the application of margin squeeze tests to bundles*, 2009) firstly concurred that bundling might be used by a vertically integrated operator with significant market power (SMP) in an input market to leverage its power into one or several downstream markets (ERG, 2009b). BEREC underlined that assessing this type of anti-competitive behaviour would also require a vast amount of detailed information on the costs of providing the bundled offer. For example, in Australia in 2003 the

ACCC required the incumbent operator Telstra to provide information about the total number of customers on each specific bundle, including the implicit discount offered (OECD, 2014).

Whether OTT services, especially video, may eventually become part of an existing relevant market (e.g. pay-television market, triple-play services market), this will depend on their current or future role as substitutes for traditional services, which can be tested through the hypothetical monopolist. While the degree of substitution can vary across markets or services, some countries already see OTT services as an important source of competition which should be promoted (e.g. the United States).

The assessment of these anti-competitive behaviours requires, in any event, that the relevant market be delineated. The definition of relevant markets in the presence of bundles is already, in itself, a rather challenging task. Not only do authorities require access to extensive, reliable and high quality information, but also, authorities may face methodological challenges compared to market definition of standalone communication services.

### **A pre-condition for assessing anti-competitive behaviour: a correct market definition for bundles**

Market definition bears consequences on which telecommunications operators are deemed dominant and thus subject to *ex ante* regulation. As bundles become increasingly more common, the challenge for both regulators and competition authorities becomes more important. As market power in a standalone service does not automatically imply dominance in the provision of a bundled offer and vice-versa, certain behaviours may raise competitive concerns depending on how the relevant market is defined. In addition, depending on market definition, a certain merger may or may not be considered to lessen competition (Pereira *et al.*, 2013). The conclusion reached on market delineation could vary depending on the standalone service used as a starting point for the market definition assessment, or on whether the focal point is the bundle itself (BEREC, 2010b). This may, of course, have an effect on *ex ante* regulation. In looking at market definition, it is worth remembering that is not an end in itself; rather it is a means to identify the products/services that act as competitive constraints on the focal product in question.

Thus, the question becomes whether market definition should continue to address standalone services (e.g. telephony, Internet access or television) or whether, in some cases, bundles may become the relevant market (Pereira *et al.*, 2013). As more users purchase bundled offers, it may make sense to define the bundle as a relevant market. The European Commission's Explanatory Note accompanying the Recommendation on Relevant Markets (2007) mentions that "*consumers may have a preference for a bundle if there are significant transactional costs. In this case, consumers may prefer to purchase the services as a bundle and from a single supplier. Hence the bundle may become the relevant product market*" (European Commission, 2007). In its 2014 Explanatory note, the European Commission further noted that "*what is important in this respect is that NRAs are able to ensure that the vertically integrated SMP operator's regulated elements of the bundle can be effectively replicated (in terms of both technical and economic replicability) at the retail level, without an implicit extension of regulation to other components which are available under competitive conditions*" (European Commission, 2014). However, as BEREC rightfully states, the presence of a separate market for service bundles does not necessarily indicate that there is no competitive concern within the individual components of the bundle (BEREC, 2010b, ComReg, 2012).

How to "technically" define markets when dealing with bundles becomes a challenge. To this end, the BEREC report on the Impact of Bundled Offers in Retail and Wholesale Market Definition (2010) provided regulators with a list of elements to take into account when considering that a given market should be defined as a bundle, such as economies of scope, transaction cost savings, the take-up of bundles in comparison to standalone products, among others. The Irish Communications Regulator (ComReg) used these general principles in 2012 when defining markets of fixed voice access (ComReg, 2012).

The underlying difficulty with regards to market definition of bundles is to find out whether observed bundle prices are competitive (i.e. to disentangle whether they are a result of economies of scope or a result of leverage, as mentioned in BEREC, 2010b). This proves difficult to ascertain, as it becomes extremely arbitrary to assign costs to specific elements of the bundle, as most infrastructure elements are used by all the services. Although the definition of relevant markets in telecommunication at a standalone level prevails today, some regulatory and competition authorities have already used or acknowledged bundles in market definitions (see Box 2).

### **Box 2. Cases where bundles have been used in market definition and analysis**

#### **United States (1996)**

*A precedent of using a type of bundle as the relevant market dates back to 1996 in the United States, where the NYNEX/Bell Atlantic merger decision acknowledged that the local exchange, exchange access and long distance markets constitute a bundle of long distance and local calls on the grounds that users faced competitive alternatives to this bundle (Gual, 2004).<sup>9</sup>*

#### **Netherlands (2005)**

*In 2005, the Netherlands regulatory authority, OPTA, ruled that mobile data such as SMS, WAP and MMS belonged to the same relevant market as access and call origination on the grounds that these services were virtually always bought as a bundle.*

#### **Chile (2008)**

*In 2008, the Chilean competition authority (Fiscalía Nacional Económica, FNE) noted, in a case about predatory pricing (operators Telsur vs. VTR), that the triple play bundle of local telephony-television-broadband may constitute a separate market. Nevertheless, it also stated that the individual markets should continue to be analysed as operators can leverage their market power through bundles.<sup>10</sup>*

#### **United Kingdom (2010)**

*In 2010, Ofcom, under the review of wholesale broadband market, acknowledged that broadband services sold as a bundle are part of the same retail market of standalone broadband.<sup>11</sup>*

#### **Portugal (2013)**

*More recently, a relevant example where a triple-play bundle has been defined as the relevant market is the merger analysis of the two major telecommunications operators conducted by the Portuguese Competition Authority in 2013 (OECD, 2014).<sup>12</sup>*

One of the conventional tools used to delineate markets from the demand point of view is assessing whether consumers would be willing to substitute a service in response to a small but significant non-transitory increase in price (SSNIP test) of the service considered (usually between 5% and 10%). The relevant product market would be that over which a hypothetical monopolist could profitably maintain a SSNIP above the competitive price level. The European Commission's Explanatory Note accompanying the Recommendation on Relevant Markets (2007) states with regards to bundles the following: *"If, in the presence of a small but significant non-transitory increase in price [SSNIP] there is evidence that a sufficient number of customers would "unpick" the bundle and obtain the service elements of the bundle separately, then it can be concluded that the service elements constitute the relevant markets in their own right and not the bundle"* (European Commission, 2007). This view has been reinstated in the newly released recommendation on relevant markets (European Commission, 2014), which acknowledges the increasing demand for packages of services. The 2014 Explanatory Note also recommended ensuring the effective replicability at the retail level, without an explicit extension of regulation to currently unregulated inputs.

The fact that enough operators can have access to all the wholesale elements of the bundle should also be taken into account in market definition; otherwise some operators may leverage their market power into the adjacent service markets part of the bundle (OECD, 2014). This would have an effect on the prices that are observed in the market, which may indeed not be reflecting competitive prices. Thus, the first issue with regards to the SSNIP test is the notion of “competitive prices” in a bundle.

If the SSNIP test is applied to a situation where current prices are above the competitive price benchmark, and if, as commonly is the case, price elasticities increase with the price, then the test is run at a higher starting point elasticity (Gual, 2004). As a consequence the SSNIP test would incorrectly lead to establishing broader markets as even small price increases will result in significant substitution (also known as the “cellophane fallacy”). In this sense, BEREC (2010b) emphasises that “*when considering the definition of bundled markets, it is important for National Regulatory Authorities (NRAs) to consider whether bundling would occur under competitive conditions, or whether it is likely to be the result of the behaviour of a firm with market power.*” The main issue here is then to identify the prices that would be expected under competitive conditions. If bundles are being used to leverage market power, the observed prices may be not an adequate proxy of competitive prices.

BEREC’s 2010 report also analysed the limitations of using the SSNIP test to identify relevant markets in the context of communication service bundles. It recommended that regulators should take into account other indicators when defining relevant markets, including economies of scope and transaction costs linked to bundles. Nevertheless, Pereira *et al* (2013), in their study of triple-play bundles in Portugal, argued that despite the difficulties with bundles, SSNIP tests can still be used to define relevant markets as bundles. One of the difficulties that the authors point to is that SSNIP tests require to establish “*determining substitutability between products of the same type and also the substitutability between products of different types*”, so when assessing the market of triple-play bundles, the substitutability *vis-à-vis* double play bundles and standalone services also should be determined. To this end, the authors used of data from service plans of six Portuguese operators (which 99% of triple-play bundled offers in that country) in order to delineate communication markets for bundles in Portugal using three forms of the SSNIP test (i.e. UPI, EPI and UPP).<sup>13</sup> They found, according to all versions performed of the test, that triple-play bundles represent a relevant product market (Pereira *et al*, 2013).

### **Implications on wholesale market definition if the retail market is a bundle**

Authorities should carefully analyse the impact of defining retail markets as a bundle and the consequences it bears on wholesale market definition, as wholesale services are in fact derived demands of downstream services. As Pereira *et al* (2013) point out: if the bundle of communication services constitutes the relevant market at the retail level, then it may be appropriate to define wholesale markets as bundles, too. The latter bears important policy implications because most regulatory proceedings in the EU usually only regulate wholesale markets and it would require re-examining which wholesale markets are susceptible to *ex ante* regulation (Pereira *et al.*, 2013).

In fact, BEREC (2010b) recognises that the definition of a bundle market at a retail level may be appropriate in some situations, and in such cases the wholesale market definition may be affected as well. For instance, this report mentions that “*retail economies of scope may be the result of economies of scope at the wholesale level that are passed downstream. In such cases, it may be appropriate to also define wholesale markets as bundles.*” In short, if the factors that result in defining the retail market as a bundle can also be observed at the wholesale level, it would be possible to define wholesale markets as bundles. If that is the case, BEREC underscores that the test for determining whether *ex-ante* regulation is warranted should be applied to the newly defined markets (three-criteria test). However, the Irish Communications Regulator (2012) pointed out that bundles at the retail level may have no impact at the wholesale level as wholesale inputs may still be handled on a standalone basis (ComReg, 2012). Similar to this view, in 2010

Ofcom (United Kingdom), in the context of the wholesale broadband market review, considered that the presence of retail bundles should not affect the definition of the wholesale market. Thus it may still make sense to define wholesale markets as individual markets. Of course, this question still remains open as it will greatly depend on how communication markets and competition dynamics surrounding bundles evolve in the coming years, but was confirmed in Ofcom's 2014 review of wholesale broadband access (Ofcom, 2014).

### **Positive economic implications of service bundles**

Section 3 of this report focuses on a key positive implication of communication bundles: the possibility for operators to offer innovative services in order to attract and keep customers. In this vein, operators may be choosing to test more innovative products and services as part of a bundle, while they would not do so, or would be facing higher risks, if they were standalone services.

Moreover, in the case of mixed bundling, operators tend to make bundle prices attractive to customers and thus apply a discount over the sum of the prices of standalone services. Customers with bundles also gain significant benefits from unified billing from a single communication service provider, even though this comes at significantly lower churn rates, which could sometimes be an indication of higher barriers to switching, which could eventually harm competition. More generally, firms bundle or tie products following a number of rationales, some of which are not necessarily anticompetitive. Understandably, policy makers and regulators have sought a broader understanding of why firms bundle in order to counter anti-competitive behaviour.

For example, it makes sense purchasing two shoes jointly in a pair or ordering a full dinner in a restaurant. The economic literature points at various examples where bundling makes economic sense. For example, Evans and Salinger (2004) conclude that consumers pay much less for tablets with multiple ingredients than they would do if buying tablets with each ingredient separately.<sup>14</sup> They argue that the use of bundling and tying under competition relies heavily on the set of product offerings that minimises the cost of satisfying different types of customers, and hence produces economies of scale and scope. Bundling also allows firms to allocate fixed costs across a broader range of products and services, helps predict buyers' valuation of products more accurately, and in some cases, reduces the complexity of product lines. Bundling can therefore, lower transaction costs.

## SECTION 2: PRICING OF TRIPLE- AND QUADRUPLE-PLAY BUNDLES

### Overview of market structures in OECD countries

Communication bundles are typically sold with a significant price discount over stand-alone prices. Indeed, these discounts are crucial in the assessment of comparative price levels and competitive behaviour in the market, but its inclusion in the established OECD price benchmarking baskets on a permanent basis is challenging, given that communication bundles can greatly vary across the OECD area. This is why bundled prices are addressed in ad-hoc reports in order to capture these variations and explain the challenges. Recent OECD work has addressed the issue of bundling in connection with price benchmarking methodologies (OECD, 2011), where an extensive comparison was conducted for double- and triple-play (voice, television and broadband access) services. This section of the report aims at extending this work to cover quadruple-play, adding mobile voice, SMS and data to the traditional triple-play bundle.

A significant aspect is whether bundled, and especially fixed-mobile integrated offers, are possible in a given market with a specific market structure. Of course, all fixed and mobile operators can potentially offer any of those services if they enter into an agreement with a fixed/mobile operator. There can be, however, significant transaction costs. The OECD has addressed different elements of fixed-mobile convergence (FMC) in previous reports. The most recent one focused on voice services and specific features or technological innovations such as Wi-Fi offloading and femtocells (OECD, 2011a).

As a result, it is highly informative to have a general picture of whether fixed providers can, via their own Mobile Network Operator (MNO) or Mobile Virtual Network Operator (MVNO), provide mobile services to their customers, which shows whether the largest three fixed broadband providers in each OECD country could, or do actually offer mobile services (see Table 1 and Figure 1). The MNO and MVNO columns represent whether that specific operator is a mobile network or a mobile virtual network operator. The FM column shows, in April 2014, whether that operator provided some sort of integrated fixed/mobile offer. Integrated offers can take the form of an actual convergent offer of fixed and mobile services, some discounts in the mobile plan exclusive to fixed customers or vice-versa. A requirement for such an offer to qualify as quadruple-play is that some sort of benefit is provided to the customer (i.e. the customer does not only purchase both services independently from the communication provider, even though these services are provided by the same brand/company or available on the same website). In some cases, such as UPC/Cablecom in Switzerland, new fixed-mobile offers have been launched shortly after the data collection (April 2014).

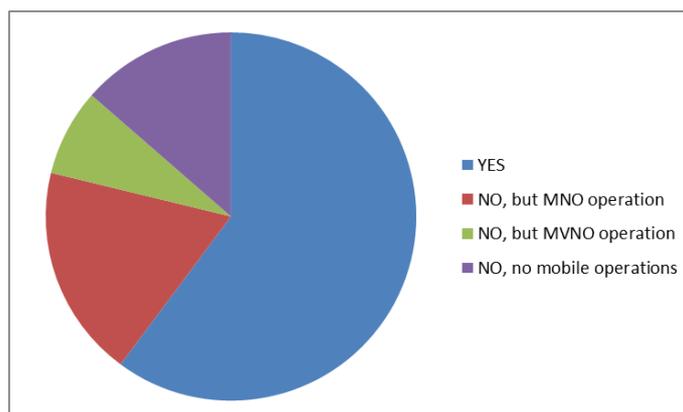
Out of the 104 fixed broadband operators surveyed in the 34 OECD countries (usually the telecommunication incumbent, the largest cable operator and the largest remaining broadband provider), 61 (58.6%) also have mobile operations in the form of an MNO and 17 (16.3%) of an MVNO. All the selected telecommunication incumbents in the 34 OECD countries own an MNO, except BT in the United Kingdom. Out of the 35 cable operators included in the data collection, eleven (including Telstra and Optus in Australia) also own an MNO, nine own an MVNO and most of them (fifteen) do not provide mobile services.

Table 1. Fixed mobile integration in OECD countries

Country	Operator	MNO	MVN O	FM	Country	Operator	MNO	MVN O	FM
Australia	BigPond/Telstra	YES	NO	YES	Japan	BB Excite/NTT-East	YES	NO	NO
Australia	Optus	YES	NO	YES	Japan	J:COM	YES	NO	YES
Australia	Internode	NO	YES	YES	Japan	KDDI	YES	NO	YES
Austria	A1	YES	NO	YES	Japan	Softbank	YES	NO	YES
Austria	Tele2	NO	NO	NO	Korea	KT	YES	NO	YES
Austria	UPC	NO	NO	NO	Korea	SK Broadband	YES	NO	YES
Belgium	Belgacom	YES	NO	YES	Korea	Tbroad	NO	NO	NO
Belgium	Telenet	NO	YES	NO	Luxembourg	P&T	YES	NO	YES
Belgium	Snow	NO	NO	NO	Luxembourg	Visual Online	NO	NO	NO
Canada	Bell	YES	NO	YES	Luxembourg	Numéricable	NO	NO	NO
Canada	Rogers	YES	NO	YES	Mexico	Telmex	YES	NO	NO
Canada	Shaw	NO	NO	NO	Mexico	Megacable	NO	NO	NO
Chile	Movistar	YES	NO	NO	Mexico	Axtel	NO	NO	NO
Chile	VTR	YES	NO	NO	Netherlands	KPN	YES	NO	YES
Chile	Claro	YES	NO	NO	Netherlands	UPC	NO	NO	NO
Czech Republic	O2	YES	NO	NO	Netherlands	Ziggo	NO	YES	YES
Czech Republic	T-Mobile	YES	NO	NO	New Zealand	NZ Telecom	YES	NO	YES
Czech Republic	UPC	NO	NO	NO	New Zealand	Call Plus	NO	YES	NO
Denmark	TDC	YES	NO	YES	New Zealand	Vodafone	YES	NO	YES
Denmark	Stofa.dk	NO	NO	NO	Norway	Telenor	YES	NO	YES
Denmark	Seas-nve	NO	NO	NO	Norway	Get	NO	YES	NO
Estonia	Elion	YES	NO	NO	Norway	Lyse	NO	NO	NO
Estonia	STV	NO	NO	NO	Poland	Orange Polska	YES	NO	YES
Estonia	Starman	NO	NO	NO	Poland	Dialog	NO	YES	YES
Finland	TeliaSonera	YES	NO	NO	Poland	UPC	NO	NO	YES
Finland	Saunalahti	YES	NO	YES	Portugal	PT	YES	NO	YES
Finland	DNA Welho	YES	NO	NO	Portugal	NOS	YES	NO	YES
France	Orange	YES	NO	YES	Portugal	Vodafone	YES	NO	YES
France	SFR	YES	NO	YES	Slovak Republic	T-Com	YES	NO	NO
France	Free	YES	NO	YES	Slovak Republic	Swan/MAX Multimedia	YES	NO	NO
France	Numéricable	NO	YES	YES	Slovak Republic	UPC	NO	NO	NO
Germany	Telekom Deutschland	YES	NO	NO	Slovenia	Telekom Slovenije	YES	NO	YES
Germany	Vodafone	YES	NO	YES	Slovenia	Amis	NO	YES	NO
Germany	Kabel Deutschland	NO	YES	NO	Slovenia	T-2	YES	NO	YES
Greece	OTEnet	YES	NO	NO	Spain	Telefonica	YES	NO	YES
Greece	Forthnet	NO	NO	NO	Spain	ONO	NO	YES	YES
Greece	CYTA	NO	NO	NO	Spain	Orange	YES	NO	YES
Hungary	T--Home	YES	NO	YES	Sweden	Telia	YES	NO	NO
Hungary	GTS - Datanet	NO	YES	YES	Sweden	Bredbands Bolaget	YES	NO	NO
Hungary	UPC	NO	YES	NO	Sweden	ComHem	NO	NO	NO
Iceland	Siminn	YES	NO	NO	Switzerland	Swisscom	YES	NO	YES
Iceland	Vodafone	YES	NO	NO	Switzerland	Sunrise	YES	NO	YES
Iceland	Tal	NO	YES	YES	Switzerland	UPC Cablecom	NO	YES	NO
Ireland	Eircom	YES	NO	YES	United Kingdom	BT	NO	YES	NO
Ireland	Vodafone	YES	NO	NO	United Kingdom	Sky	NO	NO	NO
Ireland	UPC	NO	NO	NO	United Kingdom	Virgin Media	NO	YES	YES
Israel	Bezeq/Smile	YES	NO	NO	United States	Verizon	YES	NO	YES
Israel	Hot/Smile	YES	NO	NO	United States	AT&T	YES	NO	YES
Israel	Hot/010	YES	NO	NO	United States	Comcast	NO	NO	NO
Italy	Telecom Italia/Alice	YES	NO	YES					
Italy	Fastweb	NO	YES	YES					
Italy	Tiscali	NO	YES	NO					

In only five out of the 34 OECD countries have all three providers retained for this comparison a fixed-mobile integrated offer. Traditionally, cable providers have not provided mobile services. However, an increasing number of countries have witnessed their cable provider lease spectrum in recent auction or become an MVNO, although this process is not occurring everywhere. In fact, only in Australia, France, Poland, Portugal and Spain have all three providers a quadruple-play offer. Numéricâble in France, Nos (the merger of Zon and Sonaecom), ONO in Spain and Optus/Telstra in Australia are all providing mobile services.

**Figure 1. Presence of fixed-mobile integrated offers (% of operators)**



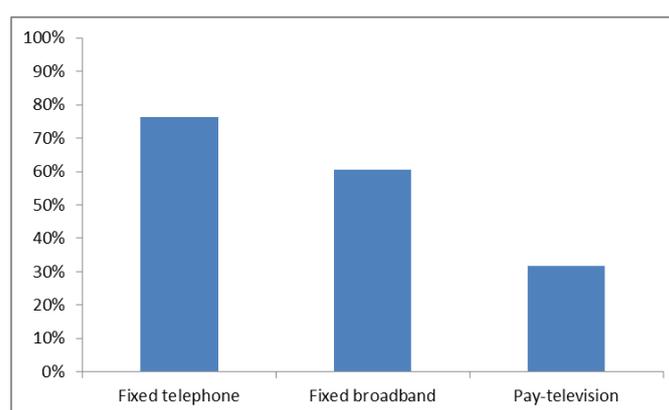
*Note: recent or ongoing consolidation between fixed and mobile operators may affect these numbers. For example, in the United Kingdom has made a bit for Everything Everywhere (EE).*

### **Bundles including broadband services**

Even though some sections of this report cover development in all 34 OECD countries, within the context of double- or triple-play bundles, this section looks at pricing of double-, triple- and quadruple-play offers in twelve OECD countries (Australia, Canada, France, Germany, Italy, Japan, Korea, Mexico, Netherlands, Spain, United Kingdom, United States).<sup>15</sup> Three operators have been included per country, except France, where four operators have been retained, due to the small market share of the largest cable operator (Numéricâble, which is in a merger process with SFR, the third largest fixed broadband provider and second largest mobile operator). In Japan, KDDI and J:COM have recently merged but keep separate brands. This is why bundled offers from both brands have been collected for this exercise. The dataset used for this section includes some 650 offers (all standalone services plus the selected double-, triple- and quadruple-play combinations) from 38 operators in twelve OECD countries.

**Table 2. Standalone offers in selected OECD countries – April 2014**

Fixed Telephone		Fixed Broadband		Pay-television	
Australia	Bigpond Telstra	Australia	Optus	Canada	Rogers
	Optus		Internode		Shaw
	Internode	Canada	Bell	Germany	Kabel Deutschland
Canada	Bell		Rogers	Japan	JCOM
	Rogers		Shaw	Mexico	Megacable
France	Orange	Germany	Kabel Deutschland	Netherlands	UPC
Germany	DT		Vodafone		Ziggo
	Kabel Deutschland	Italy	Fasweb	United Kingdom	Sky
	Vodafone		Tiscali		Virgin Media
Italy	Telecom Italia	Japan	JCOM	United States	AT&T
	Tiscali		KDDI		Comcast
Japan	JCOM		NTT East		Verizon
	KDDI	Korea	KT		
	NTT East		SKB		
Korea	KT	Mexico	Megacable		
	SKB		Axtel		
Mexico	Telmex	Netherlands	KPN		
	Megacable	Spain	Movistar		
	Axtel	United Kingdom	Virgin Media		
Netherlands	KPN	United States	AT&T		
Spain	Movistar		Comcast		
	Ono		Verizon		
	Orange				
United Kingdom	BT				
	Sky				
	Virgin Media				
United States	AT&T				
	Comcast				
	Verizon				
TOTAL	29/38		23/38		12/38

**Figure 2. Availability of standalone offers (% of operators)**

Competitive markets are expected to provide customers with a broad range of choices. As such, some customers may choose to take only one service, or to take different services from different providers, while other customers may well avail of the benefits of service bundles (e.g. unified billing, discounts). After having surveyed the three largest providers in the twelve largest OECD economies, the picture greatly departs from this assumption. While 29 out of 38 operators offer standalone fixed telephony services, only 23

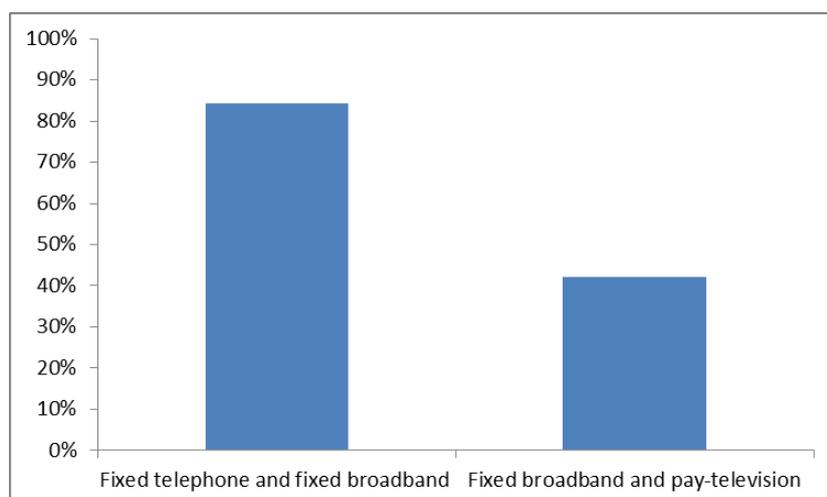
in 38 provide standalone broadband services and the number drops to only twelve operators if a standalone pay-television offer is requested (Table 2 and Figure 2 above). In particular, standalone provision of broadband services is crucial to meet customers' needs, as an increasing number of them may prefer to purchase standalone broadband and use over-the-top services instead of traditional voice or pay-television services, provided that operators do not provide incentives against this behaviour. That being said, some operators may provide incentives for using their own voice or video service by including them in the bundle at no or little additional cost.

Should a customer wish to purchase all three services independently, he/she could only do so from eight of 38 operators (21%) in these twelve countries. Moreover, four of these eight operators are among those in the United States.<sup>16</sup> As a result, a first conclusion can be drawn: the choice of standalone communication services is relatively limited in these twelve countries, especially for pay-television, at least within the operators retained for comparison, which do not include satellite-based pay-television providers, all of which offer standalone services. This has some benchmarking implications, as the discounts provided by communication providers are hard to ascertain if these services are not offered on a standalone basis.

A different perspective is provided below (Table 3, Figure 3), which shows the availability of double-play bundles in the twelve selected countries. Unless some constraints exist, operators in these countries seemingly have a preference for providing bundles of fixed telephony and broadband (32 in 38 operators) over fixed broadband and pay-television (only 16 in 38). These results may be explained by the fact that most broadband providers, except cable television providers, have traditionally offered telephony and Internet access services, with the joint provision of television being relatively recent. As such, these providers are only willing to provide pay-television services if bundled with broadband or fixed telephony. In addition, the incremental cost of providing fixed telephony services may be relatively small, which may also favour triple-play offers as opposed to double-play of fixed broadband and pay-television services.

**Table 3. Double-play offers in selected OECD countries – April 2014**

Fixed Telephone + Fixed Broadband		Fixed Broadband + Pay Television	
<b>Australia</b>	Bigpond Telstra	<b>Canada</b>	Bell
	Optus		Rogers
	Internode		Shaw
<b>Canada</b>	Shaw	<b>Japan</b>	NTT East
<b>France</b>	Free		JCOM
	Orange		KDDI
<b>Germany</b>	DT		Softbank
	Kabel Deutschland	<b>Korea</b>	KT
	Vodafone		SKB
<b>Italy</b>	Fastweb	<b>Mexico</b>	Megacable
	Telecom Italia		
	Tiscali	<b>Netherlands</b>	KPN
<b>Japan</b>	JCOM		UPC
	KDDI		Ziggo
	NTT East	<b>United States</b>	AT&T
	Softbank		Comcast
<b>Korea</b>	KT		Verizon
	SKB		
	Tbroad		
<b>Mexico</b>	Axtel		
	Megacable		
	Telmex		
<b>Netherlands</b>	KPN		
<b>Spain</b>	Movistar		
	Ono		
	Orange		
<b>United Kingdom</b>	BT		
	Sky		
	Virgin Media		
<b>United States</b>	AT&T		
	Comcast		
	Verizon		
<b>TOTAL</b>	<b>32/38</b>	<b>TOTAL</b>	<b>16/38</b>

**Figure 3. Availability of double-play bundles (% of operators)**

### *Application of the OECD price basket methodologies to bundles prices*

The OECD has a long tradition in comparing prices of communication services across countries. Since the 1990s the OECD has developed price benchmarking baskets through a consensus-based and harmonised methodology for price comparison among all member countries (even though alternative measurement methods are also informative, such as average revenue per user and/or minute of use). In this report, with the aim of comparing prices of bundled services, these baskets have been used to the extent possible. The OECD baskets try to identify relevant consumption patterns in countries by engaging in broad consultation with operators, regulators and policy makers. The basket methodologies in use were updated in 2009 (OECD, 2010) and the wireless broadband basket was developed in 2012 (OECD, 2012). Some improvement and updates were introduced, for fixed broadband services, in the OECD Broadband Metrics Workshops in 2011 and 2012.

This report conducts a price benchmarking exercise based on the existing OECD price baskets. Two major issues need to be taken into account. First, no pay-television baskets have so far been developed, which means that the proposal below is only exploratory and aims to promote discussions about how to include pay-television packages in the methodology. Second, the four different components (fixed telephony, fixed broadband, pay-television and mobile) have been combined to form several double-, triple- and quadruple-play baskets, by choosing a “basic” and an “advanced” option for each of the four components (Table 4). These “basic” and “advanced” elements have been chosen, to the extent possible, from existing OECD baskets (PSTN basket, mobile baskets and fixed broadband baskets).

**Table 4. Elements included in the bundles baskets (3-play: fixed telephony, broadband, pay-tv; 4-play: 3-play plus mobile)**

	Fixed telephony	Fixed Broadband	Pay-Television	Mobile
Basic service	Line rental only	At least 10 Mbps download speed and 25 GB data allowance	Basic pay-TV (channels not available FtA)	30 calls basket
Advanced service	Unlimited national calls to landlines (or 420 calls basket)	At least 30 Mbps download speed and 200 GB data allowance	At least 40 channels, including premium sports and premium movies content	300 calls + 1 GB basket

As a result of this preliminary exercise, a “basic” triple-play and an “advanced” or “premium” triple-play basket have been developed. A similar approach has been followed for quadruple-play bundles. The choice of the different elements and combinations of services includes views from preliminary consultation with OECD member countries. This report uses the “basket” approach of selecting the least costly service available in a given country among the operators included for that country. In order to allow for an enhanced review process, the minimum prices and corresponding offers available from the individual operators are provided (see Tables A.1 to A.6 in the Annex).

In short, this exercise is an extension of the OECD broadband baskets applied to triple-play and quadruple-play bundles. As happens with the OECD communication baskets, not all of them are applicable to all countries. As the aim is to have a broad range of indicators to inform policy makers, it is still worth providing data for all possible usage profiles in all countries, when possible. Prices are shown in nominal exchange rates (USD) and in purchasing power parity (PPP) terms (see Annex Tables A.1-A.6). Graphs displayed in this section exhibit prices in USD PPP, given that they provide a better view of communication prices in relation to domestic consumption price levels.

As any other price benchmarking exercise, the current one has a number of caveats that should be taken into account when analysing the results. The underlying rationale in this approach and, more

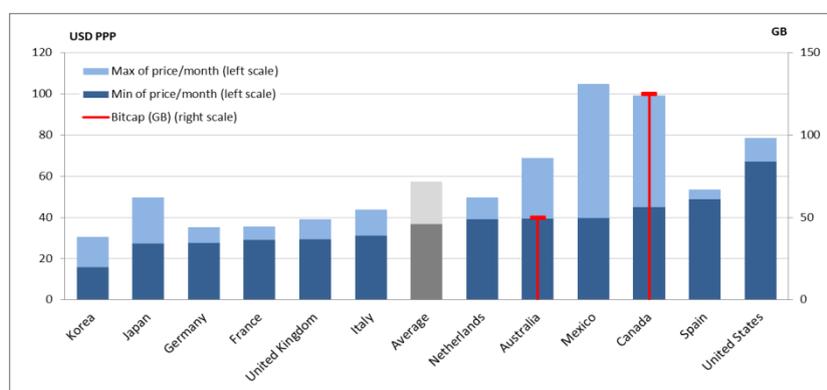
generally, in the OECD price benchmarking baskets, is grouping offers of communication services in clusters of similar consumption patterns, which in turn are compared across countries. The specific parameters proposed for the bundles baskets are outlined above but, of course, offers within the same group (basket) may still have different features or provide additional services (e.g. unlimited fixed calls, more broadband bandwidth).<sup>17</sup> These challenges are, however, already present in the existing OECD basket methodology and are thus not specific to the inclusion of bundles in the methodology.

It should also be noted that only offers from the three largest operators (in terms of subscribers) have been considered for the analysis, using the most advanced technologies (i.e. Cable, ADSL, fibre), which may only be available in large cities. In some cases, the operator with the lowest price in a country, for a given basket, only has a fraction of the customers of larger, more expensive providers. Finally, some operators rely to a great extent on promotions (initial discounts) to gain customers (e.g. first year at half price). While these promotions are incorporated into the methodology and thus reflected in the comparison, some operators extend these discounts over a longer period of time, which has not been reflected in this report due to the lack of data on actual discount periods. The reference contract period for all these comparisons is 36 months, in line with the recommendations of the OECD workshops on broadband metrics.

### Double-play bundles

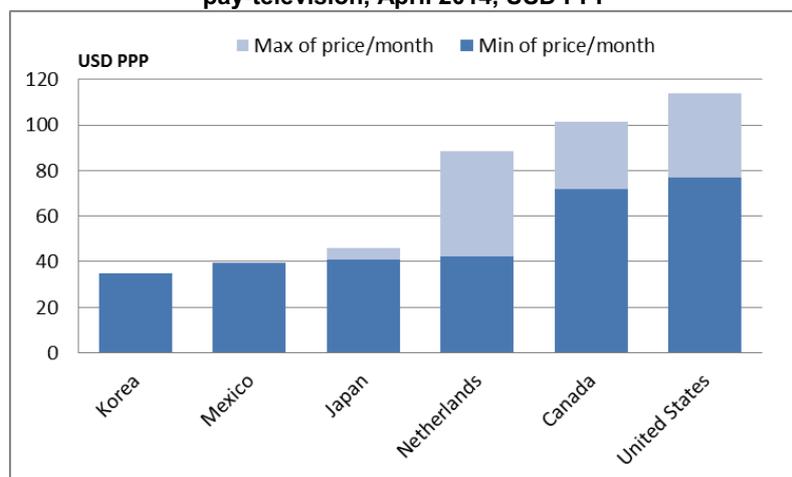
Given the low availability of double-play bundles of broadband and pay-television services, only a price comparison of double-play offers including fixed broadband and voice has been conducted. Moreover, only one possible combination of these two elements will be retained (fixed broadband of at least 10 Mbps advertised download speed and a fixed telephone connection). Double-play bundles of fixed and broadband services are available from almost all operators in these countries. Prices for this basic double-play bundle range from USD 16 in Korea to USD 67 in the United States in PPP terms (with an average price of USD 37 PPP in these countries). All the offers retained for this comparison are the least expensive of each country and do not have download capacity limitations, with the exception of Australia (50 GB) and Canada (125 GB). Figure 4 below displays the price and data allowance for “basic” double-play bundles for twelve selected OECD countries. Countries are ranked by the minimum price (basket price) although the bars also show the range of prices provided by other operators in each country (this only refers to the lowest price for each operator). Although only available in five out of twelve OECD countries, prices for double-play bundles of fixed broadband and pay-television service are compared (Figure 5 and Table A.2 in the Annex).

**Figure 4. Basic double-play - 10 Mbps broadband download speed (at least 25 GB data allowance) and telephone connection, April 2014, USD PPP**



Note: Information about the offers retained is included in Table A.1 in the Annex. Absent bitcap, data allowances are unlimited.

**Figure 5. Basic double-play - 10 Mbps broadband download speed (at least 25 GB data allowance) and basic pay-television, April 2014, USD PPP**

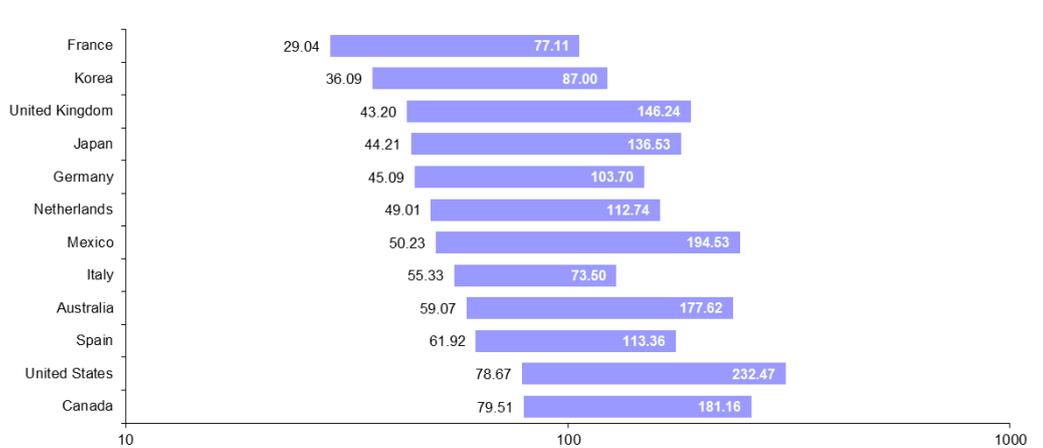


### Triple-play bundles

By far the most common bundle in the selected countries is triple-play: fixed voice, fixed broadband Internet access and pay-television services. Of the 38 operators retained, only Telmex (Mexico) and Telecom Italia and Tiscali (Italy) do not offer pay-television services (the former as a result of a specific clause in its license terms). Nonetheless, Telmex and Telecom Italia do provide online video services (Clarovideo and Cubovision, both offering VoD content over the Internet). In other OECD countries, there are also cases of fixed broadband providers (among those selected) that do not provide video services, such as Tele2 in Austria. In any case, VoD services have not been used as substitutes for traditional pay-television services in this report. Future market developments may advise a change in this approach.

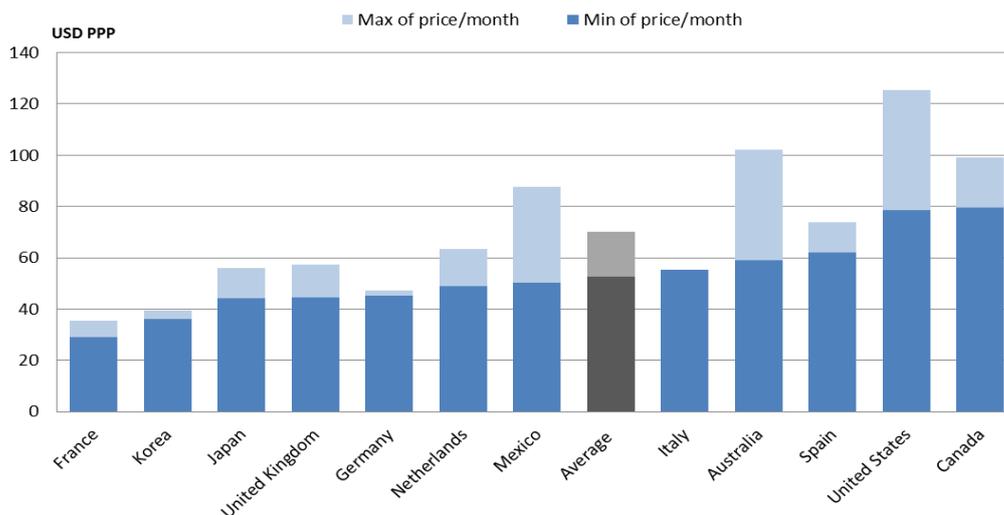
One possible approach to evaluate the influence of bundling of triple-play prices is to calculate the discount of the triple-play bundle over the purchase of the three standalone services (voice, television and broadband). However, such an approach would face serious limitations, the most important being that the three standalone services are not available from all the operators. In fact, in April 2014 only eight out of the 38 operators in the 12 countries offered both the triple-play bundle and the three standalone services.

As might be expected, triple-play services experience a significant variation of prices depending on the broadband speeds offered, whether unlimited calling is provided and, quite importantly, the quality and number of television channels and whether they include premium content (live sports and movies in the first pay-tv window, or in premium movies channels such as HBO or Cinemax). Even though the dataset does not contain all possible combinations of triple-bundles in the selected countries, as it was designed to mainly capture two specific combinations, Figure 6 below provides a good overview of the price ranges for triple-play bundles. In fact, all offers include a broadband element of at least 10 Mbps download speed. In turn, the maximum price includes at least 30 Mbps of download speed, unlimited fixed calling and premium sports and movies content. Triple-play bundles usually start at between USD 30 and USD 50, up to USD 150 - USD 200 for the most expensive packages (which usually include higher broadband speeds and premium content).

**Figure 6. Triple-play price subscription ranges (10 Mbps speed and 25 GB minimum), April 2014, USD PPP**

Note: Information about the offers retained is included in Table A.3 in the Annex.

A first triple-play price benchmarking can be undertaken under the assumptions of: i) only the telephone line connection (i.e. telephone service) although operators in some countries include local, national and international calls, ii) at least 10 Mbps of broadband download speed and 25 GB (medium tier of the OECD 10 Mbps fixed broadband basket) and iii) basic pay-television is included (provided that some channels are not available free-to-air). Figure 7 compares prices in the twelve selected OECD countries (and Table A.3 in the Annex includes more detailed information about the bundles selected). Prices for the “basic” triple-play bundle range from USD 29 in France to USD 79 PPP in Canada (average of USD 53 PPP).

**Figure 7. Triple-play basket (10 Mbps download speed and 25 GB, fixed telephone connection and basic pay-television), April 2014, USD PPP**

Note: Information about the offers retained is included in the Table A.3 in the Annex.

A second set of triple-play services will also be compared. This includes: i) telephone line and unlimited fixed national calls (or the equivalent of the fixed -PSTN- 420 calls basket if unlimited calls are not available), ii) 30 Mbps download speed broadband service with at least 200 GB of capacity (higher capacity tier of the 30 Mbps download speed basket), iii) pay-television service which includes at least premium sports and premium movies content.

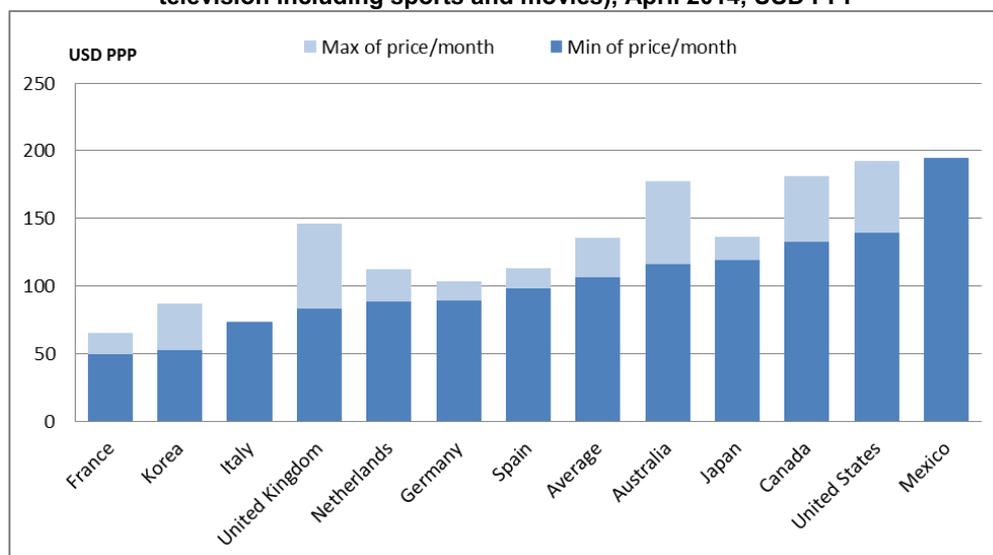
The most important challenge when comparing triple-play services is the availability and characteristics of video services. In particular, the presence of premium content (e.g. sports, newly released movies, popular television series), can have a dramatic impact on the price of triple-play bundles. In fact, top premium content is sometimes not available in the bundles offered by some operators. Finally, video packages can range from non-premium to premium content in a variety of forms. For example, according to the French competition authority, the “movies” package offered by Orange (OCS, retailed on different platforms by different operators) is not as appealing as the top channels offered by CanalPlus in terms of the number of films (French Competition Authority, 2012). The methodology used in the comparisons here included, whenever possible, at least one premium sports package and one premium movie content.<sup>18</sup> In other cases, such as Korea and Japan, it is unclear whether the premium pay-television component actually includes premium sports and movies, or any other content highly valued by consumers. Also, in the case of ONO in Spain, no premium sports and movies content were available. This report has benefitted from extensive feedback from delegations to identify the right packages (i.e. premium sports and movies content) in each country, in order to deliver comparable price benchmarking statistics.

Two further caveats should be highlighted when comparing prices of triple- and quadruple-play bundles. First, content acquisition costs can vary significantly across countries, depending among other factors, on different demand patterns or distinct competitive conditions in those markets. Second, in some OECD countries there is a mandatory fee on television households, which is frequently used to fund public television broadcasters. This fee, in the range of USD 200 to USD 300, can have an impact on price comparability and has not been considered for this exercise.

A further challenge when comparing communication bundles including pay-television services is the cost of the associated hardware, especially the video decoder. As Section 3 notes, some value-added services, such as catch-up television and cloud services may be enabled through upgraded hardware devices. This may or may not be billed in addition to “basic” hardware equipment, but is likely to have implications for consumers’ valuation of the overall bundle. As a general rule, larger bundles usually include more advanced equipment and additional capabilities.

Of course, these and other additional capabilities make price comparisons among bundles challenging. That being said, this report has retained a number of characteristics (e.g. number of channels, premium content) that are valued by customers in virtually every OECD country. Additional services or commercial arrangements, such as loyalty rebates, technical training services, or various discounts, are frequently used by providers to distinguish themselves from competing operators and reduce the turnover of customers. Section 3 of this report includes various innovative services included in communication bundles.

Bearing these constraints in mind, the price of a “premium” triple-bundle ranges from USD 50 PPP in France (from operators like Numéricâble or SFR, including OCS, BeIN Sports and/or Pass Ciné Premium) to USD 195 PPP in Mexico. The OECD average is USD 106 PPP (Figure 8).

**Figure 8. Triple-play basket (30 Mbps download speed and 200 GB, unlimited fixed calls, premium pay-television including sports and movies), April 2014, USD PPP**

Note: Information about the offers retained is included in Table A.4 in the Annex.

### The cost of upgrading

In some markets, consumers have the possibility of choosing whether they want to upgrade their triple-play bundle to unlimited calls and higher broadband speeds of premium television content. In countries with broadband data caps, operators also offer upgrades to unlimited Internet access. In others, bundled offers are provided as a package, where consumers have little ability to customise features. For example, in the United States, customers can choose from a set of bundles, but usually premium channels are available with the most expensive bundles only. Recent offers provide a hint that this trend may be reversed, at least for some specific cases, as some operators, such as Comcast, have started to market broadband products with single premium channels such as HBO, without the need of subscribing to a more expensive cable bundle.<sup>19</sup> Information is included here for specific countries and operators on the cost of upgrading fixed telephony, broadband or pay-television services (Table 5).

**Table 5. Cost of adding specific features to triple-play bundles**

Country	Operator	BB – from 10 to 30 Mbps	Voice – adding unlimited fixed calls	Premium sports	Premium movies
France	SFR	-	-	BeIN (USD 16.4)	Bouquet Cinéma (USD 19.2)
Germany	DT	From 16 Mbps to 50 Mbps (USD 6.8), to 100 Mbps (USD 13.7), to 200 Mbps (USD 27.4)	-	BigTV (USD 27.8)	BigTV (USD 27.8)
Netherlands	KPN		USD 20.9	Fox Sports (USD 34.2)	HBO (USD 20.5, 4 months at USD 10.25), Film package (USD 20.5)
Spain	Movistar			Movistar Energía (motorbikes and F1): (USD 10.9), Movistar Football (USD 20.5)	
United Kingdom	BT		USD 11.76	Sky Sports (USD 35.3)	Sky Movies (USD 27)
	Sky			Sky Sports (USD 37.1)	Sky Movies (USD 27)

A noteworthy finding of this data collection exercise is that many operators offer premium television content through third-party providers. This is largely due to the presence of exclusive dealing for premium television content. Sometimes, live football rights or premium Hollywood movies are sold on an exclusive basis, for a given country, to a pay-television provider. It is then up to this provider to retail these channels to other providers. In most cases, the winner of the rights sells these channels to other pay-television providers, as long as they keep using the original brand (Sky in Germany and the United Kingdom, CanalPlus in France, etc.). Some non-traditional pay-television providers have recently succeeded in buying sports and movies rights (e.g. Movistar in Spain, BT in the United Kingdom, Al Jazeera and Orange in France) but, for the most part, traditional telecommunication providers still rely to a great extent on these resale arrangements. This feature of pay-television markets has made it necessary to add the price of these premium channels to triple-play bundles in order to have a meaningful comparison of “premium” triple-play across countries. A summary on access to television content in selected OECD countries has been included in Section 1 (refer to Box 1 in Section 1 of the report). A further trend is the direct marketing of sports by a league to consumers. In these cases, a league, or its agent, becomes an OTT provider with the ability to sell services on a domestic and international basis if the online rights are separated from other broadcasting contracts.

### ***Triple-play bundles including mobile services***

A less common bundling arrangement is the addition of mobile to a fixed double-play bundle. The most popular example is a triple-play bundle formed by fixed voice, broadband and mobile services. In markets with lower pay-tv penetration, these bundles have gained prominence, such as in Italy or Spain. In October 2012, Telefónica launched its product “Movistar Fusión” in Spain, which includes mobile services bundled with triple-play or double-play services (mostly fixed voice and broadband). Other operators in Spain (e.g. Orange, ONO) responded with similar bundles, but the move reinforced the fixed-mobile integration trend, later underscored by Vodafone’s acquisition of ONO. Telefónica’s market in the residential fixed broadband remained relatively stable following the launch of “Fusión” in October 2012 (Q2 2012: 42.4%, Q4 2012: 42.38%, Q2 2013: 42.39%, Q4 2013: 41.54%), after a number of years of constant declines (Q4 2011: 43.85%, Q4 2010 46.7%, Q4 2009: 48.8%).

These bundles are less common in OECD countries: among the twelve countries retained for a comparison, they could be found in Korea, Italy, Spain, but remain relatively rare. In other OECD countries, for example, triple-bundles of fixed voice, fixed broadband and mobile service could be found in Austria (A1), Finland (Saunalahti), Ireland (Eircom), Luxembourg (P&T), Norway (Telenor), Poland (Orange) and Turkey (Superonline). In Canada, Rogers offers triple-play bundles of mobile services, fixed broadband and pay-television. This operator seems to have replaced fixed voice with mobile services for those customers taking this bundle. The data collection exercise in the twelve countries of reference did not conduct a systematic exercise to capture these bundles including mobile elements, so further examples of these “less common” bundles cannot be ruled out. Moreover, the presence of these types of bundles may be increasing as fixed-mobile industry consolidation advances.

### **Quadruple-play bundles**

Although some authors refer to quadruple-play as those communication bundles with traditional triple-play plus mobile voice services, thus designating triple-play plus mobile voice and data as “5-play”, this report will only refer to quadruple-play when bundles include mobile voice, regardless of whether they also include mobile broadband services. The price benchmarking statistics presented in this report aim at building on the current methodologies to develop a meaningful comparison of quadruple-play bundles, in a similar vein to what has been done for triple-play bundles (OECD, 2011). Thus, each of the triple-play bundles compared in the previous section (basic triple-play and premium triple-play) will be associated to one of the existing mobile baskets (the 30 call baskets and the 300 calls + 1 GB basket, respectively) and

its price will be compared across countries.<sup>20</sup> In some cases, operators do not offer this possibility, either because companies do not provide mobile services or because they prefer to market these services separately. For this reason, only offers providing some sort of customer advantage (e.g. discount, single branding, enhanced functionality) will be considered here as quadruple-play.

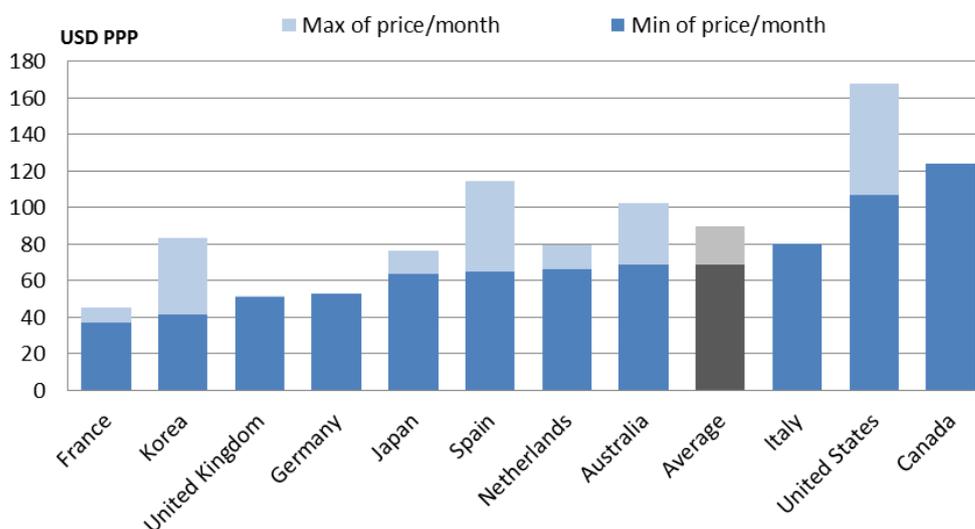
At first sight, the number of operators providing quadruple-play bundles is significantly lower than for triple-play. This may stem from the fact that the starting point for this comparison is the broadband component. The results may have varied if the mobile operators had been considered first, followed by which of them also provide fixed services.

60% of operators in the twelve selected countries offer quadruple-play services. If all 34 OECD countries are considered, the number decreases to 45%. Clearly, the trend is towards more fixed-mobile convergence: Telefonica in Spain started providing bundles of fixed and mobile services in 2012, while ONO replied by bidding on spectrum in the 4G auction and becoming an MVNO. In France, Free (Iliad) was awarded the fourth mobile license and provided discount for quadruple-play bundles from the start of its mobile operations in 2012. In Japan, KDDI (mobile provider) and J:COM (cable operator) have just merged, which facilitates further convergence (even though KDDI already had a fixed fibre network). Vodafone has purchased Spain's and Germany's leading cable operators (ONO and Kabel Deutschland), while the merger of Zon and Sonaecom in Portugal has encouraged this trend even further: all previous brands (Zon, Optimus) have disappeared to create a new, converged brand name (NOS). VTR in Chile was also awarded 4G spectrum in 2012, even though it has announced its intention to continue to operate as an MVNO.<sup>21</sup>

In line with the breakdown of “basic” and “premium” triple-play services, the methodology adds two different baskets (or consumption patterns) to triple-play services. First, a basic, low-consumption user, captured by the 30 calls mobile basket which includes post-paid and pre-paid plans. The price of the standalone mobile plan has been sought, with the assistance of the existing Teligen baskets, which provides the least costly package for this basket offered by each operator. Then, a similar –or identical- mobile package has been selected from the possible quadruple-play combinations. In some cases, discounts associated with quadruple-play bundles were only provided for post-paid plans. In that case, the standalone mobile plan retained for the baskets has been replaced by a post-paid plan if it corresponded to pre-paid offers. Likewise, low-cost brands not associated to quadruple-play discounts have also been excluded from the comparison, as unified branding is an important component of quadruple-play services.

Keeping these constraints in mind, a price benchmarking exercise has been conducted (Figure 9). Specific information about which plans have been retained for each operator is provided in Table A.5 in the Annex. The “basic” quadruple-play offer includes the “basic” triple-play offer, as described in previous sections, plus a mobile component that meets the requirements of the 30 calls mobile basket, as defined by the methodology. A “basic” quadruple play bundle thus starts at USD 37 PPP in France, up to USD 124 PPP in Canada. The average cost across the countries selected is about USD 69 PPP.

**Figure 9. “Basic” quadruple-play – at least 10 Mbps broadband download speed and 25 GB capacity, fixed line connection, basic pay-tv and 30 call mobile basket, April 2014, USD PPP**



*Note: Information about the offers retained is included in Table A.5 in the Annex.*

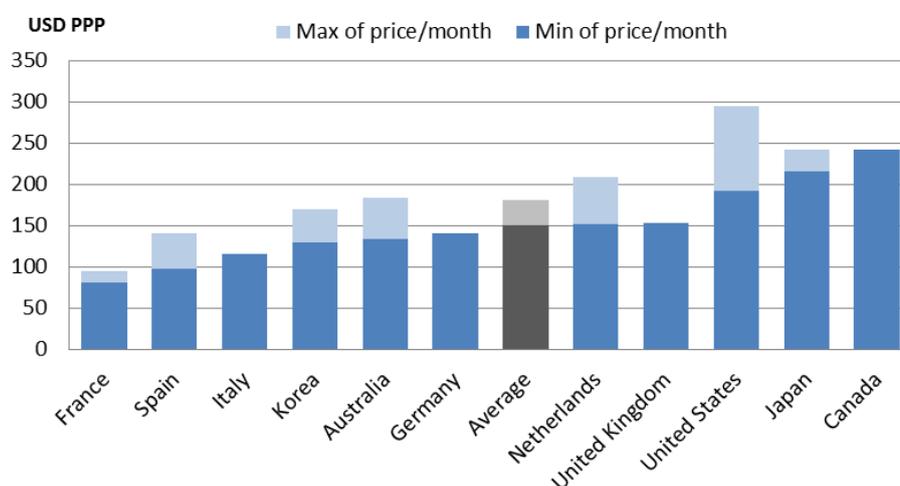
While calculating discounts over comparable standalone services proves challenging, as discussed above, the discount obtained by upgrading from triple- to quadruple-play services can be easily calculated, provided that there is a corresponding mobile plan roughly equivalent to the mobile component of the quadruple-play bundle. In some cases benefits are provided through additional services (e.g. Deezer provided by Orange in France), or larger data allowances, or buckets of calling minutes. For example, KPN in the Netherlands does not provide any explicit monetary discounts, but offers free on-net calls and twice the number of minutes (or MB of data or SMS) when subscribing to a quadruple-play bundle (Table 6 below). In Australia, BigPond/Telstra provides free “family” calls and 500 MB of mobile broadband capacity.

**Table 6. Examples of discounts provided in quadruple-play bundles**

Country	Operator	Monthly discount (mobile)	Other benefits	Discount (% of the mobile plan cost)
Australia	Optus	USD 16.5		39.3%
Australia	BigPond/ Telstra	USD 46.3 bonus allowance	500 MB mobile BB, family calls	100%*
France	Orange	Bundle	Deezer Premium	-
France	SFR	USD 6.8 ("silver" plans) USD 13.7 ("gold and platinum" plans)		40%-59%
France	Numéricâble	Bundle		-
France	Free	USD 2.7 (basic plan) or USD 5.5 (unlimited plan)		20%-100%
Germany	Vodafone	USD 13.7 plus 10% of the bundled price		21.5%
Italy	Fastweb	USD 6.8		12.2%-19.4%
Japan	KDDI	Bundle		-
Japan	J:COM	Bundle		-
Japan	Softbank	Bundle		-
Korea	KT	Bundle		-
Korea	SKB	Bundle		-
Netherlands	KPN		Plus Pakket (45 channels), Free on-net calls, double the min., MB and SMS	-
Netherlands	Ziggo	USD 13.7		39%
Spain	Movistar	Bundle		-
Spain	Ono	Bundle		-
Spain	Orange	Bundle		-
United Kingdom	Virgin Media	Bundle		-
United States	AT&T	One-off gift card of USD 250 or USD 150 (depending on the plan)		5.5%-13.6%
United States	Verizon	USD 20		26.6%

The “premium” quadruple-play bundle adds mobile services to the “premium” triple-play bundle. The mobile component is the 300 calls + 1 GB, which in many countries involves an unlimited plan for voice and SMS with 1 GB of mobile broadband data. Among the operators surveyed, the only exception is Ziggo in the Netherlands, which does not currently offer any package adapted to the 300 calls + 1 GB basket, which means that there is a substantial overage charge of some USD 75 (nearly one third of the price of the whole bundle). A similar situation takes place in Spain, where operators still charge for SMS and, in some cases, for call set-up, even though they advertise “unlimited” plans or “calls at zero cost”. Prices for “premium” quadruple-play bundles vary from USD 80 PPP in France to USD 240 PPP in Canada, with an average of USD 150 PPP (Figure 10).

**Figure 10. “Premium” quadruple-play – at least 30 Mbps (200 GB) broadband download speed, unlimited fixed calls, premium pay-television (movies and sports) and 300 calls + 1 GB mobile basket, April 2014, USD PPP**



Note: Information about the offers retained is included in Table A.6 in the Annex.

### Hedonic price analysis of broadband bundles

Hedonic prices have been used to assess pricing behaviour by taking into account different quality levels or specific features of products and services. For example, economists have attempted to construct hedonic price indices for automobiles and computers (Griliches, 1961; OECD, 2006b). Some OECD countries have also applied hedonic prices to broadband price comparisons (e.g. Portugal).

A hedonic function relates the price of a certain good -or service- to its quality characteristics, and relies on the hypothesis that the price of the good/service (e.g. a computer or other ICT products) equals the total expenditure of the individual “bundled” features purchased by the consumer (OECD, 2006b). This means that consumers value *per se* a “bundle” of characteristics rather than a specific final product/service.

A common application in the literature is using this hedonic function to account for quality changes in products over time (e.g. Griliches, 1961; Doms and Forman, 2003). Seminal work has been done describing how to construct hedonics price indexes that take into account quality adjustments (e.g. Triplett 1986, 1987, 1990). It was precisely Triplett who elaborated the “OECD Handbook on Hedonic Indexes and Quality Adjustments in Price Indexes” applied to ICT products (OECD, 2006b), which conducted an extensive review on hedonic functions and hedonic price indexes.

Some studies have already looked into applying this methodology to cross-country comparisons. For example, Lyons and Savage (2012) undertake a hedonic regression analysis using detailed plan-level data in Ireland to value various components of broadband services available to consumers over time. Wallsten and Riso (2010) used the hedonics methodology with a dataset they assembled consisting of 25 000 plans across OECD countries from 2007-2009. The authors found that residential broadband plans with data limits are usually less expensive than unlimited data service plans (namely, a 10 GB plan would cost 27% less than an unlimited plan), though such differences rely on a customer not incurring overage charges.

In order to determine which variables influence the price of service packages, in accordance to the recommendations of the OECD Workshop on Broadband Metrics (Washington D.C. in October 2011 and London in June 2012), a future OECD report will explore hedonic price analysis of broadband services and

other communication bundles. It will be examined how they can be used to inform policy makers in relation to the variables that influence communication service prices and whether these tools can be applied to derive cross-country price benchmarking, including price evolution, over time.

### **SECTION 3: INNOVATIVE SERVICES INCLUDED IN TRIPLE- AND QUADRUPLE-PLAY BUNDLES**

In addition to the services included in triple- and quadruple-play bundles, an increasing number of operators are starting to include additional features of applications as an option, or included at no additional cost, in the communication bundles. Some relevant examples have been selected below.

#### **Video features, computer security and parental control**

Most pay-television providers offer a box with some advanced functionalities, such as digital video recording (DVR), hard disk storage (e.g. 250 GB, 500 GB), viewing guides, video-on-demand services, and so forth. These developments were reflected in the OECD Report “Connected Televisions: Convergence and Emerging Business Models” (OECD, 2014a). In some cases, an advanced pay-television box is only provided with the more advanced triple-play bundles, jointly with a higher number of channels or premium content. For example, UPC, a cable operator in Austria, Czech Republic, Hungary, Ireland, Poland, Slovak Republic and the Netherlands (owned by Liberty Global), offers an advanced media. Liberty Global also owns VTR, the leading operator in Chile, and has recently purchased Virgin Media, the largest cable operator in the United Kingdom. UPC’s Mediabox HD DVR in Austria includes high-definition functionality, Digital Video Recorder (DVR), 250 GB hard disk, digital radio, Video-on-Demand (VoD), television guide and interactive applications such as games and location-based automobile traffic information. This advanced box is only included in the high-range bundles offered by UPC (Super F.I.T. Family, Top F.I.T. and Mega F.I.T., all of them with at least 75 Mbps download speed and 152 television channels) and not in the most basic ones (F.I.T. and Super F.I.T.). Some pay-television providers also offer multi-screen functionality, which allows for watching different channels in different rooms with the most advanced packages (e.g. UPC Ireland charges USD 15/month for this functionality). These applications, while certainly innovative, can be regarded as advanced functionalities within the basic video services already provided by the operators.

Security packages that frequently include antivirus, tools against spyware, firewalls, anti-spam, and so forth, are available from most broadband providers in OECD countries and sometimes included in the bundles. For example, Eircom in Ireland partners with Norton (Symantec) to offer an antivirus package, which is included for free for three months together with a broadband plus home phone bundle. These services may be branded by the operators or keep the security provider’s brand name (e.g. McAfee in Chile, Symantec in Ireland, Norman in Norway or Panda Software in Slovenia). Some of these packages (e.g. UPC in the Netherlands) also include parental control tools, even though these may be offered separately, either for web browsing or for television services.

#### **Enhanced connectivity features: cloud services and Wi-Fi**

Hotspot Wi-Fi connectivity is frequently offered to mobile customers, sometimes through agreements with third-party providers, such as the Wi-Fi sharing company FON, which provides this service in partnership with Belgacom (Belgium) and NOS (Portugal). In the United States, cable Wi-Fi is available at over 300,000 hotspots.<sup>22</sup> In France, some operators (SFR, Free Mobile, Orange) use part of the capacity of fixed broadband connections to provide Wi-Fi service to mobile customers. Free Mobile (Iliad) provides this service in a seamless way through the use of the protocol EAP-SIM, provided that the mobile handset supports this protocol, and takes advantage of this functionality to off-load traffic to fixed networks, thus

reducing demands. In some countries, bundle providers include smartphone apps that allow free international calls or calls at fixed line rates (e.g. Telenet in Belgium), provided that it is under Wi-Fi coverage.

Cloud services, in the form of computing or storage capacity on the cloud, could either be seen as an improvement of the web browsing experience or, alternatively, could be considered an OTT application, in the same vein as online music or video services (which would suggest that they be included in the next section). An increasing number of broadband providers are including a certain amount of storage capacity on the cloud as value-added to their bundle offers. In most cases, this storage capacity is accompanied by one or several email accounts or web server functionalities. A number of operators include web server functionality as a standalone function or in conjunction with cloud services (e.g. Snow in Belgium). In Luxembourg, Visualonline provides a “.eu” domain name for free, while it charges USD 34.3 per month for a static IPv4 address and USD 130.2/month for eight static IPv4 addresses.<sup>23</sup>

Online gaming services are offered by some communication providers by developing platforms to purchase game products or engage in social gaming over the Internet (e.g. Superonline in Turkey). Some other operators, such as Fastweb in Italy or Bredbandsbolaget in Sweden offer optimised connectivity for online gaming, as opposed to selling gaming products and services directly. Fastweb’s Joy broadband service (100 Mbps download speed) is configured for very low latency as is Bredbandsbolaget’s broadband service. This allows reduced ping times and delays and better gaming experience. Fastweb also includes a warning clause that explains that this profile may be switched off if it interferes with other services.

Finally, this section could also describe bundled sales of devices (smartphones, tablets) linked to communication services. Given the complexity of these issues, these arrangements will not be addressed in this report, but it should be noted that some operators provide tablets at no or very low upfront costs as a tool to attract customers, in the same way that mobile operators have long provided handsets at reduced upfront prices (OECD, 2013).

### **Over-the-top applications**

A joint provision of online music services and communication services is common in OECD countries. Subscriptions to online music providers, such as Spotify, Deezer or others are usually offered in conjunction with a fixed broadband package or, more frequently, with a mobile subscription. Examples of operators including Spotify are TeliaSonera in Finland and Sweden, Vodafone in Ireland, KPN in the Netherlands, Telecom in New Zealand and Telefónica in Spain. Orange (France), DNA Welho (Finland), T-Com (Slovak Republic) and Telekom Slovenia (Slovenia) include Deezer. Other operators have developed their own online music stores: TDC Play in Denmark (TDC), Nos Music (NOS), Vodafone Music (Vodafone) and MEO Music (Portugal Telecom) in Portugal or TTNNet in Turkey.

A newer, more innovative form of partnership between broadband operators and OTTs is the association between Netflix, a leading OTT video provider, and Virgin Media, the largest cable provider in the United Kingdom. Even though, according to the website, Netflix seems to keep the direct billing relationship with the customer, Virgin Media advertises six months of Netflix subscription for free as part of the broadband offer (Figure 11). The TiVo box, included in Virgin Media’s bundle, provides DVR functionality and an interface to access OTT applications such as Netflix. Unlike online music providers, many think that video OTTs could potentially provide direct competition against traditional pay-television providers (FCC, 2015). A move to promote video OTTs can be seen as an additional tool to gain competitive advantage by attracting customers using online applications valued by consumers. Comhem, a cable operator in Sweden, also uses the TiVo box and is advertising the inclusion of the Netflix app in Tivo’s interface. Tal in Iceland, actively advertises AppleTV on its website.

**Figure 11. Virgin Media's VIP Collection (United Kingdom)**



Source: Virgin Media (United Kingdom)

In Portugal, the leading broadband providers have developed comprehensive online applications that can be bundled to broadband connections. Both Portugal Telecom (MEO) and NOS have a wide range of possibilities, all available from the communication provider. Take, for example, Portugal's Telecom broad range of services provided under the brand MEO: MEO Music (online music service), MEO Jogos (online gaming), MEO Wallet (mobile payments), MEO Kanal (functionality to produce your own television channel), MEO Cloud (cloud service), MEO Kids (cost control and specific tariffs for mobile services), MEO Wi-Fi (Wi-Fi hotspot service) and MEO Energy (energy consumption control).

In Turkey, TTNNet also provides a broad range of services available from its website: TTNNet Müzik (online music streaming), TTNNet Wi-Fi, TTNNet Book (e-book store), TTNNet ProG (online education), TTNNet Security, TTNNet Nanny (online parental control), services for supporters of a leading Turkish football teams, TTNNet Bazaar (online shopping), AviCenna (e-health services, including treatment and diagnosis).

### Home management services

Some operators in certain OECD countries advertise home monitoring services, which range from energy consumption services, video storage, night camera, alerts, automatic system checks, live video and two-communications with the customer's premises, and so forth. Lyse in Norway provides the "Smartly" package, which includes security services, heat control, temperature management, energy consumption, smart lighting and so forth. All these functions can be controlled via tablets and smartphones. Rogers, a cable operator in Canada, is arguably the operator in the OECD area (among those surveyed) where these services are most actively advertised, as they are fully included as part of its broadband bundles, at the same level of pay-television, fixed broadband or fixed telephony services (according to Rogers' website, see Figure 12 below).

**Figure 12. Bundle offered by Rogers (Canada)**

Choose Your Bundle All Bundles

Internet + TV + Home Phone + Home Monitoring

**Bundle Bonuses**  
Extras Valued at approx.  
**\$56.56**/month<sup>1</sup>

SMART HOME MONITORING	INTERNET	TV	HOME PHONE
For 3 months <b>FREE</b> Live Video Streaming service <sup>2</sup>  For 3 years <b>FREE</b> 2-Way Voice services <sup>3</sup> <b>FREE</b> Video Storage <b>50% off</b> Day/Night Vision Camera <sup>4</sup>	<b>FREE</b> 200GB/month  <b>FREE</b> Rogers TechXpert™ Whole Home <sup>5</sup>	For 3 years <b>FREE</b> NextBox™ 3.0 rental Opt to own for \$1 after 3 years <sup>6</sup>	<b>FREE</b> Unlimited Canada-wide calling

Source: Rogers' website, <https://www.rogers.com/web/content/bundles-rogers>

These services seem to be more widespread among operators in certain countries, possibly in relation to the housing type (these services may be more valued by families living in single-dwelling than multi-dwelling buildings). Operators in Canada (Rogers), Estonia (Elion, STV), Finland (TeliaSonera), Japan (KDDI), Norway (Lyse and Switzerland (Swisscom) include, to a different extent, home monitoring services as an option for customers.

Home monitoring and management services, such as those shown here, are an example of how communication providers can leverage their access infrastructure and direct billing relationship with customers to provide new services, which in turn can increase customer fidelity and reduce churn. While some of the innovative services shown in this section may only be seen as improvements of communication services (e.g. security package, Wi-Fi connectivity, advanced video), home monitoring services, online music and e-learning applications (see below) have the potential to promote applications over broadband connections. All these services are welcome and assist in stimulating demand for broadband networks and in potentially meeting broader policy objectives.

### E-learning applications

Some operators have developed, either independently or by partnering with third-parties, websites for e-learning, usually based on social networks. Among the operators surveyed for the data collection in the 34 OECD countries, e-learning websites, usually including social networking and fora, have been found in Ireland (Eircom's Study Hub), Turkey (Superonline and Turksat) and Chile (Telefónica). In Chile, Movistar (Telefónica) provides premium access to "Aula 365", a web learning social network for a number of Latin American countries (including Argentina, Brazil, Chile, Colombia, Mexico, Peru and Uruguay) launched by Telefónica in 2012.<sup>24</sup> It was awarded the World Summit Award (e-Learning and Science) by the United Nations. Aula 365 is the biggest educational network in Latin America, with more than three million children, parents and teachers that use it to collaborate and learn online. It offers multimedia and interactive support at school and home. Aula 365 is advertised on Movistar Chile (Telefónica) as one possible application for broadband services.

In New Zealand, Telecom New Zealand and Vodafone also sponsor social networks (Telecom NZ Telecommunity and Vodafone Community) focused on exchanging technical knowledge and discussing technological issues.

### **E-health, banking, payment and other services**

Some operators advertise e-health applications on their websites, which can be purchased at an additional fee. This is the case of TNet in Turkey and for Softbank in Japan. For example, Softbank provides smart wearables that can be connected to the smartphone device for recording and managing health data.

The range of possible applications that can be supported by fixed or mobile broadband is large and increasing. A number of operators provide mobile payment services (e.g. T-Com in the Slovak Republic, Elisa in Finland, Vodafone in Portugal), Telekom Slovenije in Slovenia provides banking services in partnership with the French banking group Société Générale, as does KDDI in Japan.

In Japan, J:Com provides an earthquake alert service, in conjunction with Japan's Meteorological Agency. The system performs calculations based on the earthquake signal received by the device, located at the customer's premises and allows an early alert that a powerful earthquake will occur within minutes. J:Com's broadband subscribers receive a discount of USD 3 (they pay USD 5 instead of USD 8) when subscribing to this service.

Many other services are offered, of course, through independent third party providers or through alliances, but those included in this section were found on the operators' websites, which suggest that operators are actively promoting them. Operators are also taking advantage of their direct customer relationships to promote other services that may not be related to communication services and need not be provided over the Internet. For example, many operators offer discounts or fidelity cards or points to be spent in retail stores. Vodafone Ireland allows for the spending of its accumulated "cherry" points on cinema tickets or devices. In France, Orange offers an insurance product from Mondial Assistance together with certain communication bundles. In Canada, Rogers Communications offers its customers a loyalty program known as Rogers First Rewards. Rogers' customers are enrolled automatically and earn points for every dollar they spend each month on eligible Rogers' services. Customers are allocated into tiers and get loyalty points based on their monthly bill. Points can be redeemed for a wide range of services including service upgrades, new products, and discounts off the latest wireless devices.

### **Way forward for innovative services in communication bundles**

As innovative services such as those examined in this section gain acceptance among consumers, communication providers are expected to increase the range of services offered, and most likely to try new ones. This can be regarded as another path towards convergence. Communication providers, whether through partnerships or independently, offer new services, very much in the same way that new over-the-top providers offer traditional communication (e.g. voice) or entertainment (e.g. pay-television) services over the Internet connection. This complementarity has the potential to give rise to a variety of innovative services and business models, and deserves attention from policy makers and regulators to adjust legal and regulatory frameworks for these opportunities to flourish.

## GLOSSARY

ACCC:	Australian Competition and Consumer Division
ARCEP:	Autorité de Réglementation des Communications et des Postes (France)
BEREC:	Board of European Regulators of Electronic Communications
DBA:	Danish Business Authority
DoJ:	Department of Justice (United States)
EC:	European Commission
ERG:	European Regulators Group
FCC:	Federal Communications Commission (United States)
FMC:	Fixed Mobile Convergence
HBO:	Home Box Office
OCS:	Orange Cinéma Series
OECD:	Organisation for Economic Co-Operation and Development
OFCOM:	Office of Communications (United Kingdom)
OFT:	Office for Fair Trade (United Kingdom)
MB:	Megabyte
MNO:	Mobile Network Operator
MMS:	Multimedia Messaging Service
MVNO:	Mobile Virtual Network Operator
MVPD:	Multichannel Video Programming Distributors
NBCU:	NBC Universal
OVD:	Online Video Distributors
PAR:	Programme Access Rules
PPP:	Purchasing Power Parities
PSTN:	Public Switched Telephone Network
OTT:	Over The Top
SMS:	Short Messaging Service
SSNIP:	Small but Significant and Non-transitory Increase in Price
TFEU:	Treaty on the Functioning of the European Union
VoD:	Video-on-Demand
WAP:	Wireless Application Protocol
WBA:	Wholesale Broadband Access
Wi-Fi:	Wireless-Fidelity

## ANNEX

Table A.1: "Basic" double play - 10 Mbps (at least 25 GB) and telephone connection, prices as of April 2014															
Country	Operator	Plan	Min of Price/ month USD	Min of Price/ month USD PPP	BB component	DSL Speed (Mbps)	Bitcap (GB)	Voice component	Unlimited local calls	Unlimited national fixed calls	Unlimited mobile calls	International calls	Other		
Australia	BigPond Telstra	M 100GB Broadband	97.86	68.91	M 100GB Broadband	20	100	M Telstra Phone National	YES	YES	NO	NO			
Australia	Internode	Easy Broadband ADSL2+	55.82	39.31	50 GB	20	50	NodeLine Home Value	NO	NO	NO	NO			
Australia	Oplus	Broadband + Home Phone	65.24	45.94	30 GB	20	30	Home phone 22	YES	NO	NO	NO			
Canada	Bell	Bundle - Good (3-play)	111.07	91.80	Fibe Internet 5/1	15	80	Home Phone Lite	YES	NO	NO	NO			
Canada	Rogers	Hybrid Fibre 60/ Digital basic / Essentials (3-play)	119.94	99.12	Hybrid Fibre 60	60	120	Essentials	YES	NO	NO	NO			
Canada	Shaw	High speed 10 + Personal Home Phone	54.60	45.12	High speed 10	10	125	Personal Home Phone	YES	NO	NO	NO			
France	Free	Freebox Revolution	41.42	34.52		20	unlimited	unlimited	YES	YES	YES	>100 countries			
France	Numericable	iStart (3-play)	34.85	29.04		100	unlimited	unlimited	YES	YES	YES	>100 countries			
France	Orange	Livebox Zen (3-play)	42.68	35.57		15	unlimited	unlimited	YES	YES	NO	NO			
France	SFR	La Box de SFR (3-play)	41.42	34.52		15	unlimited	unlimited	YES	YES	NO	NO			
Germany	DT	Call & Surf Basic mit Internet Flatrate	39.99	35.39		16	unlimited	Call Start	NO	NO	NO	NO			
Germany	Kabel	Internet & Telefon 25	31.32	27.72		25	unlimited	Festnetz-Telefonanschluss + Flatrate	YES	YES	NO	NO			
Germany	Vodafone	DSL Zuhause M	34.85	30.84	DSL Zuhause M	16	unlimited	Zuhause Festnetzflat	YES	YES	NO	NO			
Italy	Fastweb	Jet	41.44	36.35		100	unlimited		NO	NO	NO	NO			
Italy	Telecom Italia	Internet Seznza Limite 10 Mbps	49.93	43.80		10	unlimited	ciamate a 0 euri	YES	YES	NO	NO			
Italy	Tiscali	Tutto Incluso Light	35.50	31.14		20	unlimited	Unlimited with set-up fee	YES	YES	500 min	500 min			
Japan	JCOM	J:COM NET Pack 40M	47.30	43.39	J:COM NET 40M	40	unlimited	J:COM PHONE plus, line rental only	NO	NO	NO	NO			
Japan	KDDI	au hikari mansion type V 16 plus + phone	35.18	32.28	au hikari mansion type V 16	100	unlimited	au hikari denwa service	NO	NO	NO	NO			
Japan	NTT East	Flets ADSL More 12M + phone (Analog lite)	54.25	49.77	Flets ADSL More 12M	12	unlimited	Analogue Lite	NO	NO	NO	NO			
Japan	Softbank	Softbank Yahoo! BB Value Plan 12M without NTT subscription (with BB phone)	29.84	27.38	Yahoo! BB Value Plan 12M	12	unlimited	BB Phone	NO	NO	NO	NO			
Korea	KT	Olleh Bundle	25.89	30.45		50	unlimited	home phone	NO	NO	NO	NO			
Korea	SKB	SKB Bundle	23.01	27.07		50	unlimited	B-Phone	NO	NO	NO	NO			
Korea	Tbroad	Smart Green	13.42	15.79		20	unlimited	Internet Telephony (39KRW, 0.04USD/3minute)	NO	NO	NO	NO			
Mexico	Axtel	Axtel X-tremo 20 Megas	42.78	58.61	Axtel X-tremo 20 Megas	20	unlimited, symmetric	Locales ilimitadas	YES	YES	NO	US/Canada			
Mexico	Megacable	10 Mbps + Megafon ilimitado 100	29.01	39.74		10	unlimited	Megafon ilimitado 100	YES	NO	100 min	NO			
Mexico	Telmex	Paquete Telmex Todo México sin Límites	76.48	104.76	Infinium 10 Mbps	10	unlimited	100+ ilimitadas + ilimitadas (cell phone calls, local, national LD)	YES	YES	100 min	US/Canada			
Netherlands	KPN	Internet en Bellen Glasvezel - Instap	47.77	39.15	Instaap	50	unlimited (symmetric)	BelVrij tariffs (but without weekend/evening allowance)	NO	NO	NO	NO			
Netherlands	UPC	Alles-in-1 Basis	60.77	49.81		50	unlimited	Standard Bellen (calls form EUR 0.09 /min)	NO	NO	NO	NO			
Netherlands	Ziggo	All-in-1 Basis	59.79	49.01		30	unlimited	Telephony Z1	NO	NO	NO	NO			
Spain	Movistar	ADSL Base	53.48	50.93		10	unlimited	Fijos gratis	YES	YES	NO	NO			
Spain	Ono	Teléfono + Internet 20 Mb	56.09	53.42		20	unlimited	Teléfono fijo con llamadas nacionales gratis	YES	YES	NO	NO			
Spain	Orange	ADSL + llamadas	49.39	47.04		20	unlimited	Teléfono con llamadas a fijos	YES	YES	NO	NO			
United Kingdom	BT	Unlimited Broadband	49.02	38.00		16	unlimited	Weekend calls	NO	NO	NO	NO	Weekend calls		
United Kingdom	Sky	Sky Broadband Unlimited	38.03	29.48		17	unlimited	Sky Talk Weekends	NO	NO	NO	NO	Weekend calls		
United Kingdom	Virgin Media	Up to 50 Mb + phone	50.51	39.16		50	unlimited	Up to 50 Mb	NO	NO	NO	NO	Weekend calls		
United States	AT&T	Max 12 + AT&T Uverse Voice 200	67.02	67.02	Max 12	12	unlimited	AT&T Uverse Voice 200	200 min	200 min	200 min	NO	200 min overall allowance		
United States	Comcast	Performance + Xfinity Voice Unlimited	73.32	73.32	Performance	25	unlimited	Xfinity Voice Unlimited	YES	YES	YES	NO			
United States	Verizon	FIOS Internet 15/5 + FIOS Digital Voice	78.67	78.67	FIOS Internet 15/5 Mbps	15	unlimited	FIOS Digital Voice Per minute Plan	NO	NO	NO	NO			

Table A.2. Basic double-play - 10 Mbps broadband download speed (at least 25 GB data allowance) and basic pay-television, April 2014, USD PPP									
Country	Operator	Plan	Min of Price/month USD	Min of Price/month USD PPP	BB component	DL Speed	Bitcap	Pay-tv component	No channel
Canada	Bell	Bundle - Good	86.70	71.66	Fibe Internet 5/1	15	80	Good	157
Canada	Rogers	Internet TV and home monitoring	122.91	101.58	Hybrid Fibre 60	60	120	Digital TV	75
Canada	Shaw	High speed 25	91.66	75.75	25 Mbps	25	250	Personal TV	175
Japan	JCOM	Smartselect NET12M, J:COM TV select, J:COM NET 12M	48.33	44.34	J:COM NET 12M	12		J:COM TV Select	29
Japan	KDDI	au hikari mansion type V 16 plus + TV (4 channels and VOD)	44.38	40.72	au hikari mansion type V 16 plus	100		au hikari TV service	4
Japan	NTT East	Flets hikari light mansion type + Flets TV + sky perfec. TV select 5	50.18	46.04	Flets hikari light mansion type	100		sky perfec TV select 5	45
Japan	Softbank	Softbank Hikari with Flets hikari next, LAN wiring plan2, Hikari TV osusume plan (44 ch)	43.64	40.04	Softbank Hikari with Flets hikari next, LAN wiring plan2	100		Hikari TV osusume plan	44
Korea	KT	Olleh Bundle	29.72	34.97	Olleh Bundle	100		Education type(8,800KRW, 8USD)	68
Korea	SKB	SKB Bundle	33.46	39.37	SKB Bundle	100		Digital promotion(9,000KRW, 8USD)79	79
Mexico	Megacable	Conecta + 10 Mbps	29.01	39.74		10		Conecta Digital	62
Netherlands	KPN	Internet en TV - Thuis - Standaard	70.90	58.12	Standaard	40			60
Netherlands	UPC	50 Mb/s Internet + digital TV	51.53	42.24	50 Mb/s Internet	50		Digitale Kabel TV & Radio	30
Netherlands	Ziggo	TV + Internet Z1	54.04	44.29	Internet Z1	30		TV Standard	60
United States	AT&T		89.22	89.22	Max	18		U-family	130
United States	Comcast		113.66	113.66	Performance Internet	25		Digital Starter	80+
United States	Verizon		76.99	76.99	FiOS Internet 15/5 Mbps	15		FiOS TV Select HD	190+

Triple and Quadruple Play Bundles of Communication Services

Table A.3. Basic triple-play – 10 Mbps download speed (25 GB), telephone connection, pay-tv, prices as of April 2014

Country	Operator	Plan	Min of Price/month USD	Min of Price/month USD PPP	BB comp.	DSL Speed	Bitcap	Voice comp	Unl local calls	Unl national fixed calls	Unl mobile calls	Unl International calls	Pay-tv component	No channel	Premium (sports and movies)	Details
Australia	BigPond Telstra	M 100GB Broadband + Essentials TV (Foxtel)	145.05	102.15	M 100GB Broadband	20	100	M Telstra Phone National	YES	YES	NO	NO	Foxtel from Telstra (Essentials TV)	>60	NO	
Australia	Internode	Easy Broadband ADSL2+ + Fetch TV	97.81	68.88	Easy Broadband ADSL2+	20	100	NodeLine Home Value	NO	NO	NO	NO	Fetch TV with Entertainment Plus	>60	NO	
Australia	Optus	Broadband + TV + Home Phone	83.88	59.07	200 GB data and unlimited local/national voice + TV	20	200	Home phone	NO	NO	NO	NO	Fetch TV	>40	NO	
Canada	Bell	Bundle - Good	111.07	91.80	Fibre Internet 15/10	15	80	Home Phone Lite	YES	NO	NO	NO	Good	157	NO	
Canada	Rogers	Hybrid Fibre 60/ Digital basic / Essentials	119.94	99.12	Hybrid Fibre 60	60	200	Essentials	YES	NO	NO	NO	Digital TV	75	NO	
Canada	Shaw	Starter	96.21	79.51	10 Mbps	10	125	Personal Home Phone	YES	NO	NO	NO	Personal	120	NO	
France	Free	Freebox Revolution	44.19	36.82		20	unlimited		YES	YES	YES	100 countries	Bouquet TV Freebox	188	NO	
France	Numericable	iStart	34.85	29.04		100	unlimited	illimité	YES	YES	YES	100 countries		40	NO	
France	Orange	Livebox Zen	42.68	35.57	Internet Haut débit ADSL	15	unlimited	illimité	YES	YES	NO	NO	TV Orange	160	BelIN Sport at EUR1/mont for 12 months	
France	SFR	La Box de SFR	41.42	34.52		15	unlimited	illimité	YES	YES	NO	NO	TV	160	NO	
Germany	DT	Entertain Sat	53.34	47.20	Surf	16	unlimited	Call Comfort	YES	YES	NO	NO	Entertain Sat	100	NO	
Germany	Kabel Deutschland	Basis 25	51.66	45.71	Internet & Telefon 25	25	unlimited	Festnetz-Telefonanschluss + Flatrate	YES	YES	NO	NO	Kabelanschluss HD	131	NO	
Germany	Vodafone	DSL Zuhause L	50.96	45.09	DSL Zuhause L	16	unlimited	Zuhause Festnetzflat	YES	YES	NO	NO	Vodafone TV	70	NO	
Italy	Fastweb	Sky+Fastweb	63.08	55.33	Fibra Fastweb	100	unlimited	Unlimited national calls	YES	YES	60	NO	Sky	190	20 Mbps in DSL homes, Calcio Package for free until August 2014	
Italy	Telecom Italia															
Italy	Tiscali															
Japan	JCOM	Smartselect NET12M + phone, TV select, NET 12M, phone plus	60.88	55.85	J:COM NET 12M	12	unlimited	J:COM PHONE plus, line rental only	NO	NO	NO	NO	J:COM TV Select	30	NO	
Japan	KDDI	au hikari mansion type V 16 plus + phone + TV	49.50	45.42	au hikari mansion type V 16 plus	100	unlimited	au hikari denwa service	NO	NO	NO	NO	au hikari TV service		NO	
Japan	NTT East	Flets hikari light mansion type + Flets TV + sky perfec TV select 5 + Hikari denwa	60.23	55.25	Flets hikari light mansion type	100	unlimited	Hikari denwa	NO	NO	NO	NO	sky perfec TV select 5	45	NO	
Japan	Softbank	Softbank Hikari with Flets hikari next, LAN wiring plan2, BB phone, Hikari TV osusume plan (44 ch)	48.19	44.21	Softbank Hikari with Flets hikari next, LAN wiring plan2	100	unlimited	BB phone	NO	NO	NO	NO	Hikari TV osusume plan	44	NO	
Korea	KT	Basic 3-play	30.68	36.09		50	unlimited	Home phone	NO	NO	NO	NO	Basic pay-tv	200	NO	
Korea	SKB	SKB Bundle	32.60	38.35		100	unlimited	B-Phone	NO	NO	NO	NO	Digital basic	137	NO	
Korea	Tbroad	HD Economy	33.56	39.48		320	unlimited	Internet Telephony	NO	NO	NO	NO	HD Digital Economy	80	NO	

## Triple and Quadruple Play Bundles of Communication Services

Table A.3. Basic triple-play – 10 Mbps download speed (25 GB), telephone connection, pay-tv, prices as of April 2014 (continued)																	
Country	Operator	Plan	Min of Price/month USD	Min of Price/month USD PPP	BB comp.	DSL Speed	Bitcap	Voice comp.	Unl local calls	Unl national fixed calls	Unl mobile calls	Unl International calls	Pay-tv component	No channel	Premium (sports and movies)	Details	
Mexico	Axtel	Paquete TV Básico 20 MB	63.92	87.56	Internet 20MB	20	unlimited	Llamadas locales ilimitadas y EUA ilimitado	YES	YES	NO	US/Canada	100 canales	100	NO		
Mexico	Megacable	10 Mbps + Megafon ilimitado 100 + Conecta	36.67	50.23		10	unlimited	Megafon ilimitado 100	YES	NO	100	NO	Conecta Digital	62	NO		
Mexico	Telmex																
Netherlands	KPN	Alles-in-1 Glasvezel - Instap	77.12	63.21	Instaap	50	unlimited (symmetri)	BeVrij tariffs	NO	NO	NO	NO		60	NO		
Netherlands	UPC	Alles-in-1 Basis	60.77	49.81	50 Mb/s Internet	50	unlimited	Standard Bellen (calls form EUR 0.09 /min)	NO	NO	NO	NO	Interactieve Digitale TV Starter + Horizon	70	NO		
Netherlands	Ziggo	All-in-1 Basis	59.79	49.01		30	unlimited	Telephony Z1	NO	NO	NO	NO	TV Standard	60	NO		
Spain	Movistar	100/10 Mb (fibra) with Movistar TV	77.60	73.90	Fibra óptica 100/10	100	unlimited	Llamadas a fijos y móviles	YES	YES	550 min	NO	Movistar TV	80	NO		
Spain	Ono	Telefono + Internet 20 + ONO TV Online	65.01	61.92	20Mb	20	unlimited	Telefono fijo con llamadas nacionales gratis	YES	YES	60 min	NO	ONO TV	30	NO		
Spain	Orange	ADSL + llamadas + Orange TV	66.05	62.90	20Mb	20	unlimited	Telefono con llamadas a fijos	YES	YES	1000 min	300 min	Orange TV	60	NO		
United Kingdom	BT	TV Entertainment + Infinity Extra	58.47	45.33	BT Infinity Extra	38	40	Weekend calls	NO	NO	NO	NO	TV Entertainment	90	NO	weekend calls, BT Sports for free	
United Kingdom	Sky	Sky BB unlimited + Original Bundle	74.05	57.40	Sky Broadband Unlimited	17	unlimited	Sky Talk Weekends	NO	NO	NO	NO	Original Bundle	35	NO	weekend calls	
United Kingdom	Virgin Media	Starter Collection	57.49	44.57	Up to 50 Mb	50	unlimited	Unlimited Weekend Calls	NO	NO	NO	NO	60 channels	60	NO	weekend calls	
United States	AT&T		124.36	124.36	Max	12	unlimited	AT&T Uverse Voice 200	200 min	200 min	200 min	NO	U-family	130	NO		
United States	Comcast	Starter	123.69	123.69	Performance	25	unlimited	Xfinity Voice Unlimited	YES	YES	YES	NO	Digital Starter	>80	NO	includes MTV, ESPN, Discovery	
United States	Verizon		78.67	78.67	FIOS Internet 15/5 Mbps	15	unlimited	FIOS Digital Voice Per minute Plan	NO	NO	NO	NO	FIOS TV Select HD	190	NO	includes Disney, TBS, HGTV, USA	

### Triple and Quadruple Play Bundles of Communication Services

Table A.4. Premium triple-play, 30 Mbps download speed and 200 GB data allowance, unlimited fixed calls, pay-tv including premium movies and sports content

Country	Operator	Plan	Min of Price/month USD	Min of Price/month USD PPP	BB component	DL Speed	Bitcap	Fixed voice component	Unl local calls	Unl national fixed calls	Unl mobile calls	International calls	Pay-tv component	No channel	Premium (sports and movies)	Details
Australia	BigPond Telstra	XL 500 GB Broadband + Premium Foxtel TV	252.23	177.62	XL 500GB Broadband	30	500	L Telstra Home Phone Pinnacle	YES	YES	YES	NO	Foxtel TV - Premium HD	92	Sports pack, Entertainment pack, Movies&Premium drama	
Australia	Intermode															not included no Australian sport
Australia	Optus	200 GB data and unlimited local/national voice + TV	164.96	116.17	200 GB data	30	200	Home phone	YES	YES	NO	NO	Foxtel TV + Sports + Movies&Drama	70	Sports, Movies&Premium drama	
Canada	Bell	Bundle - Best	208.77	172.53	Fibe Internet 50/10	50	unlimited	Home Phone Choice	YES	YES	NO	NO	Best	320	Sports, learning & News, Movies & More, Variety Packs	
Canada	Rogers	Hybrid Fibre 60/ Digital Plus / Favourites	160.70	132.80	Hybrid Fibre 60 + bonus 200 GB	60	200	Favourites + unlimited Canad calling	YES	YES	YES	NO	Extra Sports TV	150	Sports and movies packs	(Sportsnet ONE, Sportsnet 360, TSN, TSN2, NBA TV, Golf Channel, Big Ten Network, GOLTV Canada, and Leafs TV), another premium service is for free (TMN, Super Channel, Sportsnet World
Canada	Shaw	Premier TV + Broadband 50 + Personal Home phone + features	219.20	181.16	Broadband 50	50	400	Personal Home Phone+ Features	YES	YES	YES	NO	Premier TV + Best of HD + Sports + Movies	210	Sports, movies	Movie Central (Includes HBO and Showtime) and Sprotsnet World
France	Free	Freebox Revolution + Canal+	92.53	77.11		50	unlimited	illimité	YES	YES	YES	100 countries	bouque TV freebox + Canal Plus	215	Sports and movies (Canal+)	
France	Numericable	Start+BelN	73.56	61.30		100	unlimited	illimité	YES	YES	NO	100 countries	TV + BelN + PassCinéPremium	215	BelN, Pack Ciné Premium	
France	Orange	Livebox Play fibre + option premium content (bouquets orange)	78.13	65.11		200	unlimited	illimité	YES	YES	NO	100 countries	TV Orange + OCS + BelN Sport	190	OCS, BelN	
France	SFR	La Fibre de SFR	59.38	49.48		1000	unlimited	illimité	YES	YES	NO	NO	TV + OCS + BelN	190	OCS, BelN	
Germany	DT	Entertain Premium	117.18	103.70		50	unlimited	Call Comfort	YES	YES	NO	NO	Entertain Premium + Sky	130	Sky: sports, movies	
Germany	Kabel Deutschland	Komfort 50 + Sky	111.83	98.97	Internet & Telefon 50	50	unlimited	Festnetz-Telefonanschluss +	YES	YES	NO	NO	Kabelanschluss Komfort HD + Sky	180	Sky: sports, movies	
Germany	Vodafone	DSL Zuhause L + Sky Wlt Paket + VDSL 50 Mbps	101.05	89.43	VDSL	50	unlimited	ZuHause Festnetzflat	YES	YES	NO	NO	Sky	190	Welpaket + sportpaket + kinopaket	
Italy	Fastweb	Sky+Fastweb + Cinema package	83.79	73.50		100	unlimited	Unlimited national calls	YES	YES	NO	NO	SKY (Includes Calcio package) + cinema package	190		
Italy	Telecom Italia															
Italy	Tiscali															
Japan	JCOM	Smartotoku plan 160 (TV standard, NET 160M, phone plus, 1 year)	148.82	136.53	J:COM NET 160M	160	unlimited	J:COM PHONE plus	YES	YES	NO	NO	J:COM TV Standard	77	YES	
Japan	KDDI	au hikari mansion type V 16 plus + phone (fixed calls included in 420 calls basket) + TV platina select pack (39 channel + VOD)	129.87	119.15	au hikari mansion type V 16 plus	100	unlimited	au hikari denwa service	420 calls	420 calls	NO	NO	TV Platina	39	YES	
Japan	NTT East	Flets hikari light mansion type + Flets TV + sky perfec TV premium (66ch) + Hikari denwa motto anshin (fixed calls included in 420 calls basket)	141.83	130.12	Flets hikari light mansion type	100	unlimited	Hikari denwa motto anshin	420 calls	420 calls	NO	NO	sky perfect TV premium	66	YES	
Japan	Softbank															
Korea	KT		44.58	52.45		100	unlimited	Home phone +	YES	YES	NO	NO	Premium TV	205	YES	
Korea	SKB	SKB Bundle	73.95	87.00		100	unlimited	B-Phone + price 420	420 calls	420 calls	NO	NO	Digital basic	137	YES	
Korea	Tbroad															

Triple and Quadruple Play Bundles of Communication Services

Table A.4. Premium triple-play, 30 Mbps download speed and 200 GB data allowance, unlimited fixed calls, pay-tv including premium movies and sports content (continued)																
Country	Operator	Plan	Min of Price/month USD	Min of Price/month USD PPP	BB component	DL Speed	Bitcap	Fixed voice component	Unl local calls	Unl national fixed calls	Unl mobile calls	International calls	Pay-tv component	No channel	Premium (sports and movies)	Details
Mexico	Axtel	Paquete TV Total 200 MB	142.00	194.53	Internet 200MB	200	200 (symmetric)	Llamadas locales ilimitadas y EUA ilimitado	YES	YES	NO	United States	130 canales	130	WB, NFL, MGM, Studio, Universal, Claro Sports, ESPN, Fox, HBO	
Mexico	Megacable															
Mexico	Telmex															
Netherlands	KPN	Alles-in-1 Thuis Pakket - Standaard	137.55	112.74	Standaard	40	unlimited	Unlimited	YES	YES	NO	NO	Normal TV (plus HBO plus Fox Sports)	80	HBO, Fox Sports	
Netherlands	UPC	Alles-in-1 Basis + unlimited calls + premium sports and cinema	126.04	103.31	50 Mb/s Internet	50	unlimited	unlimited	YES	YES	YES	NO	Interactieve Digitale TV Starter	70	Horizon + premium channels	
Netherlands	Ziggo	All-in-1 Basis + unlimited calls + Film 1 + Sport 1	108.07	88.58		30	unlimited	unlimited	YES	YES	YES	NO	TV Standard + Film1 + Sport 1	70	Film1, Sport1	
Spain	Movistar	100/10 Mb (fibra) with Movistar TV, Movistar TV futbol and Movistar TV Energia (Movistar Total)	119.03	113.36	Fibra optica 100/10	100	unlimited	Llamadas a fijos y móviles	YES	YES	550	NO	Movistar TV with extra futbol	80	MotoGB, movies, football (Movistar para todos, energia and futbol)	
Spain	Ono															
Spain	Orange	Fibra 100 Mb + Orange TV	103.04	98.13	100mb	100	unlimited	Telefono con llamadas a fijos	YES	YES	1000	300	Orange TV + Canal Plus option (18 euros)	50	Canal Plus	
United Kingdom	BT	TV Entertainment + Unlimited BT Infinity 2	107.33	83.20	Unlimited BT Infinity 2	76	unlimited	unlimited	YES	YES	NO	NO	TV Entertainment	100	BT Sports, Sky Movies	
United Kingdom	Sky	Sky Fibre unlimited + Family bundle + Sky Sports + Sky Movies	188.65	146.24	Sky Fibre Unlimited	38	unlimited	Sky Talk Anytime International	YES	YES	NO	50 countries	Family bundle + Sky Sports + Sky Movies	100	Sky Sports, Sky Movies	
United Kingdom	Virgin Media	VIP collection	171.40	132.87	Up to 152	152	unlimited	XL Talk Unlimited Extra	YES	YES	YES	NO	TV XL + Sky Movies + Sky Sports	250	Sky Sports, Sky Movies	
United States	AT&T		192.16	192.16	Power	45	unlimited	AT&T Uverse Voice Unlimited	YES	YES	YES	NO	U450	450	Starz, encore, showtime, The movie channel, HBO, Cinemax, Fox Sports, AXS TV	
United States	Comcast	HD Premier	185.16	185.16	Blast	50	unlimited	Xfinity Voice Unlimited	YES	YES	YES	NO	Digital Premier	200	ESPN, Golf, NFL, NHL, Cinemax, Flix, Showtime, HBO, Showtim, Starz, Moviemax	
United States	Verizon		139.17	139.17	FIOS Quantum Internet 50/25 Mbps	50	unlimited	FIOS Digital Voice Unlimited Plan	YES	YES	YES	Canada	FIOS TV Ultimate HD	380	BeIN, Showtime, EPIX, MGM, Cinemax, Redzone, Outdoors, BBC, Sundance, NFL, NBA, Golf Channel, Fox News, TNT, ESPN, RSNS	

### Triple and Quadruple Play Bundles of Communication Services

Table A.5: Basic quadruple-play – basic triple-play plus 30 call mobile basket

Country	Operator	Plan	Min of Price/ month USD	Min of Price/ month USD PPP	BB component	DL Speed	Bitcap	Voice component	Unl local calls	Unl national fixed calls	Unl mobile calls	Unl International calls	Pay-tv component	No channel	Premium (sports and movies)	Mobile plan	Min	GB	Details
Australia	BigPond Telstra	M 100GB Broadband + Essentials TV (FoxIst) + 30 call basket	145.05	102.15	M 100GB Broadband	20	100	M Telstra Phone National	YES	YES	NO	NO	Foxtel from Telstra (Essentials TV)	>60	NO	Everyday Connect Plan AUD 50, SIM-only, 24 months			
Australia	Intermode	Easy Broadband ADSL2+ + Fetch TV + 30 call basket	112.31	79.09	Easy Broadband ADSL2+	20	100	NodsLine Home Value	NO	NO	NO	NO	Fetch TV with Entertainment Plus	>60	NO	Starter 15			
Australia	Optus	Broadband + TV + Home Phone	97.37	68.57	200 GB data and unlimited local/national voice + TV	20	200	Home phone	NO	NO	NO	NO	Fetch TV	>40	NO				
Canada	Bell	Bundle - Good	149.72	123.73	Fibe Internet 15/10	15	80	Home Phone Lite	YES	NO	NO	NO	Good	157	NO	Voice 30 Promo, Voicemail option			
France	Free	Freebox Revolution + Forfait mobile 2 euros	44.19	36.82		20	unlimited		YES	YES	YES	100 countries	Bouquet TV Freebox	188	NO	Forfait Mobile 2 euros	120		0.05
France	Numericable	La Box POWER + forfait mobile basique	54.19	45.16		200	unlimited	illimité	YES	YES	YES	100 countries		240	NO	Forfait Basique Mobile	60		
France	Orange	Livebox Zen	51.09	42.58	Internet Haut débit ADSL	15	unlimited	illimité	YES	YES	NO	NO	TV Orange	160	NO				BelTV Sport at EUR1/mont for 12 months
France	SFR	La Box de SFR + Forfait carré 2h + 500 MB (silver)	48.33	40.27		15	unlimited	illimité	YES	YES	NO	NO	TV	160	NO	Carré 2h + 500 MB	120		0.5
Germany	DT	Entertain Sat			Surf	16	unlimited	Call Comfort	YES	YES	NO	NO	Entertain Sat	100	NO				
Germany	Kabel Deutschland																		
Germany	Vodafone	DSL Zuhause L + Vodafone Smart S (30 calls basket)	59.76	52.88	DSL Zuhause L	16	unlimited	ZuHause Festnetzflat	YES	YES	NO	NO	Sky Weltpaket	190	NO	Vodafone Smart S, SIM-only, 24 months			
Italy	Fastweb	Sky+Fastweb	91.16	79.97	Fibra Fastweb	100	unlimited	Unlimited national calls	YES	YES	60	NO	Sky	190	NO	Mobile 500	500	2	20 Mbps in DSL homes, Calcio Package for free until August 2014
Japan	JCOM	Smartselect NET12M + phone, TV select, NET 12M, phone plus + 30 call basket	83.12	76.26	J:COM NET 12M	12	unlimited	J:COM PHONE plus, line rental only	NO	NO	NO	NO	J:COM TV Select	30	NO	Plan Z simple	30 calls		0
Japan	KDDI	au hikari mansion type V 16 plus + phone + TV + 30 calls plan	69.04	63.34	au hikari mansion type V 16 plus	100	unlimited	au hikari denwa service	NO	NO	NO	NO	au hikari TV service		NO	Plan Z simple	30 calls		0
Japan	Softbank	Softbank Hikari with Flets hikari next, LAN wiring plan2, BB phone, Hikari TV osusume plan (44 ch), while plan, 2 years, 30 calls basket	72.13	66.17	Softbank Hikari with Flets hikari next, LAN wiring plan2	100	unlimited	BB phone	NO	NO	NO	NO	Hikari TV osusume plan	44	NO	While plan	30 calls		0
Korea	KT	Olleh Bundle	70.95	83.47		50	unlimited	Home phone	NO	NO	NO	NO	Basic pay-tv	200	NO	unlimited	unlimited		5
Korea	SKB	TB Family Free + mobile plan	35.18	41.39		100	unlimited	B-Phone	NO	NO	NO	NO	Education	68	NO	30 calls			
Netherlands	KPN	Alles-in-1 Thuis Pakket - Standaard + 30 call mobile basket	97.21	79.68	Standaard	40	unlimited (symmetric)	BelVrij tariffs	NO	NO	NO	NO		60	NO	SIM Only Budget 150, SIM only, 24 months			Spotify Premium
Netherlands	Ziggo	All-in-1 Basis + Heel Veel	80.89	66.31		30	unlimited	Telephony Z1	NO	NO	NO	NO	TV Standard	60	NO	Heel Veel	300	300	300 min or SMS
Spain	Movistar	100/10 Mb (libra) with Movistar TV	120.17	114.44	Fibra óptica 100/10	100	unlimited	Llamadas a fijos y móviles	YES	YES	550 min	NO	Movistar TV	80	NO		unlimited		1
Spain	Ono	Teléfono + Internet 20 + ONO TV Online + Tarifa 200	68.36	65.10	20Mb	20	unlimited	Teléfono fijo con llamadas nacionales gratis	YES	YES	60 min	NO	ONO TV	30	NO	Tarifa 200	200		0.3
Spain	Orange	ADSL Llamadas with Orange TV and Canguro 35	112.50	107.14	20Mb	20	unlimited	Teléfono con llamadas a fijos	YES	YES	1000 min	300 min	Orange TV	60	NO	Canguro 35	150		0.3 added 27 euros for SMS (0.12*225)
United Kingdom	Virgin Media	Starter Collection + Virgin Media mobile Tariff	65.87	51.06	Up to 50 Mb	50	unlimited	Unlimited Weekend Calls	NO	NO	NO	NO	60 channels	60	NO	Virgin Media Tariff	100		0.1 weekend calls
United States	AT&T	Basic 4-play (Max 12, uverse 200 and basic pay-tv) + Mobile Share - Basic Phone 300 MB, 24 months	167.62	167.62	Max	12	unlimited	AT&T Uverse Voice 200	200 min	200 min	200 min	NO	U-family	130	NO	Mobile Share - Basic Phone 300 MB, 24 months			0.3
United States	Verizon	FIOS 3-play + Prepaid Basic, 250 texts & unlimited on-net texts	106.87	106.87	FIOS Internet 15/5 Mbps	15	unlimited	FIOS Digital Voice Per minute Plan	NO	NO	NO	NO	FIOS TV Select HD	190	NO	Prepaid Basic, 250 texts & unlimited on-net texts			includes Disney, TBS, HGTV, USA

Triple and Quadruple Play Bundles of Communication Services

Table A.6. Premium quadruple-play, premium triple-play plus 300 calls + 1 GB mobile basket																			
Country	Operator	Plan	Min Price/ month USD	Min of Price/ month USD PPP	BB component	DL Speed	Bitcap	Fixed voice component	Unl local calls	Unl national fixed calls	Unl mobile calls	International calls	Pay-tv component	No channel	Premium (sports and movies)	Mobile plan	Min	GB	Details
Australia	BigPond Telstra	XL 500 GB Broadband + Premium Foxtel TV + 300 calls + 1 GB	261.55	184.19	XL 500GB Broadband	30	500	L Telstra Home Phone Pinnacle	YES	YES	YES	NO	Foxtel TV - Premium HD	92	Sports pack, Entertainment pack, Movies&Premium drama	Everyday Connect Plan AUD 60, 1.5 GB, SIM-only, 24 months	300 calls + 1 GB		
Australia	Internode																		not included no Australian sport
Australia	Optus	200 GB data and unlimited local/national voice + TV + 300 calls + 1 GB basket	190.40	134.09	200 GB data	30	200	Home phone	YES	YES	NO	NO	Foxtel TV + Sports + Movies&Drama	70	Sports, Movies&Premium drama	My SIM AUD 35, SIM-only, 24 months	300 calls + 1 GB		
Canada	Bell	Bundle - Best + 300 calls + 1 GB basket	293.00	242.15	Fibe Internet 50/10	50	unlimited	Home Phone Choice	YES	YES	NO	NO	Best	320	Sports, learning & News, Movies & More, Variety Packs	Voice & Data Lite 75, Data 2048 MB, voicemail			
France	Free	Freebox + forfait mobile illimité	114.61	95.51		50	unlimited	illimité	YES	YES	YES	100 countries	bouque TV freebox + Canal Plus	215	Sports and movies (Canal+)	illimité	unlimited	20	
France	Numericable	Start + BeN + Pass Ciné Premium + Forfait Ultra Mobile	97.49	81.24		100	unlimited	illimité	YES	YES	NO	100 countries	TV + BeN + PassCinéPremium	215	BeN, Pack Ciné Premium	Forfait Ultra Mobile	unlimited	3	
France	Orange	Edition Open Play 4G/H+ + premium content	101.28	84.40		50	unlimited	illimité	YES	YES	YES	100 countries	TV Orange + OCS + BeN Sport	190	OCS, BeN	Open Play 4G/H+	unlimited	3	
France	SFR	Box SFR fibre + carré gold (3GB)	109.55	91.29		1000	unlimited	illimité	YES	YES	NO	NO	TV + OCS + BeN	190	OCS, BeN	Carré 3 GB	unlimited	3	
Germany	Vodafone	DSL Zuhause L + Sky Wit Paket + VDSL 50 Mbps + CallYa Smartphone Fun 25	159.30	140.97	VDSL	50	unlimited	ZuHause Festnetzflat	YES	YES	NO	NO	Sky	190	Welpaket + sportpaket + kinopaket	CallYa Smartphone Fun 25, unlimited data			
Italy	Fastweb	Sky+Fastweb + Cinema package	132.44	116.18		100	unlimited	Unlimited national calls	YES	YES	NO	NO	SKY (includes Calcio package) + cinema package	190	football, cinema	Mobile Freedom	unlimited	2	
Japan	JCOM	Smartokoku plan 160 (TV standard, NET 160M, phone plus, 1 year)	264.07	242.27	J-COM NET 160M	160	unlimited	J-COM PHONE plus	YES	YES	NO	NO	J-COM TV Standard	77	YES		LTE plan, LTE flat	300 calls + 1 GB	7
Japan	KDDI	au hikari mansion type V 16 plus + phone (fixed calls included in 420 calls basket) + TV platina select pack (39 channel + VOD)	235.96	216.48	au hikari mansion type V 16 plus	100	unlimited	au hikari derwa service	420 calls	420 calls	NO	NO	TV Platina	39	YES		IS flat, plan LL Simple	300 calls + 1 GB	unlimited
Korea	KT		145.00	170.59		100	unlimited	Home phone + unlimited	YES	YES	NO	NO	Premium TV	205	YES		unlimited	unlimited	
Korea	SKB	SKB Bundle	110.67	130.20		100	unlimited	B-Phone + price 420 calls	420 calls	420 calls	NO	NO	Digital basic	137	YES		300 call + 1 GB		
Netherlands	KPN	Alles-in-1 Glasvezel - Premium	185.51	152.05	Standaard	40	unlimited	Unlimited	YES	YES	NO	NO	Normal TV (plus HBO plus Fox Sports)	80	HBO, Fox Sports		300 call + 1 GB		
Netherlands	Ziggo	All-in-1 Basis + unlimited calls + Film 1 + Sport 1	254.79	208.84		30	unlimited	unlimited	YES	YES	YES	NO	TV Standard + Film1 + Sport 1	70	Film1, Sport1	Héééééé veel	600	2	high overage charges
Spain	Movistar	Fusión TV con fibra	147.79	140.75	Fibra optica 100/10	100	unlimited	Llamadas a fijos y móviles	YES	YES	550	NO	Movistar TV with extra futbol	80	MoloGB, movies, football (Movistar para todos, energia and futbol)		unlimited	1	
Spain	Orange	Fibra 30 Mb with Orange TV and unlimited and Canal+	103.04	98.13	100mb	30	unlimited	Telefono con llamadas a fijos	YES	YES	1000	300	Orange-TV + Canal Plus option (18 euros)	50	Canal Plus	Canguro 45	unlimited	1	
United Kingdom	Virgin Media	VIP collection 3-play + Essential mobile Tariff	197.08	152.78	Up to 152	152	unlimited	XL Talk Unlimited Extra	YES	YES	YES	NO	TV XL + Sky Movies + Sky Sports	250	Sky Sports, Sky Movies	Essential Tariff	1200	1	
United States	AT&T	Premium 4-play (Max 45, overe unlimited and premium pay-tv), 1 add the price of the mobile plan and include discount	295.34	295.34	Power	45	unlimited	AT&T Uverse Voice Unlimited	YES	YES	YES	NO	U450	450	Starz, encore, showtime, The movie channel, HBO, Cinemax, Fox Spoels, AXS TV	Mobile Share - Basic Phone 300 MB, 2 GB option, 24 months			
United States	Verizon	Premium 3-play with 300 call + 1 GB - USD 20/month reduction	192.26	192.26	FIOS Quantum Internet 50/25 Mbps	50	unlimited	FIOS Digital Voice Unlimited Plan	YES	YES	YES	Canada	FIOS TV Ultimate HD	380	BeN, Showtime, EPIX, MGM, Cinemax, Redzone, Outdoors, BBC, Sundance, NFL, NBA, Golf Channel, Fox News, TNT, ESPN, RSNs	Single Line Plan \$50, 1GB, 24 months			

**Table A.7: Exchange and tax rates used for the comparison**

COUNTRY	TAX RATE ADDED	EXCHANGE RATE (USD to local currency) – April 2014	PPP (USD PPP to local currency) – March 2014
Australia	included	0.9320	0.6563
Canada	13%	0.9099	0.7520
France	included	1.3812	1.1510
Germany	included	1.3812	1.2223
Italy	included	1.3812	1.2116
Japan	included	0.009754	0.008949
Korea	included	0.0009588	0.001128
Mexico	included	0.07655	0.1048
Netherlands	included	1.3812	1.1321
Spain	included	1.3812	1.3154
United Kingdom	included	1.6750	1.2985
United States	10%	1	1

Source: OECD.stats (extraction made on 26/5/2014)

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## NOTES

<sup>1</sup> Foreclosure is the firm's ability to restrict output in a market through the leverage of its power in adjacent markets (Rey and Tirole, 2006).

<sup>2</sup> It was actually in the notification of the Danish regulator to the European Commission of its decision concerning regulation of the market for wholesale broadband access (WBA), issued December 2008. Please see [http://ec.europa.eu/danmark/documents/alle\\_emner/videnskabelig/kabel-tv-net-brev-dk.pdf](http://ec.europa.eu/danmark/documents/alle_emner/videnskabelig/kabel-tv-net-brev-dk.pdf)

<sup>3</sup> Please refer to ERG (2009), page 21: [http://www.erg.eu/streaming/ERG%20\(09\)%2049rev1%20Draft%20Report%20on%20technical%20replicability%20of%20bundles.pdf?contentId=546794&field=ATTACHED\\_FILE](http://www.erg.eu/streaming/ERG%20(09)%2049rev1%20Draft%20Report%20on%20technical%20replicability%20of%20bundles.pdf?contentId=546794&field=ATTACHED_FILE)

<sup>4</sup> For more information about the CanalPlus/TPS merger please see: [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/GF/WD\(2013\)47&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/GF/WD(2013)47&docLanguage=En). Please also refer to:

- C2006-02 / Lettre du ministre de l'économie, des finances et de l'industrie du 30 août 2006, aux conseils de la société Vivendi Universal, relative à une concentration dans le secteur de la télévision payante." <http://www.arcep.fr/fileadmin/reprise/dossiers/audiovisuel/dec-ministre-fusion-canal-tps.pdf>
- Avis n° 06-A-13 du 13 juillet 2006 relatif à l'acquisition des sociétés TPS et CanalSatellite par Vivendi Universal et Groupe Canal Plus) <http://www.autoritedelaconcurrence.fr/pdf/avis/06a13.pdf>
- Avis n° 06-0528 de l'Autorité de régulation des communications électroniques et des postes en date du 23 mai 2006 relatif à une demande d'observations du rapporteur général du Conseil de la concurrence portant sur les concentrations constituées par l'acquisition du contrôle exclusif des sociétés TPS et Canal Satellite par Vivendi Universal dans le secteur de la télévision payante [http://www.arcep.fr/fileadmin/uploads/tx\\_gsavis/06-0528.pdf](http://www.arcep.fr/fileadmin/uploads/tx_gsavis/06-0528.pdf)
- Décision n° 11-D-12 du 20 septembre 2011 relative au respect des engagements figurant dans la décision autorisant l'acquisition de TPS et CanalSatellite par Vivendi Universal et Groupe Canal Plus") - 2011 <http://www.autoritedelaconcurrence.fr/pdf/avis/11d12.pdf>
- Décision n° 12-DCC-100 du 23 juillet 2012 relative à la prise de contrôle exclusif de TPS et CanalSatellite par Vivendi et Groupe Canal Plus) – 2012 [http://www.autoritedelaconcurrence.fr/pdf/avis/12DCC100decision\\_version\\_publication.pdf](http://www.autoritedelaconcurrence.fr/pdf/avis/12DCC100decision_version_publication.pdf)

<sup>5</sup> Please refer to: *Décision Tribunal de Commerce de Paris* (2010), <http://www.larp.fr/dossiers/wp-content/uploads/2010/10/Jugement-Free-Neuf-Cegetel-France-Telecom-Orange-Sports-Tribunal-de-commerce-de-Paris-230209.pdf>

<sup>6</sup> Please refer to: *Arrêt de la Cour d'appel* (2010): [http://www.anlsp.fr/actualite-la\\_cour\\_d\\_appel\\_de\\_paris\\_autorise\\_commercialisation\\_de\\_chaine\\_orange\\_sports-72](http://www.anlsp.fr/actualite-la_cour_d_appel_de_paris_autorise_commercialisation_de_chaine_orange_sports-72) and *Arrêt de la Cour de cassation* (2010): [http://www.courdecassation.fr/publications\\_cour\\_26/arrets\\_publices\\_2986/chambre\\_commerciale\\_financiere\\_economique\\_3172/2010\\_3324/juillet\\_3606/798\\_13\\_17029.html](http://www.courdecassation.fr/publications_cour_26/arrets_publices_2986/chambre_commerciale_financiere_economique_3172/2010_3324/juillet_3606/798_13_17029.html)

<sup>7</sup> For more information about Pay TV markets competition decisions in the United Kingdom please refer to:

- Ofcom: <http://stakeholders.ofcom.org.uk/broadcasting/reviews-investigations/pay-tv/>
- United Kingdom Competition Commission (2010): <http://www.competition-commission.org.uk/our-work/directory-of-all-inquiries/movies-on-pay-tv-market-investigation>  
[http://www.competition-commission.org.uk/assets/competitioncommission/docs/2010/movies-on-pay-tv/main\\_report\\_appendices\\_and\\_glossary.pdf](http://www.competition-commission.org.uk/assets/competitioncommission/docs/2010/movies-on-pay-tv/main_report_appendices_and_glossary.pdf)

<sup>8</sup> For more details regarding the COMCAST/NBCU merger, please refer to: [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/GF/WD\(2013\)49&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/GF/WD(2013)49&docLanguage=En) . Also, refer to:

- FCC's decision: [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-11-4A1.doc](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-11-4A1.doc)  
<http://transition.fcc.gov/transaction/comcast-nbcu.html>
- DoJ's website: <http://www.justice.gov/atr/cases/comcast.html>

<sup>9</sup> This case is NYNEX/Bell Atlantic Docket 97-286, # 50, and it is mentioned in Gual, J. (2004), in the book “The Economics of Antitrust and Regulation in Telecommunications: Perspectives for the New European Regulatory Framework”, edited by Pierre-André Buigues, Patrick Rey, chapter “Market Definition in the Telecoms Industry”.

<sup>10</sup> Fiscalía Nacional Económica (2008), *Telsur vs. VTR*, Rol C no. 138-07.

<sup>11</sup> From OECD (2014): “For example, in its 2010 review of the wholesale broadband access market, Ofcom (UK) considered triple- and quadruple-play offers, and suggested that “services that make up a bundled package should not be treated as a single market for the purpose of this market review” and that “broadband access services purchased in a bundle are part of the same retail market as broadband access services purchased as a stand-alone package.

<sup>12</sup> Kento\*Unitel\*Sonaecom/ZON\*Optimus: Non Opposition Decision accompanied by the imposition of conditions and Obligations by the Competition Authority (Portugal, 2013) See: [http://www.concorrenca.pt/FILES\\_TMP/2013\\_05\\_final\\_net.pdf](http://www.concorrenca.pt/FILES_TMP/2013_05_final_net.pdf)

<sup>13</sup> The unilateral price increase or UPI is based on the EU Commission Notice, the equilibrium price increase or EPI is based on the 1984 US Merger Guidelines, and the upward pricing pressure (UPI) test is based on the test of Farrell and Shapiro. See Pereira *et al* (2013).

<sup>14</sup> Microsoft Corporation provided research funding for this paper.

<sup>15</sup> Which broadly correspond to the twelve largest OECD economies. Language barriers have been into account for the final country choice.

<sup>16</sup> Rogers (CA), Kabel Deutschland (DE), JCOM (JP), Megacable (MX), Virgin Media (UK), AT&T (US), Comcast (US) and Verizon (US).

<sup>17</sup> All these details are included in the Annex, where a set table lists the specific characteristics of each offer retained for each bundle for each operator. An example of this situation can be the double-play included below: while the minimum data allowance to qualify for this bundle is 25 GB, most offers include unlimited capacity and do not have any data cap restriction. Some of these offers may have higher speeds than the minimum required of 10 Mbps. Meanwhile, some may contain extra value (e.g. included calls to foreign countries), or also include triple play even if that is not the intent (i.e. some offers in France).

<sup>18</sup> Examples of premium television content are, for sports, NFL, NBA or ESPN in the United States, BeIN or CanalPlus Sports in France, Sky Sports packages in Germany, Italy or the United Kingdom, or Movistar TV in Spain. Premium movies content is provided by HBO, Canal Plus Ciné, Starz or Showtime.

<sup>19</sup> Please see: <http://www.digitaltrends.com/home-theater/comcast-rolls-hbo-broadband-bundle-targeting-cord-cutters/#!Pwgn0>; [http://www.nytimes.com/2014/02/16/business/media/comcast-vs-the-cord-cutters.html?\\_r=0](http://www.nytimes.com/2014/02/16/business/media/comcast-vs-the-cord-cutters.html?_r=0); <http://www.dailytech.com/Comcast+Launches+New+Internet+Plus+Plan+Including+HBO+Local+Channels/article33619.htm>

<sup>20</sup> The 30 call mobile basket corresponds to just below 60 minutes of voice calls (including mobile to fixed, on-net, off-net and voicemail) and 100 SMS. The 300 calls + 1 GB mobile basket corresponds to less than 600 minutes of voice calls, 225 SMS and 1 GB of data (for smartphones only).

<sup>21</sup> <http://www.telesemana.com/blog/2013/08/20/vtr-abandonaria-su-red-celular-a-fin-de-ano/>

22

<http://www.cablewifi.com/>

23

Snow has announced that it will discontinue its operations in Belgium in June 2015, <http://snow.be/en/home> (last accessed on 27/5/2015)

24

See details of Aula 365 in the following link: <http://www.aula365.com/> ;  
<http://www.movistar.cl/PortalMovistarWeb/internet/aula-365> ; <http://itusersmagazine.com/tag/aula-365/>