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Mobile Handset Acquisition Models

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MOBILE HANDSET ACQUISITION MODELS

English - Or. English

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FOREWORD

The Working Party on Communication Infrastructures and Services Policy (CISP) discussed the document in December 2012. It agreed to recommend the document for declassification to the Committee for Information, Computer and Communications Policy (ICCP). The ICCP Committee agreed to its declassification in April 2013.

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MOBILE HANDSET ACQUISITION MODELS

MAIN POINTS

This report examines the relationship between the prices for mobile communication services and some of the most popular handsets used to access these services, focusing on smartphones. The objective is to better understand different business models and how they may affect comparisons of prices.

When consumers sign up for a mobile communication service - either as a prepaid customer or post-paid subscriber - they may either bring their own device (i.e. purchased at the full price directly from the operator or from an independent retailer), or enter into a contractual agreement for a specified period, with a mobile operator, which includes a handset at a reduced upfront price. This market behaviour, commonly but inaccurately described as a "handset subsidy" by most stakeholders, has had a significant influence on how markets have evolved in different countries.

This raises the question, examined in this report, of how the different models for handset acquisition in different countries, and across different operators in these countries, may affect comparisons of service prices. As benchmarking of mobile communication prices provide an important indicator that is used to inform policy makers, regulators, industry and consumers, this report examines the challenges for such price comparisons associated with handset discounts bundled with mobile communication plans.

The bundled sale of a smartphone device, with a significant upfront discount, together with a mobile communication plan has been and remains a driver for customer acquisition and retention for many mobile operators. Even though these practices may not prove sustainable under some business conditions and some operators are starting to withdraw them from their offers, they remain common in many OECD countries. Arguably, they play a substantial role in users taking up or upgrading their smartphone devices at a faster pace than they would otherwise, and, therefore, in assisting the faster adoption of mobile broadband services. They do this by extending credit to users of smartphones who may prefer to pay back the cost of a device over the length of a contract rather than the full upfront cost.

Mobile operators offer handset discounts to users when bundled with longer contracts (e.g. 24 or 36 months). In return, users are charged higher monthly fees. If the repayment exceeds the cost to the operators of offering the discount or leads to the attraction of additional market share, particularly for customers with higher average revenue per user (ARPU), they provide an incentive for operators to offer larger upfront discounts for these customers. There is less "discounting" for handsets bundled with pre-paid plans, however, as the absence of a commitment period acts as a deterrent to extend credit.

This report concludes that, in broad terms, consistent price benchmarking of wireless broadband services is only slightly affected by the presence of bundled discounts for popular smartphones. In some cases, where one or more operators allow for the possibility of purchasing the smartphone device independently, bundled handset discounts represent, in many cases, a higher total cost for consumers - provided that the total cost (smartphone plus mobile plan) is accounted for over the relevant time period (e.g. 36 months). This is not unexpected given the cost of capital in extending the credit though operators might also take advantage of volume discounts in the purchase of handsets.

Experience has shown that barriers to credit for the purchase of communication services are best addressed by a competitive market. The outstanding success of pre-paid cards, which followed market liberalisation, has provided a business model that has enabled billions of users around the world to gain communication services for the first time. The rapid take-up of smartphones, which are significantly more expensive than feature-phones, could be pointed to as a similar example of a competitive market providing

ways to address barriers to credit and, therefore, expanding the social and economic benefits that can be associated with the widespread take-up of such devices. This may be one reason that regulators in some countries have stepped back from not permitting handset discounts in association with contracts. Nonetheless, it is worth asking in each country whether a range of alternatives is being provided, as would be expected in a competitive market.

It is worth noting that in some countries different operators provide a range of options for their customers to acquire handsets. This can include “bring your own device” or purchase a device at the upfront retail price, from their operator, without entering into a service contract. As noted, the cost of a handset can be bundled with the ongoing subscription. A further option used in some countries as the outcome of regulatory requirements or simply due to competition, however, is for operators to sell unbundled services and handsets with or without a service contract. In other words customers enter into a “pay as you go” agreement with separate payments each month for the services and repayment of the handset. In terms of price benchmarking the latter schemes are more transparent and may further contribute to competition.

Practices that promote consumer information and reduce consumer lock-in, such as the use of handset purchase via unbundled monthly instalments, can have a positive impact on both consumers and the ecosystem that exists around smartphones. They can also be beneficial to market development by removing high upfront payments that may act as a deterrent for purchasing smartphones. In addition, they do not pose as many concerns for consumer empowerment and protection because they enhance the ability for users to switch operators. This is why regulatory authorities in a number of countries enforce maximum periods for contracts after which customers are entitled to have their handsets “unlocked”, do not permit devices to be locked or ensure there are procedures for early termination of service contracts. Some regulatory authorities also mandate that information be made available to consumers (e.g. the full cost of a bundle that includes service and device over the period of a contract) in an effort to make the full costs more transparent. If discount schemes are not transparent for price benchmarking it is worth asking if they are transparent for consumers.

Introduction

In recent years the market for mobile communication services has significantly changed in OECD countries, from predominantly offering voice and text services, to including data services. This has been enabled by the introduction of higher speed wireless infrastructure (so called 3G and 4G networks) as well as the rapid development and take-up of "smartphones" as opposed to "feature phones", or handsets with more simple functionality. In some OECD countries smartphones are now said to make up more than half the market. With these changes in mind, in 2012 the OECD adopted a new set of baskets for comparing wireless broadband prices.

In developing this new methodology, a question arose as to the possible effects that the different models for handset acquisition across different countries and operators may have on service prices and, hence, the potential implications any differences may have for comparing these prices. The issue at hand is, in other words, how the different models for handset acquisition in different countries, and across different operators in these countries, may affect comparisons of service prices.

When a consumer becomes a post-paid subscriber to mobile communication services they either bring their own device (i.e. purchased at the market price from the operator or an independent retailer) or enter into a contractual agreement for a specified period with a mobile service provider, which includes a handset at a reduced upfront price (in most cases between one half and one third of the price of an independent retailer). In the latter case, the manufacturer's recommended retail price, or the market price, may be substantially reduced with the operator recovering their costs (benefitting from any volume discounts from the retail price), over the course of the contract through the prices they charge for communication services.

There are variations on the main models for handset acquisition and their relationship to the prices charged by mobile operators. In many cases, these involve a contractual period for service, the price charged by the mobile operator is bundled into the monthly post-paid charge for service. According to some industry analysts, customers greatly appreciate facing a low upfront payment for a handset device. In other words, it may be challenging for some customers to pay around USD 600 to USD 700 for some of the most popular smartphones when signing up for a mobile communication service. Moreover, customers strongly value new smartphones when switching operators and therefore handset devices offered for discounted upfront payments have played a significant role in customer acquisition and retention (Cap Gemini, 2009).

There are, however, recent examples of operators unbundling handset acquisition charges from monthly service payments. In these cases, a user pays a nominal upfront fee and a monthly repayment for the cost of the handset. They are obligated to repay the full cost for the handset but that price is shown independently from their monthly retail charge. This is in contrast to models that bundle both prices and only break out a charge, for the handset, if a user terminates their service before the period for the contract expires. Moreover, in some countries such as Sweden, some evidence has been reported that subscribers signing for longer contracts are offered discounts in the price of their mobile plan, regardless of the sales strategy for handsets.[1]

Given the differences between the models used across operators and in different countries, there is a need to better understand how markets are evolving. If, for example, estimates for the acquisition costs bundled in ongoing monthly charges were to be estimated for those countries where they exist, this would need to be done using a consistent, understandable and transparent methodology. This is not necessarily a straightforward task. While the recommended retail prices for "smartphones" are readily available, mobile operators likely negotiate volume discounts (though there is also likely to be less scope for the most popular brands). Some claim that the price paid by consumers over a contract period may sometimes

significantly exceed cost and a reasonable return (though again this would depend on the level of competition in a market, whether an operator has exclusive use of a particular handset or introduces a popular handset after a competitor has had an exclusive period and so forth).

In addition, the pace of innovation with smartphones is such that the "wholesale" prices paid by operators may depend on the lifecycle stage a device has reached. Thus, any comparison of broadband plans, on a cross-country basis, that does not consider the model used for acquisition of handsets could lead to an overestimation (or vice versa) of relative costs of mobile services. This is, of course, because operators in some countries include handset acquisition costs in their prices while, in other cases, this cost is met directly by consumers.[2] This report provides below some examples of possible price differences, for the same usage pattern, between independent handset purchases plus a pre-paid or SIM-only offer, and the overall price of the mobile bundle including the discounted handset. While there are some exceptions, the overall conclusion is that the price for a SIM-only contract plus an independent handset purchase is on average USD 10-20 per month cheaper than the bundled option, for countries where both options exist. Of course, the price difference may sometimes be related to perceptions of higher quality or a more recognised brand on the part of consumers.

Is there a subsidy involved? It is rather a bundled sale

Discussions on the models used for handset acquisition in which users pay a lower upfront price are commonly said to involve a handset "subsidy". The use of the term subsidy may not be helpful in considering the dynamics of this market. If a subsidy is thought of as an uncompensated direct economic transfer from one group to another it is not clear that the model used in mobile communications meets these criteria. For one thing, as the costs to operators are likely to be fully recovered, with payment simply made over time rather than upfront, it is questionable whether subsidy, in its general usage, is the correct term to be applied. If one of the actors (consumers, operators, manufacturers) benefited to a greater or lesser extent from a particular model (e.g. higher or lower prices for handsets and services) and this group used those gains in a different market, a case might be made that one group was subsidising its activities elsewhere (e.g. in another country or cross-subsidy to another product or service).

Part of the complexity is that the term "subsidy" can be used in a number of different contexts. The word subsidy can sometimes be applied where some type of regulation influences how different actors price goods and services. Historically, in telecommunication services offered in monopoly markets, some spoke of cross-subsidies from some consumers to others in the way operators priced services. This could for example reflect regulation designed to support objectives, such as universal service. With liberalisation, policy makers have sought to reduce or eliminate cross-subsidies to support such objectives. If markets are not providing a service, other tools are put in place (e.g. universal service funds and so forth). Mobile markets, on the other hand, are competitive and while having restrictions on entry, due to spectrum limitations, have much less scope for cross-subsidies than may have existed in monopoly markets.

One definition of the practice, using the term subsidy is the following: "*a handset subsidy is the monetary value, i.e. the difference between the purchase price and the sale price of the handset, given to a customer during the subscription process*" (Kim et al., 2004). As noted, under some models, operators offer a lower initial price for a handset in exchange for a binding contract period during which they aim to recover the difference, with the sale price, via monthly fees. As the word subsidy is sometimes applied to practices that extend credit or guarantee loans this may come closest to being applicable in some models for handset acquisition. The success of pre-paid services around the world has a great deal to do with the creation of a business model that does not require consumers to have credit. While the bar is generally set higher for post-paid services, some consumers may be able to access smartphones via an ongoing post-paid subscription that they would not be able to otherwise manage due to credit limitations. Nevertheless, as service pricing that ensures cost recovery from the same consumers, is presumably followed, it is

questionable whether the word subsidy is applicable. The practice may also perform a number of other functions for operators.

Motivation behind lower upfront payments for handset devices

A number of objectives have been attributed to models that offer lower upfront prices for handsets in return for longer term service contracts in which these fees are recovered (e.g. one to three years). These include:

- Enticing new subscriptions from mobile users for whom the upfront cost of smart phones, or other devices such as tablet computers, may otherwise be a barrier;
- Retaining customers or attracting them from other operators for more predictable periods, possibly gaining a higher return if the level of competition enables this to go beyond cost recovery or alternatively sustaining a lower return if competition compels such a practice;
- Influencing the capabilities offered by manufacturers on smartphones and the proportion of customers using those features.

If handset acquisition models are thought of in terms of "subsidies" the applicability of such objectives has likely changed in recent years. If "cross-subsidies" were originally used to attract users that had not yet joined a mobile network, by charging more to the service prices of existing users and lower upfront handset prices for new users, this is likely less applicable as penetration rates reached saturation. Today these "subsidies" are targeted at current mobile users in order for them to upgrade their subscriptions to make use of new technologies (e.g. 3G/4G or new capabilities that open new business opportunities), as well as enticing customers from competing networks to change network or remain on their current network (Albon and York, 2008).

Whether operators can use low upfront payment models to increase returns over contract periods or are obliged to accept lower returns due to competitive forces is an open question. At least one mobile operator that is a relatively new entrant, with a different model for handset acquisition, says "handset subsidies" represent unfair competition and result in "usury rates of 300 to 400% that consumers don't see" (Smith, 2012). While this operator, as a new entrant, has an incentive to promote models with greater capabilities for consumers to switch service provider, it is also the case that they have launched lower priced services than had previously been the case in that market. On the other hand, even some established operators are trying to move away from the model suggesting the actors which may benefit from the low priced handsets is not a straight forward matter. It could, for example, mean that the manufacturers with the capabilities most valued by users are the ones most benefiting from the model. Certainly, financial analysts look to see if operators are disciplining or reducing their use of handset subsidies and associate this with higher margins (Forbes, 2012, Battersby, 2012).

A number of commentators note that low priced handsets and long-term contracts give operators greater influence or control over market directions. The use of low upfront prices for smartphones has arguably led to a much faster take-up of these devices creating the capability for operators to sell an increasing amount of data services. At the same time, the interest manufacturers have in ensuring they benefit from service offers associated with their devices, as opposed to their competitors, has in some countries influenced the capabilities they make available on those devices. Switching off capabilities for tethering, for example, in some countries was likely the result of requests from operators that felt it might cut across their existing business models. It may also be the case that manufacturers have not developed certain capabilities because they would undercut other existing business models in areas such as international mobile roaming.[3] That being said, the need to meet evident consumer demand, for features

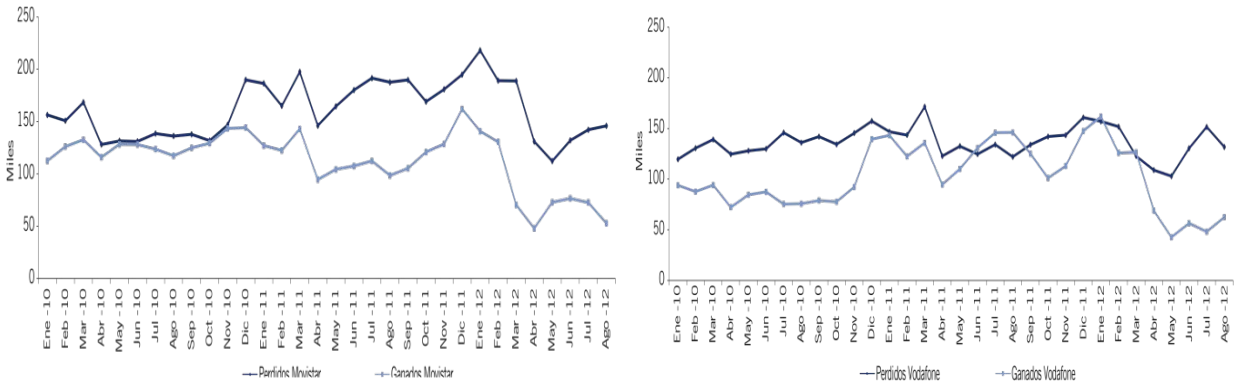
such as tethering, shows that the amount of influence operators can exert due to some models of handset acquisition faces discipline in competitive markets.

In this light, handset "subsidies" or bundled discounts seem to be used as a dimension of competition. However, operators also use these arrangements to induce clients to sign long-term contracts, and this in turn creates customer "lock-in" (by increasing switching costs), thus potentially limiting other aspects of competition (Kim *et al.*, 2004). Regulatory authorities have addressed this in a number of different ways but, for the most part, have not prohibited linking low priced handsets with contracts. Indeed, in a number of cases competition authorities have fined operators in countries when they have been found to be acting in concert. In some cases, such as the case of the Netherlands, this behaviour was related to bundled handset discounts, involving co-operation on reducing the "subsidies" for handsets.[4] A number of regulators have put in place regulation that ensures consumers can have handsets de-blocked at the end of a contract period or can exit contracts after a certain period with a payment to compensate the operator. Actions such as these may influence the behaviour of operators who might be less willing to offer upfront handset bundled discounts because it would tend to limit the ability to lock-in users.

The overall effect on competition is at best ambiguous. Most countries have not regulated handset "subsidies" and, if anything have moved to reduce any restrictions in this area. The practice could be seen as the bundling of a service and a product, and some countries have prohibited this practice in the past but lifted restrictions in recent years, such as Belgium, Finland, Italy and Korea (Kim *et al*, 2004; European Commission, 2009).[5] On the other hand, the recent experience in some countries shows that markets may themselves curb or even eliminate "subsidies".

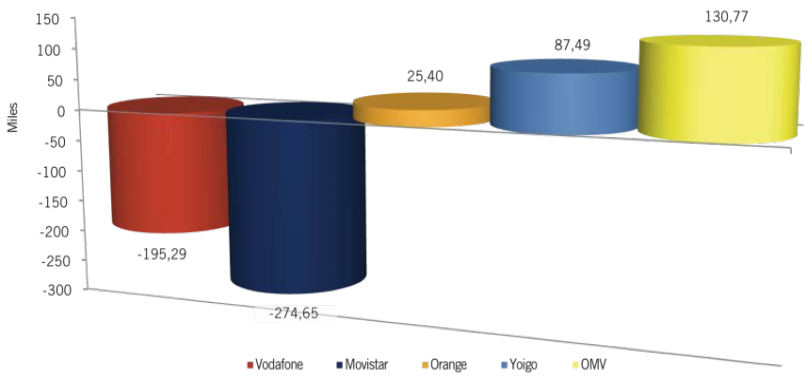
In Spain, Telefonica and Vodafone, the two operators with the largest market share, decided to remove handset subsidies in February 2012 (Cinco Dias, 2012). This action was not followed by Orange (Spain) which gained market share from Telefonica and Vodafone during the first half of that year (Figure 1 and 2). Possibly as a result of this experience Vodafone reintroduced what it described as a short term special offer, which included the price of a handset, at the end of July 2012 (Reuters, 2012). In press reports, Telefonica said they would not reintroduce subsidies but did have an offer to attract Orange customers wishing to join their network. The declining trend for Telefonica and Vodafone seems to have intensified after the removal of handset bundled discounts.

Figure 1. Number portability balance of Telefonica and Vodafone in Spain (number acquired vs. number lost)



Source: CMT, monthly note August 2012

Figure 2. Number portability balance by operator in Spain (August 2012)



Source: CMT, monthly note, August 2012.

In France, during 2012, Free Mobile (Iliad) became the fourth mobile network operator (MNO) in that country. As the most recent mobile entrant, Free Mobile entered a market in which mobile penetration was relatively mature. By way of contrast, the third MNO in the French market (Bouygues Telecom) had been established in 1994 and was launched in 1996, when mobile penetration in France was only 4.1 subscribers per 100 inhabitants, growing subsequently to 9.6 in 1997 and 18.7 in 1998.

Free introduced several SIM-only plans where it offered the handset separately without a bundled "subsidy" but with the possibility of financing the device. For an upfront nominal fee of USD 207 and a monthly repayment of USD 203 for three months a customer could, for example, purchase an iPhone 5 16 GB (i.e. a total cost of USD 816). Longer repayment periods are also available and these payments are treated separately from the monthly charge for service. Alternatively, customers could bring their own device to use with the SIM supplied by Free Mobile. The price of the same device, from the Apple Store in France at this time, was USD 865.

In the United Kingdom, Vodafone, O2 and Everything Everywhere have eliminated subsidies but only in the pre-pay segment, where they were relatively small.[6] By way of example, the average discount for prepaid plans was USD 100 in the United Kingdom in March 2012, whereas the average discount for post-paid contract was USD 600. In this case, the lack of commitment period may help in discouraging operators from offering larger discounts. In Australia, the two largest operators Telstra and Optus, both commented during mid-2012 earnings reports that they had reduced handset "subsidies" for customer acquisition (Bingemann, 2012). Both companies said they planned to reduce acquisition costs and rely on adding value for customers for future growth.

In the United States, the largest operators have also been seeking to reduce handset "subsidies". AT&T and Verizon are reported to be increasing the upfront prices they charge for devices, such as iPhones, as well as introducing an "upgrade fee". In April 2012, Verizon introduced a USD 30 fee for consumers to upgrade their phones to a later model (Epstein, 2012). AT&T recently doubled its charges to USD 36 and extended the time at which a customer becomes eligible for an upgrade (Beren, 2012). Sprint charges a USD 18 upgrade fee plus an extra USD 10 monthly smartphone charge. Some financial analysts and the carriers themselves have linked reduced "subsidies" with increasing returns.

In Europe, some have suggested that the trend towards reductions in handset bundled discounts followed the European Regulators move towards reducing mobile termination rates. If this were the case, it

would have meant that operators were "cross-subsidising" manufacturers (selling) and their own customers' (buying) smartphones from the charges paid by the users of other networks. However, it could be that pricing schemes are evolving and the handset "subsidy" model is perhaps becoming less attractive for operators.

The initial driver for reducing upfront prices for handsets, for operators, was attracting consumers to upgrade from feature-phones to smartphones. This was accompanied by greater opportunities for MNOs to market data services, and increase returns from investment in 3G and 4G networks, at a time when voice and text services were coming under greater competitive pressure from MVNOs. The growing success of smartphones, particularly from the launch of the first iPhone onwards, has meant that carriers needed to attract new customers or defend their existing subscriber base.

While bundled discounts existed in countries where an operator had an exclusive arrangement with Apple, for the initial iPhone generations, and in others where the iPhone was marketed by multiple carriers, the difference in such deals may have led to variations in the level of reductions for this handset and those of other manufacturers. By 2012, however, the level of competition among smartphone manufacturers has substantially increased to such an extent that operators may be able to reduce bundled discounts if they were driven by the leading position for one manufacturer.

An alternative possibility is that operators were inducing a form of "network effect" through "subsidising" handsets. This would have relied on their capacity to capture a greater share of total returns, than for handset manufacturers by obtaining higher volume discounts (correlated to their market share), and exclusivity contracts with handset providers (e.g. iPhone and Orange in France or AT&T in the United States), as well as the hurdles for consumers to switch operators.

Pricing models are evolving and this may be because iPhone exclusivity contracts are no longer the norm and regulators in some countries have implemented SIM unlocking or competitors have offered alternatives (e.g. bring your own device or standalone repayments) in association with lower monthly prices. The level of power any of the manufacturers have will no doubt be strongly influenced by smartphone innovation as their bargaining position with operators is premised on consumer demand for their products (Bloomberg Newsweek, 2012). It is possible that reductions in handset bundled discounts reflect greater competition among manufacturers, something that is likely to increase (Low, 2012).

Selected country experiences

Australia

Analysis by the Australian Competition and Consumer Commission revealed that, in Australia, handset "subsidies" increased with the launch of 3G networks, and thus these bundled discounts were not aiming to attract new mobile subscriptions but rather directed to attract customers from competing networks, as well as migrating current customers to the new 3G technology (Albon and York, 2008b). The available evidence suggests this "subsidisation" was unlikely to be consistent with the internalisation of network externalities (as it is not attracting marginal users), but instead it could induce Australian operators to over-subsidise mobile subscriptions due to pressures in the retail mobile service market (Albon and York, 2006). In other words, bundled handset discounts were simply used as a competitive tool.

Canada

In Canada, smartphone customers typically purchase the device and the plan together. The mobile operator, in exchange for signing a term contract for a mobile wireless plan that includes voice, text, and data will heavily discount the device. For the largest operators, roughly 90% of their smartphone customers have received a discount for their device. The amount of "subsidy" varies according to the

smartphone model and the length of the contract. Higher end devices tend to be associated with the largest discounts. In Canada, a three-year term is the most common contract length and is associated with the largest discounts. Device discounts are often significantly larger for three-year contracts relative to one or two year contracts (e.g. USD 100 for two year contract versus USD 500 for a three year contract). Some devices, such as the iPhone 4S 16 GB, are only available on a three year contract with a discount or uncontracted at the full retail price.

The magnitude of the discounts is often considerable. A comprehensive sample of smartphones available from the two largest operators in Canada was conducted in summer 2012. It showed a wide range of discounts with a tendency to cluster in the range of USD 450 for the most popular smartphones. The average discount per month over a three-year term was USD 11.66, while the median was USD 13.26. It should be noted that monthly rate plans are independent of whether a contracted discount was afforded or not (Table 1).

Table 1. Handset discounts in Canada (USD)

	Retail Price	Discount*	Discount/Month*
Low	149.99	149.99	4.17
High	869.99	720.00	20.00
Average	472.82	419.65	11.66
Median	499.99	477.49	13.26

*Assuming a three year term contract (exchange rate of 20 November 2012 was CAD 0.9969 to USD 1 but have been converted on a 1 to 1 basis)

In October 2012, the federal communications regulator initiated a proceeding to establish a mandatory code to address the clarity and content of mobile wireless services contracts and related issues for consumers (CRTC, 2012).[7] Several provincial governments have developed or are in the process of implementing consumer protection legislation that applies to the provision of wireless services. Of particular interest in this context are provisions that limit the early termination charges, which state that carriers cannot charge a subsidy fee in excess of what is left for the remaining value of the phone. Carriers have moved to adopt this approach voluntarily on a national basis in certain cases. For example, in January 2012 Rogers began limiting cancellation charges to the pro-rated remaining value of the device discount plus a service charge of USD 12.50.

Canadian consumers have come to expect subsidies as part of a wireless service. While handset "subsidies" are said by some to be a drag on profits they seemingly remain a key, in that market, to attracting customers. Over the past two years, four new wireless entrants launched services, initially with a "no-contract" approach with no handset "subsidies". Over time, however, with market developments, and specifically to attract smartphone users, several of these providers have moved to a "tab" model.

Under this model, the subscriber pays for their telephone over a period of time, as part of their pre-paid monthly package. Following a credit check, an operator such as Koodo Mobile will offer services without a contract. Customers receive a nominal reduction of up to USD 150 on their chosen device in the form of an interest free loan, which is not repayable unless they leave Koodo Mobile.[8] The charge is reduced by a payment of 10%, on the "tab", each month until the fee is expunged. At that time the tab begins to accumulate credit, in the form of a reverse interest free loan from the consumer to the operator, and this amount can be used as a contribution to the cost of a new device. Globalive, one of the largest new entrants in the Canadian market, has announced that it will be going one step further and adopting a post-paid approach and expanding the "tab" model.

Portugal

In 2006, one study on the mobile market in Portugal (using hedonic pricing regressions) concluded that upfront discounts are used more intensively in new handset models than older models, and tend to disappear as the model ages (Albon and York, 2006). The authors pointed out that mobile phone companies compete in several dimensions and equipment discounts is one of them. This suggests that at that time mobile phone companies in Portugal were "subsidising" handsets with 3G technology, seemingly to support the take-off of this technology.

Spain

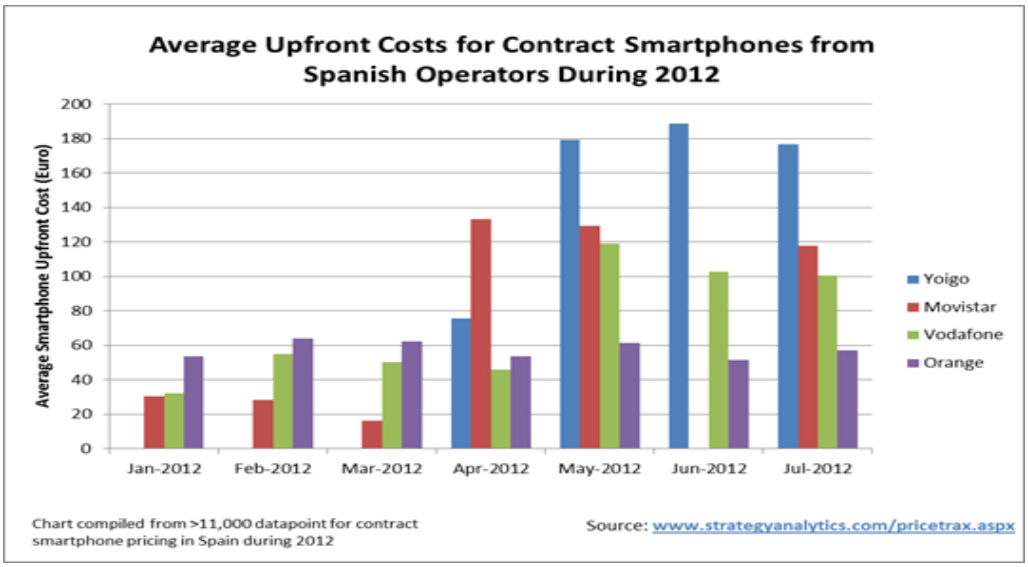
In Spain, during the GSMA Mobile World Congress, in February 2012, Telefónica announced that it would reduce mobile phone subsidies in order to concentrate its commercial strategy on the reduction of resale tariffs. At the time, a Spanish newspaper claimed that handset providers for the Spanish market sold 97% of their terminal devices through operators with some type of "bundled discount" (only 3% were sold freely without any type of "subsidy") (Cinco Dias, 2012). Even if this might have had repercussions on handset providers, Telefonica announced that it will put in place a credit scheme for financing terminal devices. Yoigo, the fourth largest mobile operator in Spain, pointed out that it had pursued the same strategy since September 2011 and argued that this is a common practice in Nordic countries, where it said 80% of handsets were sold this way. This method for financing credit for terminal devices is seemingly the same commercial strategy pursued by Free Mobile in France.

In March 2012, Orange Spain decided to retain mobile handset "subsidies". It assured the market that was a profitable approach, saying that using this strategy it had increased its Earning before Interests, Taxes, Depreciation and Amortisation (EBITDA) by 6.4% in 2011 (Cinco Dias, 2012). The number portability balance also seems to favour Orange, at least during the months following the removal of handset discounts by their two larger competing operators. Orange Spain also put in place a service that acts as an insurance scheme for mobile devices, fairly similar to what Bouygues has introduced in France, in 2012. For an additional charge, it acts as insurance for any possible harm that can occur to a device.

In May 2012, a Spanish newspaper said that the reduction on handset "subsidies" had decreased sales of these devices by 20% (La Vanguardia, 2012). Whether the decrease was entirely attributable to this cannot be known as there are also challenging economic conditions in that country. What can be said is that the market shares of different manufacturers ebb and flow depending on the innovation they bring to the market. In addition, as a general observation, there may be a tendency in future for users to buy fewer devices for second SIM cards, given the trend towards lower termination rates in Europe and more all inclusive voice and text offers (i.e. little need for separate SIMs/devices to take advantage of on-net offers especially given the higher cost of smartphones).

In Spain, Telefonica has adopted a move to reduce costs, and, in line with that strategy, has reduced substantially its catalogue of mobile devices from 280 down to nearly 80 devices. The company is also reported to be seeking higher volume discounts particularly for the less popular models. This, in turn, obliges providers with smaller market shares to offer even lower prices on terminal devices just to be kept in the catalogue of a mobile network operator.

Figure 3. Average upfront costs for contract smartphones from Spanish operators during 2012, EUR



Source: Strategy Analytics, PriceTrax

United Kingdom

Operators in the United Kingdom have said their removal of pre-paid (not post-paid) handset "subsidies" was due to Ofcom's decision to reduce mobile termination rates by 80%. In other words, they are actually saying, if not directly, that the "subsidy" came from consumers on other networks cross-subsidising their sales of handsets to pre-paid customers. Alongside that change, there is more incentive to entice these consumers to move to post-paid two-year contracts, which helps, from the operator's perspective, to create a stable customer base.

Since their appearance in 2007, one month contracts in the United Kingdom have remained on average around 17% of total sales, while two-year contracts have increased from 2% in 1Q 2008 to 68% of total sales in 1Q 2011. Other contracts, like 18 month or yearly contracts have been decreasing (Ofcom, 2011). Ofcom's report "The Consumer Experience 2011" stated the following:

> "In July 2011, Vodafone and Orange introduced significant price increases on standard pre-pay tariffs, and in the same month Vodafone, O2 and Everything Everywhere all announced that they were stopping any subsidies on pre-pay handsets. These increases in pre-pay tariffs follow reductions in mobile termination rates (which result in operators receiving less revenue from inbound calls from other mobile networks – and a characteristic of pre-pay customers is that they typically receive more calls than they make), but also come in the context of operators incentivizing customers to migrate to post-pay (pay monthly) tariffs, which typically deliver greater customer lifetime value to operators, as post-pay customers are less likely to change provider. By the end of 2010, 48.7% of mobile phone subscribers were on post-pay contracts, up from 41.1% a year previously."

United States

In the United States, handset discounting is a common practice. It would seem that it initially was a scheme to stimulate data use and minutes of use, through the increased sales of smartphones with the associated tariffs applicable, as well as ensuring a loyal customer base. It seems that carriers today, like Verizon and AT&T, while they have benefited from handset subsidies in the past, are now considering

reducing or removing them. The first step toward this reduction of subsidies is that the three largest carriers (Sprint, Verizon and AT&T) have introduced upgrade fees ranging from USD 30 to USD 36 in order to increase the period in which they encourage users to upgrade handsets (Wall Street Journal, 2012a). The chief marketing officer of the fourth nationwide carrier, T-Mobile, has stated that bundled handset discounts by carriers devalues technological innovations coming to the market, and T-Mobile offers, as an option, discounted monthly rates to consumers who pay full price for a handset (Fox Business News, 2012).[9]

In 2012, some financial analysts downgraded their estimates for Apple's stock price because they said that the removal of discounts by carriers would reduce Apple's sales (BTI Equity Research Group, 2012). The CEO of Apple responded by saying that he was not concerned about this position taken by carriers since their business is only to produce the best smartphone and consumers value that, with or without "subsidies".[10] Some surveys indicate that the maximum willingness by significant numbers of consumers, to pay for an iPhone, was in the vicinity of an upfront charge of USD 200 (BTI Equity Research Group, 2012). Nevertheless, some MNOs and MVNOs, as might be expected in a competitive market, are exploring other options to attract customers.

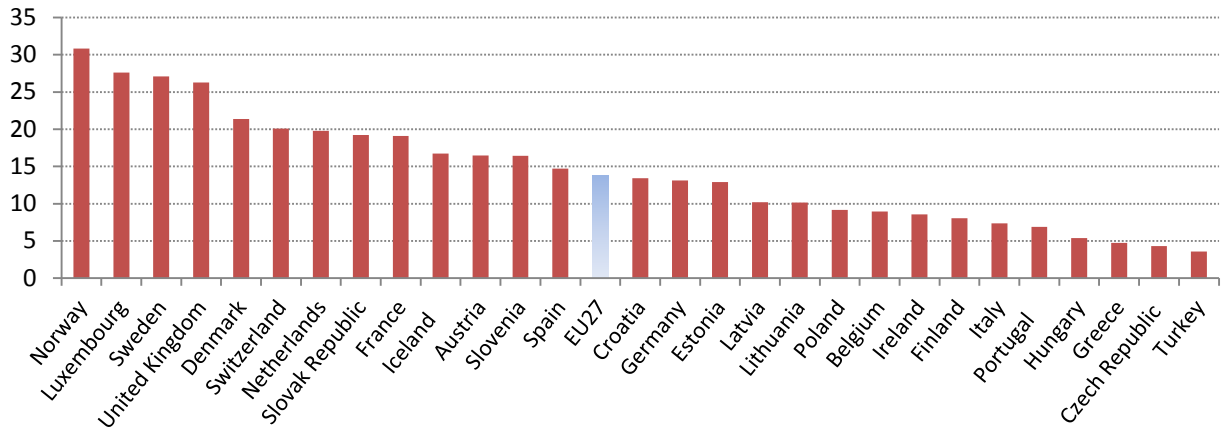
In May 2012, Leap Wireless, through its Cricket brand, introduced for the first time an unsubsidised iPhone, with a lower monthly fee for its pre-paid service (Wall Street Journal, 2012b). In June 2012, Nextel's MVNO, Virgin Mobile, announced that it would follow Leap's move (Wall Street Journal, 2012c). Financing schemes, separate from the services tariffs, were available for the device. Some commentators have said there are lower prices for consumers associated with such price schemes compared to the predominant iPhone offers bundled with service fees. Meanwhile, carriers in the United States are observing what will be the results of Leap's strategy, as well as Telefonica's and Vodafone's strategy in Spain of completely removing the handset bundled discounts as they see these initiatives as an experiment for the industry as a whole.

The shift to the practice of pro-rating early termination fees (ETFs) on service contracts is one trend that mitigates the impact of handset discounts tied to longer contracts on the ability of consumers to switch providers. Currently, all four nationwide providers in the United States pro-rate early termination fees (ETFs) over the course of the standard two-year contract by progressively reducing the fee postpaid customers pay to terminate their service contracts before the expiration of their term. For example, the AT&T ETF for advanced smartphones and devices starts at USD 325 and is reduced by USD 10 for each full month of service completed.[11] The Verizon ETF for advanced smartphones and devices starts at USD 350 and is reduced by USD 10 for each full month of service completed.[12] The Sprint ETF for advanced smartphones and devices is USD 350 for the first six months, and then is reduced by USD 20 for each full month of service completed until the ETF reaches USD 100.[13]

What happened in countries where the handset "bundled discount" was prohibited by regulators in the past?

While in recent years it is difficult to disentangle the results for communication markets, in some countries with the global economic downturn, it is notable that Italy, Finland and Belgium, which all had restrictions at some stage on handset "subsidies", were among the countries with lower access to the Internet through their mobile phone in 2010 (Figure 4).

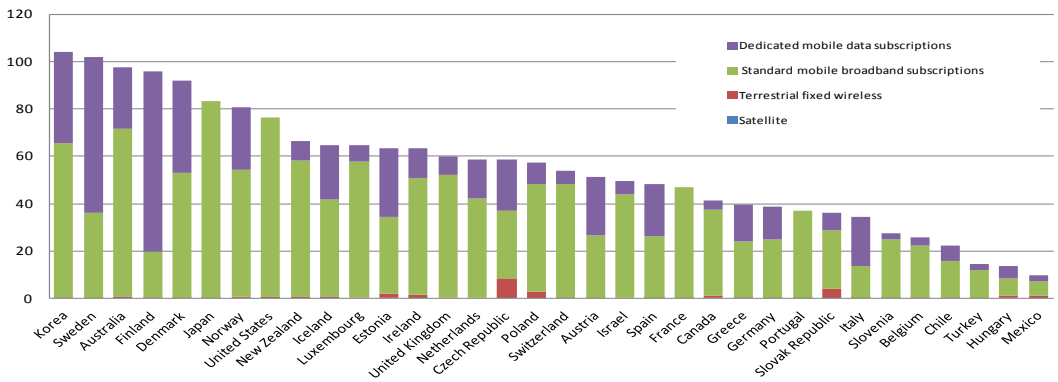
Figure 4. Percentage of individuals using their mobile telephone to access the Internet in selected countries, 2010



Source: OECD Communications Outlook 2011, Sources EUROSTAT and Swiss Federal Statistical Office.

These findings are seemingly corroborated by the OECD wireless broadband penetration data, where Belgium and Italy are placed in the bottom third of OECD countries ranked by wireless broadband penetration. Finland presents a very high wireless broadband penetration, but it is mainly made up of laptop and tablet-based subscriptions, with handset-based broadband penetration considerably lower (Figure 5). Any possible effect may also have been small as the restrictions in Finland were lifted in 2006, such that there has been a considerable time elapsed.

Figure 5. OECD wireless broadband subscribers per 100 inhabitants, by technology, June 2012



Belgium

The national legislation on commercial practices in Belgium (law of 14 July 1991) prohibited the sale of bundled offers in all sectors, with a number of exceptions.[14] Following the European Court of Justice decision (Case 2005/29/EC), the Law of 14 July has been amended and now combined offers (law of 6 April 2010) are authorised in Belgium.[15]

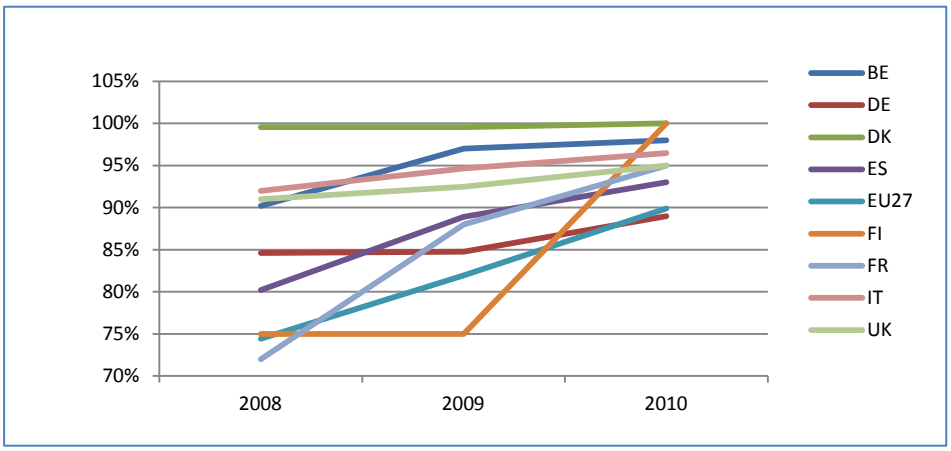
In May 2011, it was reported in Belgium that Telenet, an MVNO using Mobistar's network, would propose the iPhone 4S 16 GB for USD 1.27 for a pay-monthly plan of USD 95, USD 253 for monthly fee of USD 53 and USD 508 tied to a monthly charge of USD 38.[16] However, other operators in that country, such as Belgacom and Mobistar, do not offer handset subsidies.[17]

Finland

Finland had a ban on bundled handset discounts between 1996 and 2006. Some authors claim that when the ban was eliminated, new technology adoption increased (Ballebye Okholm et al., 2008, Hazzlet, 2009).[18] A further study regarding the impact of handset bundled discounts (bundling with service plans) on the amount of data usages found evidence that from 2005-2006 mobile cellular data traffic grew by almost 200% in Finland. The authors seem to attribute this growth of 3G in Finland to the bundling of smartphones and plans, which was restricted in Finland until 2005 (Tallberg et al., 2007).[19] The authors believe that the removal of this regulation allowed a more rapid exploitation of 3G technology in Finland in 2006.

The regulator allowed handset bundling with the restriction that operators still had to offer the handset on a standalone basis as well as specifying the discount as a separate item. The authors believe this reduced the negative effects of a service tariff increase. Nevertheless, it is difficult to draw conclusions given that data traffic increased at high rates, from relatively low bases, in many countries during this time. Any study would need to take into account the growing popularity of smartphones, around that time, and factors such as any expansion of network coverage. Between 2009 and 2010, for example, 3G coverage increased from 75% of the population to 100% (Figure 6).

Figure 6. 3G coverage of selected European Union countries (% population)



Note: Percentage of total population living in areas covered by 3G - third generation mobile networks.

Source: Digital Score Board, 4 June 2012 from EU Digital Agenda Data,

Italy

Currently, all Italian mobile network operators provide subscription offers which include handset discounts. Some operators disaggregate handset fees and the service charges in their monthly bill (e.g. TIM). Others include the service charge and handset cost in the monthly fee explicitly. Typically,

offers including high volumes of minutes provide no (or low) additional fee for the handset, against a high monthly charge.

There have been a number of actions taken by the regulatory authorities in Italy aimed at impeding unfair commercial practices provided by mobile operators in their offers, including handset discounts. Prior to these initiatives operators "subsidised" handsets imposing an SIM-lock on devices sold under such agreements. With decision n. 9/06/CIR, AGCOM allowed SIM unlocking after nine months of subscription and SIM blocking cannot exceed 18 months. Moreover, with decision n. 40/2007, AGCOM stipulates that when a customer cancels a contract with a handset bundled discount prior to the end of the commitment period, they need to only pay the received bundled discount, without any further penalty.[20]

Korea

In June 2000, handset bundling and bundled discounts were prohibited in Korea. Then, in spring 2004 the Korean regulator allowed subsidies for WCDMA technology with a cap of 40% of the cost of the terminal device, and for PDA phones a maximum of 25% (Tallberg et al., 2007). In March 2006 the ban was lifted and carriers were allowed to provide handset subsidies in order to promote the adoption of new technologies such as 3G. In June 2011, Korea's telecom regulator confirmed that it was investigating all three network carriers under allegations of excessive subsidies. The Korea Communications Commission (KCC) stated that "*our constant position is that it is desirable for operators to convert costs spent on excessive marketing competition into tariff reductions, new service development and infrastructure expansion"* (Davies, 2011).

Additional case: South Africa

In December 2009, the telecommunications regulator of South Africa (ICASA) ruled that post-paid offers that are purported to include a handset "subsidy" should clearly indicate the following:

- the cost of the equipment,
- the interest charged on repayment of the capital cost, and
- the "subsidy" offered and the monetary value of the services provided by the licensee.

However, this regulation has not been enforced because it has been challenged in courts. It was temporarily withdrawn in March 2011.

Consumer and environmental issues related to handset devices

Consumer empowerment and handset subsidies

This document has noted some of the advantages attributed to bundled handset discounts, especially those targeting popular smartphones and their influence in shaping competitive dynamics in the mobile ecosystem. It has also noted the advantages from the perspective of operators such as assisting in retaining customers and in increasing the adoption of new network technologies such as 3G and 4G with supposed wider benefits for economic and social development. It has also highlighted that the ability of consumers to switch providers and thus avoid consumer lock-in, is central to promoting consumer protection and empowerment. On the latter point, the OECD Policy Guidance for protecting and empowering consumers in communication services says:

> "*the time and costs associated with switching services by consumers should be minimised. For example, the notice periods for ending contracts, or the 'lock in' period for mobile phone handsets could be limited in order to facilitate switching.*"

Long contract durations, in exchange for bundled handset discounts, may pose a fundamental challenge for consumer empowerment and protection, unless they can be discontinued with a fare recovery of the upfront costs associated with initial discounts provided by operators. In other words, the issue should not be with an upfront discount but that it should be specified and re-payable by consumers seeking to change operators. Even though policy makers perceive consumer lock-in as a potential problem, some economic literature argues that lock-in is not always harmful to consumers or competition. Being the incentives to acquire a customer higher, as a customer will likely be kept longer under consumer lock-in, competition for the customer may be stronger so that he would be offered a better deal (Farrell and Klemperer, 2007). On the other hand, competing technologies which may render switching more difficult may trigger technological competition by encouraging carriers to undertake rapid and/or early deployment of new technologies.

This report highlights below that, if the total cost of ownership is considered, bundled handset discounts do not, or at least should not, involve a lower final price for consumers on a long-term basis. Handset discounts are, as a matter of fact, a strong tool for customer retention, and a very effective advertising tool. What policy makers should attempt to avoid is that these legitimate customer acquisition and retention tools pose challenges to consumer protection and empowerment.

Previous OECD work has noted that bundles can be both beneficial and harmful for consumers. As bundled handset discounts are a particular case of a bundle, policy makers should ensure that consumers are not worse off as a result of such market dynamics. In this respect, easy procedures to ensure number portability, increased provision of information and, especially, enforcing a compulsory period after which handset locking should be removed, should act as a deterrent for operators to engage in anti-competitive practices.

The OECD Policy Guidance referenced above defines "consumer lock-in" as follows:

> "*when a customer becomes dependent on a specific vendor for products and services and is unable to use another vendor without incurring substantial switching costs. In relation to bundling, lock-in may make it difficult or impossible for subscribers to switch providers of certain bundled services and not others*".

In summary, policy makers should ensure that consumers do not incur substantial switching costs and, while recognising the potential advantages of bundled handset sales, have available easily understandable information and simplified switching procedures. Some of the existing initiatives in selected OECD member countries to increase consumer awareness and reduce consumer lock-in have been summarised below (Table 2).

Environmental issues linked to handset device waste

This report has highlighted the potential role of frequent handset substitution as a driver for network investment, technology upgrade and increased adoption of more advanced communication technologies by consumers and business. This is not, however, the primary reason why policy makers encourage these developments but rather that there is strong evidence that the roll out of smartphones facilitates broader economic and social development. That being said, it is also incumbent on all stakeholders to ensure that this development is sustainable.

The OECD report "*Case Study on Critical Metals in Mobile Devices*", released in February 2012, concluded that handset prices do not reflect the societal cost of extraction and waste disposal of the metals used in mobile handsets (as they are highly polluting). This lack of "internalisation", according to the report, is heightened by the fact that "handset subsidies" make opaque the true commercial cost of a handset to the user who is willing to dispose or upgrade it at a faster rate than would otherwise be the case. That is to say, the user follows a higher rate of upgrade with respect to what they would normally do if they were conscious of the price paid for the terminal device at the beginning of the contract, (this price being reflected through the higher service monthly fees).

The report provides a valuable set of recommendations for the management of critical metals in mobile telephones. This report put forward a number of measures that decision makers should consider for achieving two main goals: *i)* to increase collection of mobile devices, instead of generating waste, and *ii)* to develop environmentally sound management (ESM) systems for waste in developing countries with large informal sectors. The latter factor will become more critical as a growing secondary market for used handsets develops in these countries.

Once again, promoting increased information on the actual cost - or rather, standalone price - may help increase awareness of the overall environmental cost of handset devices. These factors need to be measured against the above-mentioned attributes of the shorter replacement cycles for smartphones. Even though this report shows that, in some cases, the overall price of a mobile plan including a bundled handset may be higher than a separate purchase of both elements, the low up-front payment to purchase the handset may hide the true cost of the handset and thus increase the upgrade/replacement rate of the handset.

Table 2: Provisions regarding handset locking and contract duration in selected OECD countries

	SIM-Unlocking Regulation?	Minimal Contract duration for handset discount[21] months	Regulation on early termination fees on mobile contracts?	Do operators offer handsets unbundled from the service plan (SIM only offers)?	If handsets are bundled with service, does the bill transparently disaggregate the cost of service from the cost of the handset (including discount)?
Australia	No	12	An Industry Code (the TCP) requires operators to state upfront the maximum termination fee payable.	Yes	Yes
Canada	No regulation on SIM locking	36		Yes	Yes, by regulation operators must state the amount or "handset discount" provided in the offer.
Chile	Yes, under the number portability framework the government passed a regulation on 1 January 2012 where all new devices must be unlocked and past models should be unlocked by operators at no cost.			Yes	Yes (to be confirmed)
Finland		12		Yes, by regulation since 2006. Bundling of the handset and service was finally allowed in 2006, but with the restriction that handsets had to be sold on an unbundled way as well.	

	SIM-Unlocking Regulation?	Minimal Contract duration for handset discount[21] months	Regulation on early termination fees on mobile contracts?	Do operators offer handsets unbundled from the service plan (SIM only offers)?	If handsets are bundled with service, does the bill transparently disaggregate the cost of service from the cost of the handset (including discount)?
France	Yes, user can ask for after 6 months of contract	12	Law Chatel. Clients may switch companies after 13 months of contract if they pay upfront 25% of the total amount due for the remaining contract commitment .	Yes	No
Germany		24			No
Israel	Yes, SIM locking is prohibited from the beginning of the contract.	6	Yes, early termination fees are prohibited.	Yes	Yes, provision aims at decoupling the cost of handsets from the cost of the telecom service.
Italy	Yes, with decision n. 9/06/CIR, AGCOM allowed SIM unlocking after 9 months of subscription and SIM locking cannot exceed 18 months	24	Yes, law n. 40/2007 when cancelling a contract with a handset discount in a premature manner the customer needs to pay only the received discount, without any penalty.	Yes	Some operators do it as commercial practice (e.g. TIM).
Japan	No, but MIC has established guidelines that encourage operators to unlock SIMs	-[22]	No	Yes	Handsets are not bundled with the service
Korea					
Netherlands	Yes (to be confirmed)	12			
Spain	No	18-24	Yes, law (RDL) 1/2007 established that no disproportionate charges are to be applied for contract termination and operators cannot set compensations that do not correspond to the harm effectively	Yes	No

	SIM-Unlocking Regulation?	Minimal Contract duration for handset discount[21] months	Regulation on early termination fees on mobile contracts?	Do operators offer handsets unbundled from the service plan (SIM only offers)?	If handsets are bundled with service, does the bill transparently disaggregate the cost of service from the cost of the handset (including discount)?
			caused by a customer terminating a contract. No specific limits were set in this provision.		
United Kingdom	No, but Ofcom advises consumers interested in unlocking their phones to ask about unlocking fees and minimum locking periods before they buy a mobile.	12	(Ofcom regulation on Early termination Fee for fixed broadband, but remains to see if it applies to mobile services, too).	Yes, relatively recent introduction of these plans in 2011 (5% of mobile phone users had a SIM-only contract according to OFCOM's Consumer Experience report)	
United States	No	12			No

Price comparison of handset discounts associated to mobile communication plans

Some have suggested that allowances should be made, in benchmarking mobile prices, for the discounts ("subsidies") offered to users. In other words, if one service was offered without a handset subsidy at USD 50 per month and another, with an upfront discount for the cost of the handset, at USD 65 per month, that an allowance be made (e.g. a reduction or USD 15 if that could be determined to be the discount for the second operator). This raises the question of whether it is possible to determine the discounts applied.

Different practices across operators, such as some allowing independent purchase of the handset and others tying it to a mobile plan, as well as different pricing strategies would make this task highly impractical if not impossible. Moreover, information on the wholesale prices for smartphones paid by operators is not publicly available, so any exercise aiming at guessing what the bundled discount would be, based on actual prices paid by those operators, would be unrealistic.

Some operators plainly state the amount of bundled discount they are offering for the handset in an upfront payment, and others, for example TIM in Italy, advertise a monthly payment for the handset that includes an implicit bundled discount. In the case of these monthly payments, the question would arise as to which discount rate should be used to convert these cash flows to net present values. Moreover, gathering information about all handsets offered by operators (sometimes in catalogues of more than 100 handsets) is unrealistic.

The foregoing does not however mean that an attempt cannot be made to assess handset subsidies to provide an indication of market developments. To make this practical it is necessary to introduce a number of parameters. Here, for example, two smartphones have been selected for comparison: the iPhone 4S 16 GB and the Samsung Galaxy SII 16 GB. Both these devices were the latest respective generations of these handsets at the time the information was gathered.

An example for two different countries can illustrate the challenges in this area: the United States and France. When comparing them two complications arise:

- in the United States, iPhones can be SIM-locked, whereas in France, by regulation, they have to be unlocked after a certain period of time;

- in the United States, carriers offer a bundled discount of USD 450 regardless of which plan customers sign up for; in France, however, the handset bundled discount depends on the amount of minutes of use a consumer chooses in its service package (i.e. the more voice minutes, the greater the bundled discount). In this case, the handset "bundled discount" of the package of highest minutes has been selected for France (Table 3).

Table 3. Estimates of Handset "bundled discount" for the iPhone 4S 16 GB

Country	Operator	Advertised iStore Price	Upfront Price of handset in USD*	Total USD of handset if a two year contract**	Handset Bundled discount***
United States	AT&T	USD 649.99	USD 649.99	USD 199.99	USD 450.00
United States	Verizon	USD 649.99	USD 649.99	USD 199.99	USD 450.00
United States	Sprint	USD 649.99	USD 649.99	USD 199.99	USD 450.00
France	Orange	EUR 629.00	USD 657.43	USD 155.73	USD 501.70
France	SFR	EUR 629.00	USD 657.43	USD 188.03	USD 469.40
France	Bouygues	EUR 629.00	USD 657.43	USD 188.03	USD 469.40

Notes: *The exchange rate used is EUR/USD= 1.3. Advertised prices in the United States exclude VAT, so France's prices are deducted 19.6% corresponding to the VAT. ** Price of handset in a two year contract is uncorrelated with the service plan in the United States. For France, the deduction is correlated with the service plan. To make both comparable, the highest paying plan in France was taken as a reference, i.e. EUR 69.99/month (for all three operators.) ***Difference between price upfront in current USD of the Iphone (iStore price) and the price offered to a consumer subscribing to a two year contract by mobile network operators.

Source: Publicly available information from operators and Apple.[23]

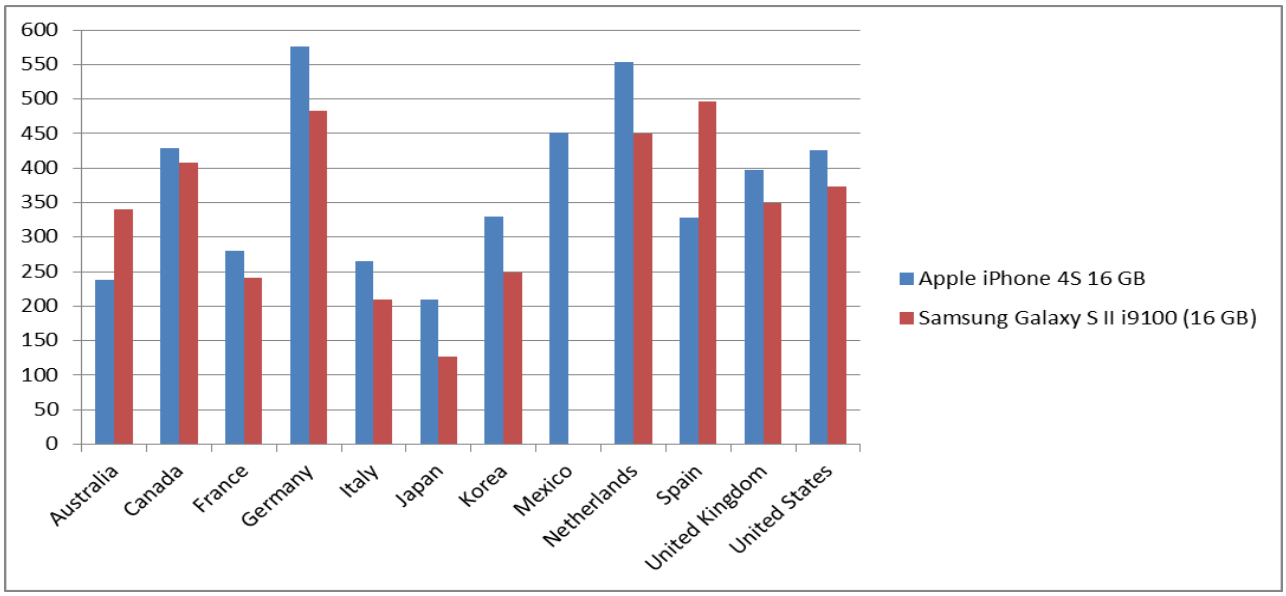
Cross-country comparison of handset bundled discounts for iPhone 4S 16 GB and Samsung Galaxy S II 16 GB – sample of 12 OECD countries for post-paid plans only

A first attempt to map the amount of handset discount to mobile communication plans was conducted by retrieving the price for the iPhone 4S 16 GB and the Samsung Galaxy SII 16 GB, available to consumers in the twelve largest OECD economies. The database from Strategy Analytics called PriceTrax was used, which tracks the prices of handsets offered by operators in different countries. This database contained data for 23 OECD countries for these two handsets, for a total of 18 480 data points, based on automatic web-browsing tools. Given the large size of the database and the fact that web-browsing is automated, a significant amount of work had to be devoted to double-checking many of the data points. Another important challenge found when using this database was that many of the prices for these two smartphones used in the comparison only mentioned the data component of a mobile plan (hence not the full bundled plan), or only the price paid for the mobile plan (hence no name), which increased the difficulty for conducting quantitative analysis of these tariffs.

Notwithstanding these challenges, the approach taken was to retrieve the actual price for the handset device for those mobile plans that had been selected as the least expensive for a given operator, by default in March 2012 when available. This exercise was conducted for twelve OECD countries and three mobile broadband baskets (100 calls + 500 MB, 300 calls + 1 GB and 900 calls + 2 GB), for a total of 144 data points (Figures 7 to 10). This approach offers a trade-off between the reliability of the data and the number of data points. The purpose of doing so was to try to assess the magnitude of handset discount variations across service plans. The following graphs show the associated discount for these handset devices, as an average of the two selected offers (the least expensive offer from each of the two operators surveyed). An important clarification is that this exercise considers **post-paid plans only**. Since pre-paid plans usually involved no or very little associated handset discount, these were not judged relevant for this exercise, as the main aim was to investigate handset discounts. A different exercise will be conducted below, where both pre-paid and post-paid plans will be considered, aiming at finding the least expensive offer for each

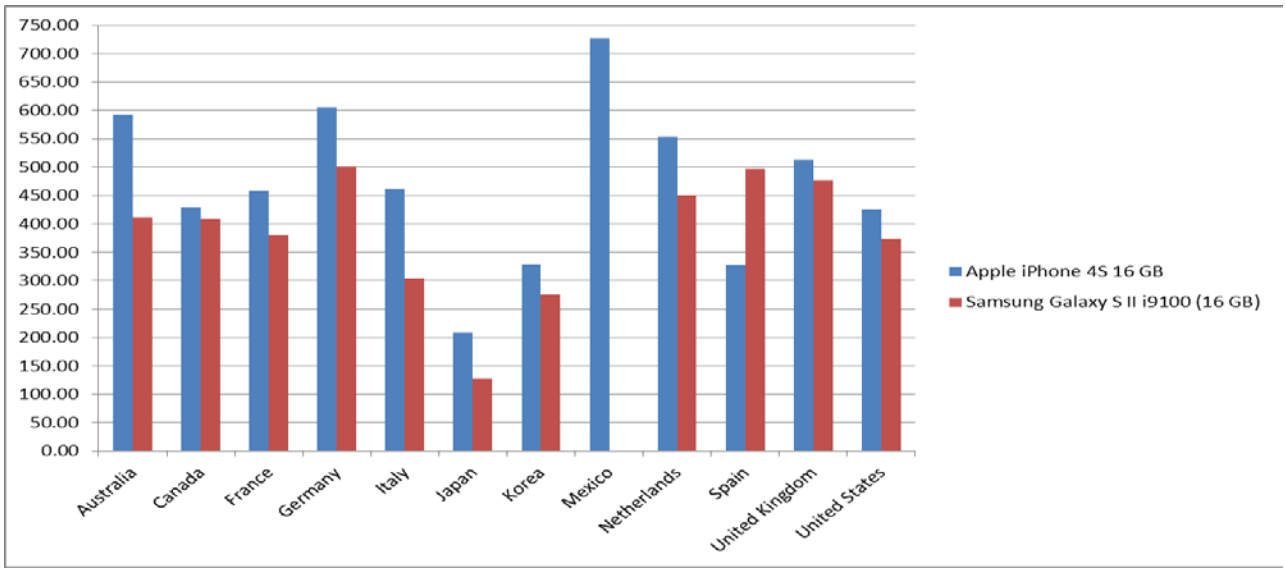
one of the baskets, including handset charges, regardless of whether consumers and businesses purchase pre-paid or post-paid plans.

Figure 7. 100 calls + 500 MB basket and associated handset "bundled discount" by country, post-paid only, USD, VAT excluded, post-paid only



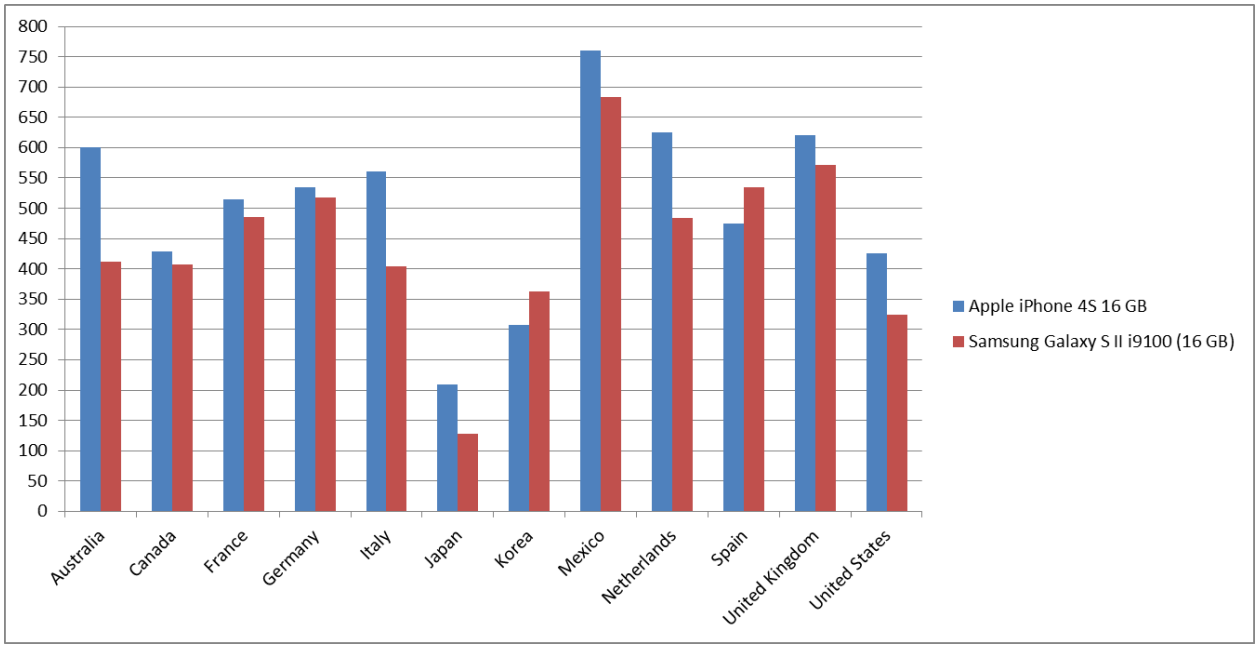
Source: Strategy Analytics/PriceTrax

Figure 8. 300 calls + 1 GB basket and associated handset "bundled discount" by country, post-paid only, USD, VAT excluded, post-paid only



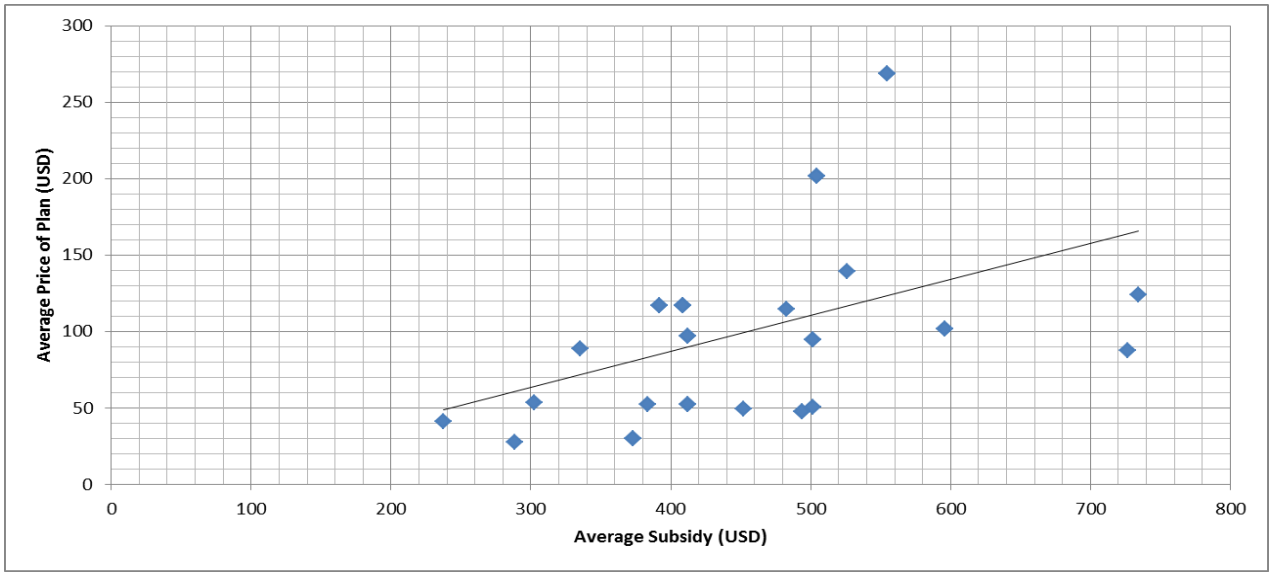
Source: Strategy Analytics/PriceTrax

Figure 9. 900 calls + 2 GB basket and associated handset "bundled discount" by country, post-paid only, USD, VAT excluded, post-paid only



Source: Strategy Analytics/PriceTrax

Figure 10: Relationship between handset bundled discount and average price of plan of 3 different mobile broadband baskets in a per country basis



Source: Strategy Analytics/PriceTrax

These results show two main trends. First, as expected, the amount of bundled discount increases with higher monthly charges paid for mobile communication plans (Figure 10). Take the case of Italy: the bundled discount for the iPhone 4S is USD 250 for the 100 calls basket, USD 350 for the 300 calls basket

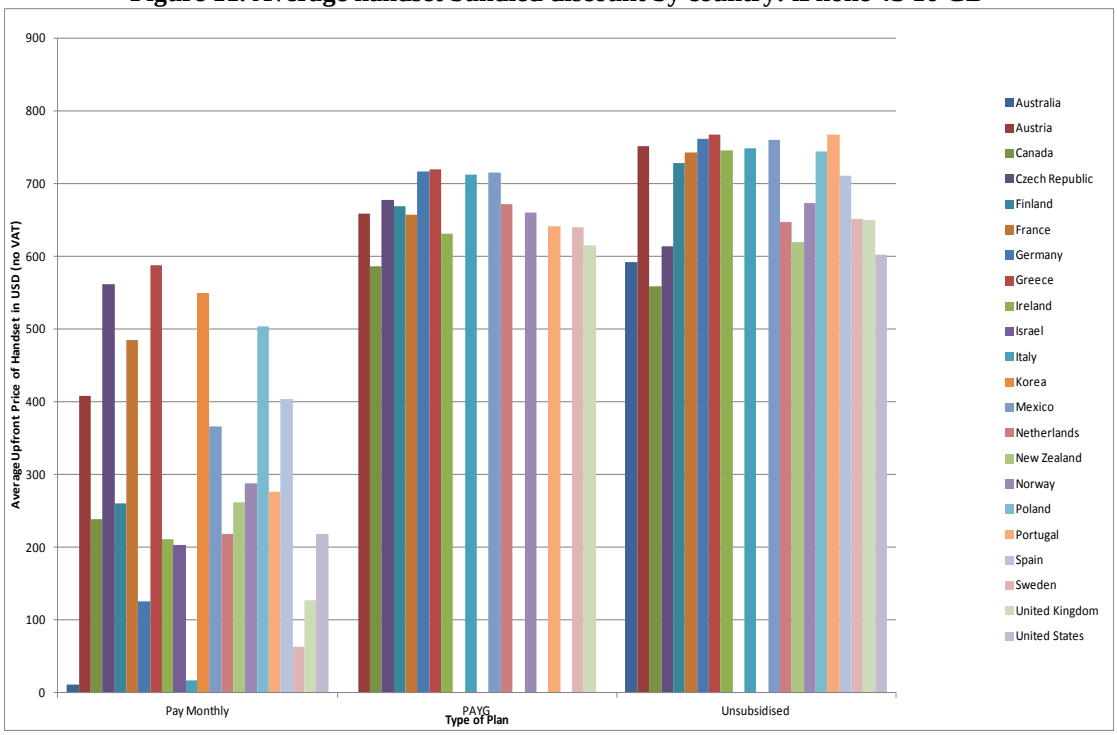
and USD 450 for the 900 calls basket. Second, in some countries these discounts are relatively low, as is the case of Korea or Japan, where operators have not relied on this commercial practice to the same extent as other countries. Lastly, as mentioned above, some countries generally offer the same associated discount regardless of the mobile plan consumers sign up for, such as Canada and the United States. It is true, however, that in these two countries these "fixed" bundled discounts are sold in conjunction with long contract duration of 24 and/or 36 months (i.e. in Canada a discounted iPhone is only awarded with a contract of 36 months) for the operations with the largest market shares considered here. In addition, in those countries the market is more focused on unlimited plans, which makes the price across different baskets more similar and favours higher consumption patterns.

Main trends in bundled handset discounts in 23 OECD countries

The Pricetrax database was used to calculate the average handset bundled discounts for both models by country and its relationship with the average plan price associated to these models for the 23 OECD countries included in the database. This way of assessing the data is more imprecise since it is an average of all price plans that each operator offers when selling an iPhone 4S 16 GB and Samsung Galaxy S II 16 GB.

However, this type of aggregated data is also useful because it reveals some main trends for the 23 OECD countries (Figure 11). These trends include: how the bundled discount varies with plan duration, what is the average bundled discount by country for the two terminal devices, and the average price of the handset by type of plan. The handset bundled discount or "bundled discount" was measured by subtracting the handset stand-alone price in each country minus the average price of the handset when it is engaged in a post-paid plan.

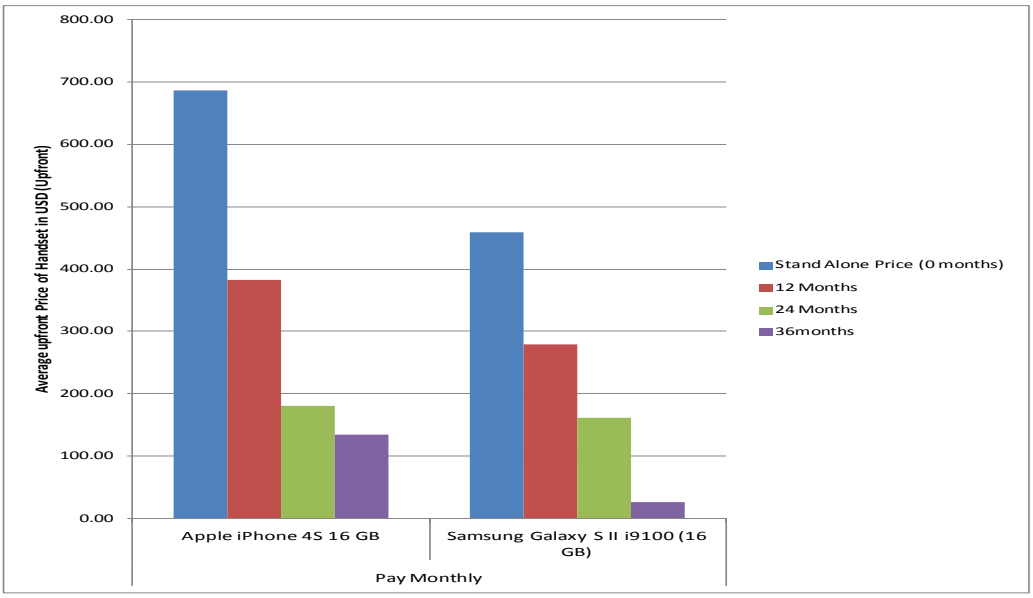
Figure 11. Average handset bundled discount by country: iPhone 4S 16 GB



Source: Strategy Analytics/PriceTrax

As expected, higher bundled discounts are awarded to consumers committing to longer contract terms (Figure 12). For example, the average upfront price for the Samsung Galaxy S II was USD 450 without any commitment, just below USD 300 for a 12-month commitment, down to roughly zero if a 36-month contract is signed.

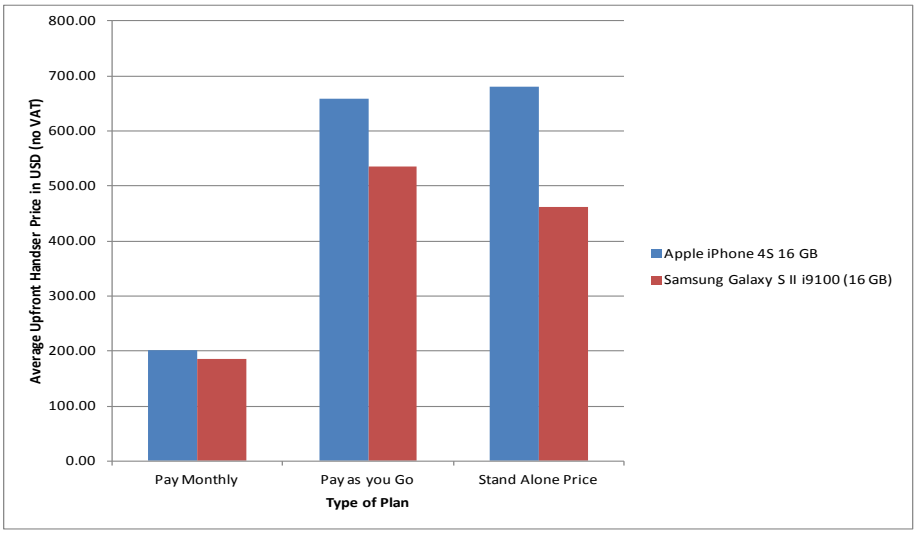
Figure 12. Average upfront handset price by plan duration for 23 OECD countries compared to stand alone price



Source: Strategy Analytics/PriceTrax

While acknowledging the caveats described above, the average upfront price for pay-monthly plans was roughly USD 200 for these two handset devices, while the price paid under a pre-paid plan was almost as high as the stand-alone price. In some cases, the price paid by a pre-paid user was higher than that offered by independent retailers (Figure 13).

Figure 13 - Average Handset Price for 23 OECD countries by Type of Plan



Influence of handset prices on price benchmarking

This section sets out the results of an endeavour to include handset-related charges in the context of the OECD methodology for measuring wireless broadband prices. The methodology was adopted in June 2012, and countries agreed that handset-related charges should not be included or considered in the comparison exercise due to challenges in comparability and the inherent complexity involved in comparing handset prices (e.g. many different models, rapidly changing prices). Handset prices have been amortised over three years (36 months), which is the same contract length used for the wireless broadband basket methodology to amortise non-recurring costs. Following the same reasoning of the methodology, the assumption is not that customers commit to three-year contracts, but rather that three years is the period that the average customer keeps his service, until he agrees to a new contract with the same operator or switches operator.[24]

This exercise has been conducted here, by using only three wireless broadband baskets: 100 calls + 500 MB of data, 300 calls + 1 GB and 900 calls + 2 GB of data, for a limited set of countries as of February/March 2012, based on the country choice of the PriceTrax database and on previous benchmarking exercises. The country set includes some of the largest OECD economies: Australia, Canada, France, Germany, Italy, Japan, Korea, Mexico, the Netherlands, Spain, United Kingdom and the United States. The selected smartphone device was the iPhone 4S 16 GB. The price element that corresponds to handset charges has been retrieved from the PriceTrax database. For those operators that offer the possibility of adding a monthly payment to purchase a smartphone, the discount rate has been set at zero, which means that the handset component is merely added to the monthly bill and no net present value calculations are undertaken.

The process has been conducted in two stages. First, we have examined the wireless broadband baskets for handset-based services. Then, the smartphone price has been retrieved from the Pricetrax database, resulting in a total price that includes the handset component. For each country, if the selected plan involves a discounted smartphone, no further analysis was undertaken, as this plan should also be the least costly including handset charges. If the selected plan did not involve a substantial handset discount (i.e. the full smartphone price needs to be paid), then a search was conducted within the baskets to identify plans that could possibly be less expensive when including the handset component, typically those plans that had not been selected by the basket selection, but whose prices are close enough to the selected plan that a discounted handset price may result in a lower price including the handset price. Again, the Pricetrax database was used to retrieve the handset price for the alternative plan.

Only in three cases, in the 36 plans selected for these three baskets, did an alternative plan have to be selected because such a change happened. In contrast, in most cases the same plan remained as the least expensive and this exercise only involved adding the handset price component on top of the initial basket price.

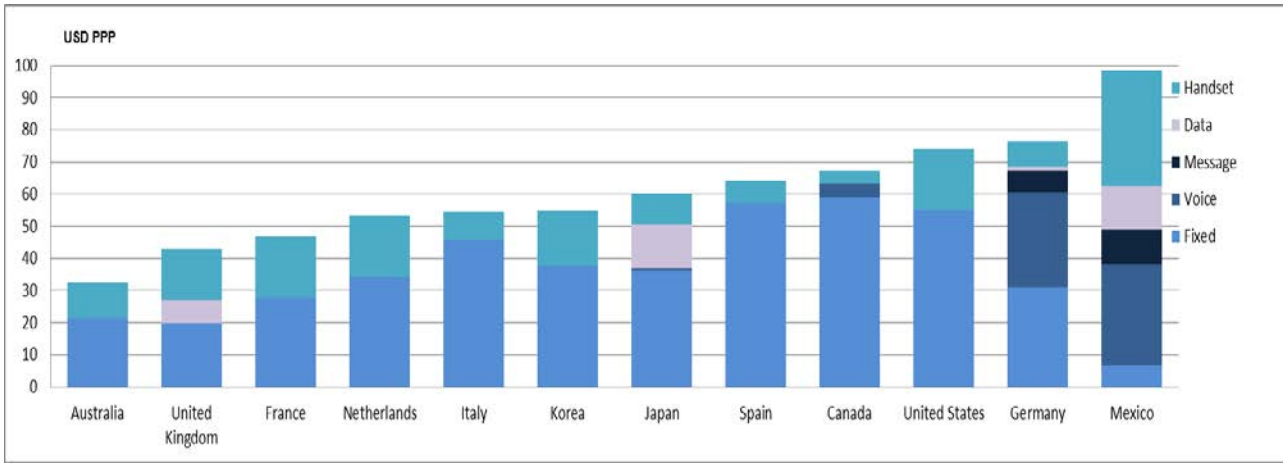
The mobile baskets distribute traffic according to different consumption patterns, which can greatly vary across different OECD countries. Such differences are one reason why the OECD has a range of usage patterns across its baskets. For example, countries with a higher average usage tend to perform better in those baskets with a greater number of calls. By way of contrast, countries with lower usage levels, prices for the higher consumption plans tend to be higher, as the largest providers focus their competitive efforts on the prevailing calling patterns. By way of example, less than 1% of mobile users in the Netherlands can be categorised as falling under the 900 calls basket. The average number of mobile minutes per subscriber is 88 minutes in the Netherlands, against an OECD average of 140 in 2011, with a smartphone penetration of 58%.[25] Dutch wireless broadband subscribers tend to use more data but make fewer calls. In addition, mobile prices in the Netherlands have undergone substantial changes since February 2012. For example, the cost of KPN's offer "Bell-SMs-Web SO 1500", which included 1500

SMS and 1GB of data, was around USD 120 PPP in February 2012. The cost of an equivalent bundle in February 2013 decreased to USD 65 PPP, mainly due to the introduction of a flat rate for voice calls (up to 1500 minutes), plus the inclusion of unlimited on-net calls.

The first results shown correspond to the 100 calls + 500 MB basket (Figure 14). An average of USD 14.56 PPP per month corresponds to handset charges, for a total of USD 60.47 including handset charges. Only Canada, Germany, Italy and Spain show mobile plans where the handset was heavily discounted, whereas for all other countries, the smartphone had to be purchased at prices close to those of independent retailers (no discounts involved).

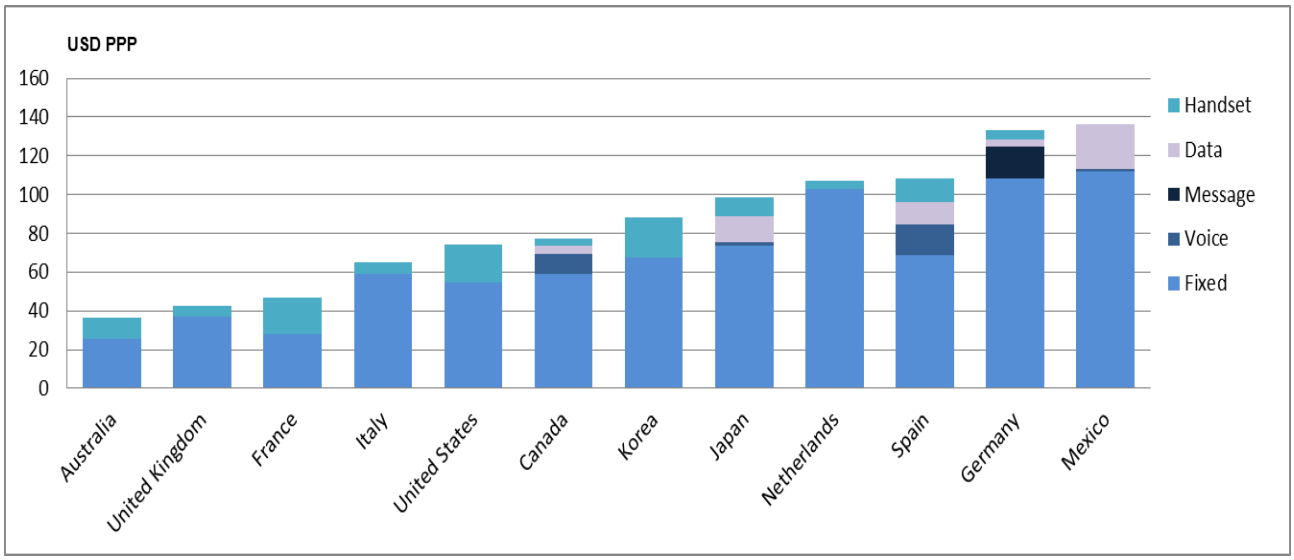
Being aware of non-discounted prices in these countries, it is easy to derive the associated handset discount for each one of the plans retained: an iPhone 4S 16 GB sold at USD 650 results in a monthly (non-discounted) rate of 650 divided by 36 months which equals USD 18 per month, which could go up to USD 30 PPP in countries with more unfavourable PPP relationship, such as Mexico. If operators offer an associated discount of USD 450, the resulting monthly rate would be USD 5.5 per month (Figure 14).

Figure 14: Basket mobile 100 calls + 500 MB, including VAT, per month, February 2012



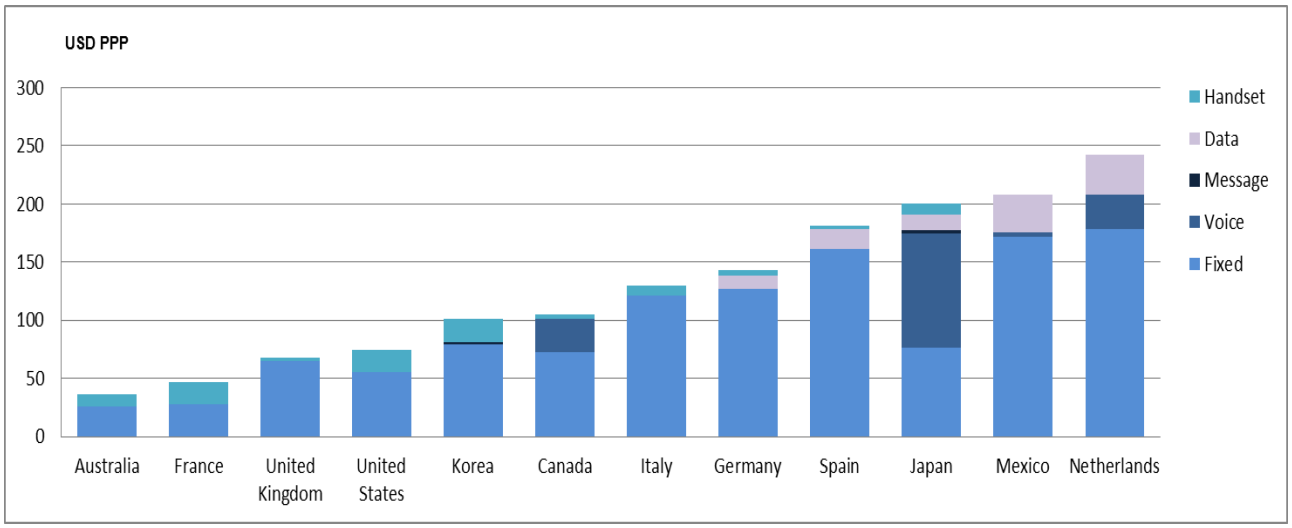
For the 300 calls + 1 GB baskets, similar results were obtained as regards the countries where important discounts were offered (Figure 15). The average price paid for handset charges was USD 9.67, for a total of USD 84.51 for this basket. It can be noticed, however, that the average price paid for the handset was lower than for the previous basket, which is in line with other findings of the report, whereby the discounts are larger for higher mobile telephone charges. The selected plans in Canada, Germany, Italy, Mexico, the Netherlands and the United Kingdom provided large bundled discounts to customers.

Figure 15. Basket mobile 300 calls + 1GB, including VAT, per month, February 2012



Lastly, the 900 calls + 2 GB shows that the average price paid for the handset element is the lowest in the three baskets examined, as expected (Figure 16). In this case, virtually all the mobile plans retained for this basket involved larger discounts, only in Australia, France, Korea and the United States the handset component was higher than USD 10. The average handset charge was USD 8.54 per month. The average price for this basket being around USD 128.12, this reiterates the operators' strategy of offering important discounts for handsets, being only to users generating high ARPU.

Figure 16. Basket mobile 900 calls + 2 GB, including VAT, per month, February 2012



The case of Australia and Italy are noteworthy, as operators usually separate the handset element in their monthly bills. As noted above, this provides more transparency and lets consumers know the actual amount that correspond to payments for the device.

A worthwhile issue that can be explored for these data is whether heavily discounted handsets provide consumer benefits in terms of price. In other words, whether over a contract duration of 36 months it is less expensive for consumers to commit to a long-term contract and benefit from the handset discount, or is it rather preferable to purchase both elements separately.

The results are two-fold. On the one hand, many of the plans retained in the baskets already offered heavy discounts (between 15 and 17 out of 36 plans). Accordingly, the answer to the question of whether there is a less expensive plan that includes the selected handset is straightforward: the choice of any other plan would imply a higher price if handset charges are considered. However, for those countries and baskets where the selected plan did not involve handset discounts (e.g. SIM-only and pre-paid offers), strong differences between these plans arise. For the 100 calls + 500 MB basket, only in one country did a plan involving handset discount could be purchased at roughly the same total price. In contrast, in six other cases, the plan involving discounts had a total price in excess of USD 5 up to USD 50 per month (on average USD 19 PPP).

Similar findings were valid for countries such as France and the United States for the 300 calls plus 1 GB, whereby offers including heavy handset discounts were in some cases 50% to 100% more expensive than unbundled offers. Notwithstanding this, this situation may be changing as a result of the growing prominence of unbundled offers in some countries, which may force larger players to offer less expensive plans that do not include the element (e.g. in France, the emergence of "Éco"/SIM-only offers has been gaining importance in the past one to two years). In two cases, however, the bundled offer was less expensive than the unbundled one (USD 20 PPP in Mexico and USD 5 PPP in the Netherlands).

Additional evidence provided by Mexico, on a different set of handsets (iPhone 5 16 GB and Samsung Galaxy SIII), seems to confirm that consumers purchasing a plan with a bundled discounted smartphone face a higher cost of ownership over 24 or 36 months in that country, as operators largely recover the associated discounts by charging higher monthly fees for the mobile plan.

Even though a systematic analysis of these data has proved challenging, as not in all countries there is a possibility of purchasing SIM-only offers from the largest operators, or only through more expensive pre-paid offers, the reported evidence shows that, in many cases, consumers can be charged higher global fees when opting for bundled discounted handsets (12 out of 18 instances), while the contrary is extremely rare (three out of eighteen instances). In many instances (around 18 out of 36), only one option (unbundled or bundled) was available to customers. Of course, other factors are involved in the comparison. For example, consumers may prefer certain brands or quality of service offered by operators relying on bundled handset discounts, or the simplicity of acquiring a smartphone when signing up for a mobile plan.

There are a number of conclusions that may be drawn from these results. For example, if plans that involve the possibility of purchasing a smartphone at discounted prices are compared with those where the smartphone needs to be purchased independently, by the customer, a significant price gap (of USD 10 or higher) was found between these two sets of plans (USD 16.39 on average, USD 16.56 more expensive for the 100 calls + 500 MB baskets, USD 11.81 for the 300 calls + 1 GB basket and USD 22.96 for the 900 calls + 2 GB basket). Hence, in most cases, operators offer smartphones at discounted rates but they largely recover these discounts and in most cases obtain an additional return.

By way of conclusion, the handset component of the mobile bundle is unlikely to distort the final benchmarking results significantly. It is, of course, a factor that may shift the rankings of countries that have introduced generalised associated discounts, such as Canada and Germany. Nevertheless, it is unlikely that the distortion would be important (Table 3). In our set of twelve countries compared by using three different baskets, the country's position in the ranking remained unchanged after accounting for explicit handset costs (i.e. not included in the mobile plan) in 19 out 36 cases. In 15 cases, countries moved up or down one position, whereas in only two cases a country's ranking moved two or three positions.

Table 4: Ranking changes resulting from the inclusion of handset costs

(+ a better ranking, - a worse ranking)	100 calls + 500 MB: ranking change	300 calls + 1 GB: ranking change	900 calls + 2 GB: ranking change
Australia	=	=	=
Canada	+3	+1	=
France	=	-1	=
Germany	-1	+1	=
Italy	+1	+1	=
Japan	=	=	=
Korea	-1	-1	=
Mexico	-1	-1	=
Netherlands	=	=	=
Spain	+1	=	=
United Kingdom	=	+1	+1
United States	-2	-1	-1
Explicit handset prices as % of final price, average	**24.08%**	**11.44%**	**6.67%**

With regard to explicit handset costs as a percentage of the total costs faced by consumers, our empirical evidence is in line with intuitive guessing, as handset costs account for a larger share of final mobile prices for lower consumption baskets (i.e. which are less expensive): 24.08% for the 100 calls plus 500 MB basket, 11.44% for the 300 calls plus 1 GB basket and 6.67% for the 900 calls plus 2 GB basket. Even though this percentage may seem high, especially for the lower usage baskets, it does not translate into substantial changes in country rankings, as noted above.

At the same time, it should be borne in mind that, as shown in this report, the option of purchasing the smartphone device independently is usually less expensive where it exists. Moreover, large bundled discounts are normally offered in exchange of contract commitments for an established period of time, therefore having a potential negative impact on consumer empowerment and on competition dynamics. Nonetheless, large bundled discounts may in some cases prove to be more economically rational than the independent acquisition of handsets. In other circumstances, the option of *à la carte* smartphone purchase, combined with the most competitively-priced service plan from the available carriers, will be the better choice for a consumer.

Table 5. 100 calls + 500 MB post-paid only, USD excluding VAT per month

Country	Operator	Handset Name	Date	Price	Plan Type	Plan Name	Plan Duration	Plan Price
Australia	Telstra	Apple iPhone 4S 16 GB	Jul-2012	NA	Pay monthly	Freedom Connect Plan $49 , Data 1024 MB, 24 months	24	47.35
Australia	Telstra	Samsung Galaxy S II i9100 (16 GB)	Oct-2011	41.16	Pay monthly	Freedom Connect Plan $49 , Data 1024 MB, 24 months	24	47.35
Australia	Optus	Apple iPhone 4S 16 GB	Feb-2012	362.88	Pay monthly	Business Complete $49 , Mobile Internet 1536 MB, 24 months	24	47.35
Australia	Optus	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	100.80	Pay monthly	Business Complete $49 , Mobile Internet 1536 MB, 24 months	24	47.35
Canada	Bell Mobility	Apple iPhone 4S 16 GB	Feb-2012	157.24	Pay Monthly	Voice & Data 50 , 500 SMS, Data 500 MB, Unlimited Five Calls and SMS to	36	95.53
Canada	Bell Mobility	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	*49.14*	Pay Monthly	Voice & Data 50 , 500 SMS, Data 500 MB, Unlimited Five Calls and SMS to	36	95.53
Canada	Rogers Wireless	Apple iPhone 4S 16 GB	Feb-2012	156.31	Pay Monthly	Voice & Data $50 , 250 SMS, Data 500 MB, 1 months, My5 Canada-Wide Ca	36	78.34
Canada	Rogers Wireless	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	*49.14*	Pay Monthly	Voice & Data $50 , 250 SMS, Data 500 MB, 1 months, My5 Canada-Wide Ca	36	78.34
France	Orange	Apple iPhone 4S 16 GB	Feb-2012	421.45	Pay Monthly	Forfait Origami Style 2h , Surf 500 MB, 24 months, Calls to 3 sel.num.	24	42.88
France	Orange	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	276.89	Pay Monthly	Forfait Origami Style 2h , Surf 500 MB, 24 months, Calls to 3 sel.num.	24	42.88
France	SFR	Apple iPhone 4S 16 GB	Feb-2012	377.97	Pay Monthly	Carre Connect 3h , Internet 500 MB, 24 months, Calls to 3 sel.num.	24	42.88
France	SFR	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	277.89	Pay Monthly	Carre Connect 3h , Internet 500 MB, 24 months, Calls to 3 sel.num.	24	42.88
Germany	T-Mobile	Apple iPhone 4S 16 GB	Mar-2012	5.53	Pay monthly	Complete Mobile L , Data 1000 MB, 24 months	24	76.77
Germany	T-Mobile	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	89.35	Pay monthly	Complete Mobile L , Data 1000 MB, 24 months	24	76.77
Germany	Vodafone	Apple iPhone 4S 16 GB	Feb-2012	201.06	Pay monthly	SuperFlat Mobil , + Messaging Flat, Internet by time 0 MB, 24 months	24	84.20
Germany	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	89.30	Pay monthly	SuperFlat Mobil , + Messaging Flat, Internet by time 0 MB, 24 months	24	84.20
Italy	Vodafone	Apple iPhone 4S 16 GB	Feb-2012	263.76	Pay Monthly	Smart 300 , Data 500 MB, 12 months, Calls to 1 sel.num.	12	39.34
Italy	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	263.76	Pay Monthly	Smart 300 , Data 500 MB, 12 months, Calls to 1 sel.num.	12	39.34
Italy	TIM	Apple iPhone 4S 16 GB	Jul-2012	*630.40*	Pay Monthly	Tutto Compreso 250 , Opzione Full, Unlimited data, TIMx2 Calls to 1 sel.num.	24	42.81
Italy	TIM	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	*378.24*	Pay Monthly	Tutto Compreso 250 , Opzione Full, Unlimited data, TIMx2 Calls to 1 sel.num.	24	42.81
Japan	NTT DoCoMo	Apple iPhone 4S 16 GB	NA	NA	Pay Monthly	Type L , Voicemail, Xi Data plans 7000 MB, 24 months	24	215.32
Japan	NTT DoCoMo	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	331.73	Pay Monthly	Type L , Voicemail, Xi Data plans 7000 MB, 24 months	24	215.32
Japan	KDDI	Apple iPhone 4S 16 GB	Jul-2012	520.07	Pay Monthly	Plan M , Simple + Everybody Discount with 24M, PacketWIN Single Measure	24	74.44
Japan	KDDI	Samsung Galaxy S II i9100 (16 GB)		586.91	Pay Monthly	Plan M , Simple + Everybody Discount with 24M, PacketWIN Single Measure	24	74.44
Korea	SK Telecom	Apple iPhone 4S 16 GB	Feb-2012	461.31	Pay monthly	All-In-One 45-special discount , 2 year contract	24	28.07
Korea	SK Telecom	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	393.16	Pay monthly	All-In-One 45-special discount , 2 year contract	24	28.07
Korea	KT	Apple iPhone 4S 16 GB	Feb-2012	560.26	Pay monthly	Show I light , 3 year contract-smart sponser, Data Plus 500 MB	36	27.27
Korea	KT	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	570.91	Pay monthly	Show I light , 3 year contract-smart sponser, Data Plus 500 MB	36	27.27
Mexico	Telcel	Apple iPhone 4S 16 GB	Jul-2012	266.25	Pay Monthly	Más X Menos Unlimited Internet 1 , 300 SMS, Unlimited data, Calls to 4 sel.	24	54.05
Mexico	Telcel	Samsung Galaxy S II i9100 (16 GB)		NA	Pay Monthly	Más X Menos Unlimited Internet 1 , 300 SMS, Unlimited data, Calls to 4 sel.	24	54.05
Mexico	Movistar	Apple iPhone 4S 16 GB	Jul-2012	350	Pay Monthly	Plan iPhone 3	24	44.28
Mexico	Movistar	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	NA	Pay Monthly	Plan Siempre Conectados - Plan D , 200 SMS, Data 1000 MB, Calls and SM	24	44.28
Netherlands	KPN	Apple iPhone 4S 16 GB	Feb-2012	145.23	Pay monthly	Bel-SMS-Web 350	24	53.41
Netherlands	KPN	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	0.00	Pay monthly	Bel-SMS-Web 350	24	53.41
Netherlands	Vodafone	Apple iPhone 4S 16 GB	Jun-2012	43.59	Pay monthly	iPhone Vaak 200 , Internet 500 MB, 24 months	24	43.41
Netherlands	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	67.05	Pay monthly	Bel+SMS+Web 250 , Zorgeloos SMS, Internet 500 MB, 24 months	24	50.97
Spain	Movistar	Apple iPhone 4S 16 GB	Feb-2012	235.56	Pay monthly	Habla Movistar y Navega 21 , Data 500 MB	24	52.31
Spain	Movistar	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	0.00	Pay monthly	Habla Movistar y Navega 21 , Data 500 MB	24	52.31
Spain	Vodafone	Apple iPhone 4S 16 GB	May-2012	404.62	Pay monthly	Tarifa @M , TP Smartphone 500 MB, Calls to 2 sel.num.	24	52.60
Spain	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	77.77	Pay monthly	Tarifa @M , TP Smartphone 500 MB, Calls to 2 sel.num.	24	52.60
United King	O2	Apple iPhone 4S 16 GB	Feb-2012	318.34	Pay monthly	Pay Monthly Extra 200 , Data 500 MB, 24 months	24	36.09
United King	O2	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	318.34	Pay monthly	Pay Monthly Extra 200 , Data 500 MB, 24 months	24	36.09
United King	T-Mobile	Apple iPhone 4S 16 GB	Mar-2012	126.07	Pay monthly	Pay Monthly 500 Mins , Internet Booster 500 MB, 24 months	24	23.62
United King	T-Mobile	Samsung Galaxy S II i9100 (16 GB)	Mar-2012	127.34	Pay monthly	Pay Monthly 500 Mins , Internet Booster 500 MB, 24 months	24	23.62
United State	AT&T Mobility	Apple iPhone 4S 16 GB	Apr-2012	199.99	Pay Monthly	Nation 450 , 3000 SMS, Data 3072 MB, 24 months	24	121.44
United State	AT&T Mobility	Samsung Galaxy S II i9100 (16 GB)	Jun-2012	99.99	Pay Monthly	Nation 450 , 3000 SMS, Data 3072 MB, 24 months	24	121.44
United State	Verizon Wireless	Apple iPhone 4S 16 GB	Apr-2012	199.99	Pay Monthly	Talk 450 , 1000 SMS, Data 2048 MB, 24 months	24	111.95
United State	Verizon Wireless	Samsung Galaxy S II i9100 (16 GB)	Apr-2012	NA	Pay Monthly	Talk 450 , 1000 SMS, Data 2048 MB, 24 months	24	111.95

Table 6. 300 calls + 1 GB post-paid only, USD excluding VAT per month

Country	Operator	Handset Name	Date	Price	Plan Type	Plan Name	Plan Duration	Plan Price
Australia	Telstra	Apple iPhone 4S 16 GB		NA	Pay monthly	Freedom Connect Plan $79 , Data 2048 MB, 24 months	24	76.34
Australia	Telstra	Samsung Galaxy S II i9100 (16 GB)	Nov-2011	0	Pay monthly	Freedom Connect Plan $79 , Data 2048 MB, 24 months	24	76.34
Australia	Optus	Apple iPhone 4S 16 GB	Feb-2012	8.4	Pay monthly	Optus Cap $59 , Mobile Internet 2048 MB, 24 months	24	57.02
Australia	Optus	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	0	Pay monthly	Optus Cap $59 , Mobile Internet 2048 MB, 24 months	24	57.02
Canada	Bell Mobility	Apple iPhone 4S 16 GB	Feb-2012	157.24	Pay Monthly	Small Business Flex $40 + Message Centre , 500 SMS, Email & In	36	140.75
Canada	Bell Mobility	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	49.14	Pay Monthly	Small Business Flex $40 + Message Centre , 500 SMS, Email & In	36	140.75
Canada	Rogers Wireless	Apple iPhone 4S 16 GB	Feb-2012	156.31	Pay Monthly	Voice & Data $50 , 250 SMS, Data 500 MB, 1 months, My5 Canad	36	116.47
Canada	Rogers Wireless	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	49.14	Pay Monthly	Voice & Data $50 , 250 SMS, Data 500 MB, 1 months, My5 Canad	36	140.75
France	Orange	Apple iPhone 4S 16 GB	Mar-2012	221.29	Pay Monthly	Forfait Origami Star 3h , Surf 2048 MB, 24 months, Calls to 3 sel.nu	24	64.88
France	Orange	Samsung Galaxy S II i9100 (16 GB)	Mar-2012	221.29	Pay Monthly	Forfait Origami Star 3h , Surf 2048 MB, 24 months, Calls to 3 sel.nu	24	64.88
France	SFR	Apple iPhone 4S 16 GB	Jan-2012	222.29	Pay Monthly	Carre Web 5h , Unlimited Eve & Wkd Calls, Unlimited data, 24 mont	24	71.47
France	SFR	Samsung Galaxy S II i9100 (16 GB)	Jan-2012	55.49	Pay Monthly	Carre Web 5h , Unlimited Eve & Wkd Calls, Unlimited data, 24 mont	24	71.47
Germany	T-Mobile	Apple iPhone 4S 16 GB	Mar-2012	5.53	Pay monthly	Complete Mobile L , Data 1000 MB, 24 months	24	107.85
Germany	T-Mobile	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	89.35	Pay monthly	Complete Mobile L , Data 1000 MB, 24 months	24	107.85
Germany	Vodafone	Apple iPhone 4S 16 GB	Feb-2012	145.18	Pay monthly	SuperFlat Allnet , + Messaging Flat, Internet by time 0 MB, 24 mont	24	137.65
Germany	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	55.77	Pay monthly	SuperFlat Allnet , + Messaging Flat, Internet by time 0 MB, 24 mont	24	137.65
Italy	Vodafone	Apple iPhone 4S 16 GB	Feb-2012	197.88	Pay Monthly	Smart 600 , Data 1024 MB, 12 months, Calls to 1 sel.num.	12	50.20
Italy	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	197.88	Pay Monthly	Smart 600 , Data 1024 MB, 12 months, Calls to 1 sel.num.	12	50.20
Italy	TIM	Apple iPhone 4S 16 GB	Jul-2012	302.59	Pay Monthly	Tutto Compreso 500 , Opzione Full, Unlimited data, TIMx2 Calls to 1	30	53.68
Italy	TIM	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	252.16	Pay Monthly	Tutto Compreso 500 , Opzione Full, Unlimited data, TIMx2 Calls to 1	24	53.68
Japan	NTT DoCoMo	Apple iPhone 4S 16 GB	*NA*	NA	Pay Monthly	Type LL , Voicemail, Xi Data plans 7000 MB, 24 months	24	249.31
Japan	NTT DoCoMo	Samsung Galaxy S II i9100 (16 GB)	Jul-2012	331.73	Pay Monthly	Type LL , Voicemail, Xi Data plans 7000 MB, 24 months	24	249.31
Japan	KDDI	Apple iPhone 4S 16 GB	Jul-2012	520.07	Pay Monthly	Plan LL , Simple + Everybody Discount with 24M, PacketWIN Single	24	130.76
Japan	KDDI	Samsung Galaxy S II i9100 (16 GB)		586.91	Pay Monthly	Plan LL , Simple + Everybody Discount with 24M, PacketWIN Single	24	130.76
Korea	SK Telecom	Apple iPhone 4S 16 GB	Feb-2012	477.04	Pay monthly	All-In-One 65-special discount , 2 year contract+1/2 on-net discount	24	56.41
Korea	SK Telecom	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	425.93	Pay monthly	All-In-One 65-special discount , 2 year contract+1/2 on-net discount	24	56.41
Korea	KT	Apple iPhone 4S 16 GB	Feb-2012	543.88	Pay monthly	Show I special , 3 year contract-smart sponser, Unlimited data	36	50.44
Korea	KT	Samsung Galaxy S II i9100 (16 GB)	Mar-2012	483.26	Pay monthly	Show I special , 3 year contract-smart sponser, Unlimited data	36	50.44
Mexico	Telcel	Apple iPhone 4S 16 GB	Jul-2012	66.85	Pay Monthly	Mas X Menos Todos Destino 4 , Data 3072 MB, Calls to 6 sel.num.	24	97.61
Mexico	Telcel	Samsung Galaxy S II i9100 (16 GB)	NA	NA	Pay Monthly	Mas X Menos Todos Destino 4 , Data 3072 MB, Calls to 6 sel.num.	24	97.61
Mexico	Movistar	Apple iPhone 4S 16 GB	Jul-2012	0	Pay Monthly	Plan iPhone 4.	24	77.81
Mexico	Movistar	Samsung Galaxy S II i9100 (16 GB)	NA	NA	Pay Monthly	Plan Siempre Conectados - Plan D , 200 SMS, Data 1000 MB, Cal	24	77.81
Netherlands	KPN	Apple iPhone 4S 16 GB	Feb-2012	145.23	Pay monthly	Bel-SMS-Web 650	24	142.19
Netherlands	KPN	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	0	Pay monthly	Bel-SMS-Web 650	24	142.19
Netherlands	Vodafone	Apple iPhone 4S 16 GB	Jun-2012	43.59	Pay monthly	iPhone Vaak 200 , Internet 500 MB, 24 months	24	43.41
Netherlands	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	67.05	Pay monthly	Bel+SMS+Web 250 , Zorgeloos SMS, Internet 500 MB, 24 months	24	50.97
Spain	Movistar	Apple iPhone 4S 16 GB	Feb-2012	235.56	Pay monthly	Habla y Navega 60 , Data 2048 MB	24	105.98
Spain	Movistar	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	0	Pay monthly	Habla y Navega 60 , Data 2048 MB	24	105.98
Spain	Vodafone	Apple iPhone 4S 16 GB	May-2012	404.62	Pay monthly	Tarifa @M , TP Smartphone 1000 MB, Calls to 2 sel.num.	24	87.97
Spain	Vodafone	Samsung Galaxy S II i9100 (16 GB)	Feb-2012	77.77	Pay monthly	Tarifa @M , TP Smartphone 1000 MB, Calls to 2 sel.num.	24	87.97
United Kingdom	O2	Apple iPhone 4S 16 GB	Mar-2012	0	Pay monthly	Pay Monthly Online 300 , Data 1024 MB, 24 months	24	53.80
United Kingdom	O2	Samsung Galaxy S II i9100 (16 GB)	Mar-2012	0	Pay monthly	Pay Monthly Online 300 , Data 1024 MB, 24 months	24	53.80
United Kingdom	T-Mobile	Apple iPhone 4S 16 GB	Mar-2012	215.21	Pay monthly	Pay Monthly 300 Mins - Unlimited T-Mobile Talk Booster , Data 1536	24	40.68
United Kingdom	T-Mobile	Samsung Galaxy S II i9100 (16 GB)	Mar-2012	191.01	Pay monthly	Pay Monthly 300 Mins - Unlimited T-Mobile Talk Booster , Data 1536	24	40.68
United States	AT&T Mobility	Apple iPhone 4S 16 GB	Apr-2012	199.99	Pay Monthly	Nation 450 , 3000 SMS, Data 3072 MB, 24 months	24	121.44
United States	AT&T Mobility	Samsung Galaxy S II i9100 (16 GB)	Apr-2012	99.99	Pay Monthly	Nation 450 , 3000 SMS, Data 3072 MB, 24 months	24	121.44
United States	Verizon Wireless	Apple iPhone 4S 16 GB	Apr-2012	199.99	Pay Monthly	Talk 450 , 1000 SMS, Data 2048 MB, 24 months	24	111.95
United States	Verizon Wireless	Samsung Galaxy S II i9100 (16 GB)	NA	NA	Pay Monthly	Talk 450 , 1000 SMS, Data 2048 MB, 24 months	24	111.95

Table 7. 900 calls + 2 GB, post-paid only, USD excluding VAT per month

Country	Operator	Handset Name	Date	Price	Plan Type	Plan Name	Plan Duration	Plan Price
Australia	Telstra	Apple iPhone 4S 16 GB		NA	Pay monthly	Freedom Connect Plan $129 , Data 3072 MB, 24 months	24	124.66
Australia	Telstra	Samsung Galaxy S II i9100 (16	Nov-2011	0.00	Pay monthly	Freedom Connect Plan $129 , Data 3072 MB, 24 months	24	124.66
Australia	Optus	Apple iPhone 4S 16 GB	Mar-2012	0.00	Pay monthly	Timeless Extreme $99 , Mobile Internet 3072 MB, 24 mon	24	95.67
Australia	Optus	Samsung Galaxy S II i9100 (16	Mar-2012	0.00	Pay monthly	Timeless Extreme $99 , Mobile Internet 3072 MB, 24 mon	24	95.67
Canada	Bell Mobility	Apple iPhone 4S 16 GB	Feb-2012	157.24	Pay Monthly	Business North America 250 + Message Centre , 500 SM	36	196.58
Canada	Bell Mobility	Samsung Galaxy S II i9100 (16	Jul-2012	49.14	Pay Monthly	Business North America 250 + Message Centre , 500 SM	36	196.58
Canada	Rogers Wireless	Apple iPhone 4S 16 GB	Feb-2012	156.31	Pay Monthly	Voice & Data $60 , 2500 SMS, Data 2048 MB, 1 months,	36	202.39
Canada	Rogers Wireless	Samsung Galaxy S II i9100 (16	Jul-2012	49.14	Pay Monthly	Voice & Data $60 , 2500 SMS, Data 2048 MB, 1 months,	36	202.39
France	Orange	Apple iPhone 4S 16 GB	Jan-2012	165.69	Pay Monthly	Performance Pro Smartphone Unlimited , Surf 2048 MB, 2	24	182.80
France	Orange	Samsung Galaxy S II i9100 (16	Jan-2012	56.71	Pay Monthly	Performance Pro Smartphone Unlimited , Surf 2048 MB, 2	24	182.80
France	SFR	Apple iPhone 4S 16 GB	Jan-2012	166.69	Pay Monthly	Carre Absolut , Unlimited data, 24 months	24	108.86
France	SFR	Samsung Galaxy S II i9100 (16	Jan-2012	11.01	Pay Monthly	Carre Absolut , Unlimited data, 24 months	24	108.86
Germany	T-Mobile	Apple iPhone 4S 16 GB		NA				
Germany	T-Mobile	Samsung Galaxy S II i9100 (16 GB)		NA				
Germany	Vodafone	Apple iPhone 4S 16 GB	Feb-2012	145.18	Pay monthly	SuperFlat Allnet , + Messaging Flat, Internet by time 0 MB	24	139.01
Germany	Vodafone	Samsung Galaxy S II i9100 (16	Feb-2012	55.77	Pay monthly	SuperFlat Allnet , + Messaging Flat, Internet by time 0 MB	24	139.01
Italy	Vodafone	Apple iPhone 4S 16 GB	Feb-2012	0.00	Pay Monthly	Smart 2000 , Data 1024 MB, 12 months, Calls to 1 sel.nu	12	126.28
Italy	Vodafone	Samsung Galaxy S II i9100 (16	Feb-2012	0.00	Pay Monthly	Smart 2000 , Data 1024 MB, 12 months, Calls to 1 sel.nu	12	126.28
Italy	TIM	Apple iPhone 4S 16 GB	Jul-2012	302.59	Pay Monthly	Tutto Compreso 1500 , Opzione Full Maxi, Unlimited data,	30	102.58
Italy	TIM	Samsung Galaxy S II i9100 (16	Jul-2012	252.16	Pay Monthly	Tutto Compreso 1500 , Opzione Full Maxi, Unlimited data,	24	102.58
Japan	NTT DoCoMo	Apple iPhone 4S 16 GB	*NA*	NA	Pay Monthly	Type LL , Voicemail, Xi Data plans 7000 MB, 24 months,	24	468.06
Japan	NTT DoCoMo	Samsung Galaxy S II i9100 (16	Jul-2012	331.73	Pay Monthly	Type LL , Voicemail, Xi Data plans 7000 MB, 24 months,	24	468.06
Japan	KDDI	Apple iPhone 4S 16 GB	Jul-2012	520.07	Pay Monthly	Plan LL , Simple + Everybody Discount with 24M + Call De	24	281.62
Japan	KDDI	Samsung Galaxy S II i9100 (16 GB)		586.91	Pay Monthly	Plan LL , Simple + Everybody Discount with 24M + Call De	24	281.62
Korea	SK Telecom	Apple iPhone 4S 16 GB	Feb-2012	520.29	Pay monthly	All-In-One 95-special discount , 2 year contract+1/2 on-net	24	117.00
Korea	SK Telecom	Samsung Galaxy S II i9100 (16	Feb-2012	368.59	Pay monthly	All-In-One 95-special discount , 2 year contract+1/2 on-net	24	117.00
Korea	KT	Apple iPhone 4S 16 GB	Feb-2012	543.88	Pay monthly	Show I Premium , 3 year contract-smart sponser, Unlimite	36	60.24
Korea	KT	Samsung Galaxy S II i9100 (16	Apr-2012	366.13	Pay monthly	Show I Premium , 3 year contract-smart sponser, Unlimite	30	60.24
Mexico	Telcel	Apple iPhone 4S 16 GB	Jul-2012	0.00	Pay Monthly	Telcel 1000 , Data 3572 MB, Calls to 10 sel.num; Operato	24	129.16
Mexico	Telcel	Samsung Galaxy S II i9100 (16 GB)		NA	Pay Monthly	Telcel 1000 , Data 3572 MB, Calls to 10 sel.num; Operato	24	129.16
Mexico	Movistar	Apple iPhone 4S 16 GB	Jul-2012	0.00	Pay Monthly	Plan Siempre Conectados - Plan F , 200 SMS, Data 2024	24	119.00
Mexico	Movistar	Samsung Galaxy S II i9100 (16	Jul-2012	0.00	Pay Monthly	Plan Siempre Conectados - Plan F , 200 SMS, Data 2024	24	119.00
Netherlands	KPN	Apple iPhone 4S 16 GB	Mar-2012	22.30	Pay monthly	Bel-SMS-Web 1500 , 1000 SMS	24	288.90
Netherlands	KPN	Samsung Galaxy S II i9100 (16	Feb-2012	0.00	Pay monthly	Bel-SMS-Web 1500 , 1000 SMS	24	288.90
Netherlands	Vodafone	Apple iPhone 4S 16 GB	Mar-12	NA	Pay monthly	Business Bundle Web 1600 , Zorgeloos SMS, 24 months	24	247.84
Netherlands	Vodafone	Samsung Galaxy S II i9100 (16	Feb-12	NA	Pay monthly	Business Bundle Web 1600 , Zorgeloos SMS, 24 months	24	247.84
Spain	Movistar	Apple iPhone 4S 16 GB	Feb-2012	235.56	Pay monthly	Habla y Navega 90 , Data 2048 MB	24	240.02
Spain	Movistar	Samsung Galaxy S II i9100 (16	Feb-2012	0.00	Pay monthly	Habla y Navega 90 , Data 2048 MB	24	240.02
Spain	Vodafone	Apple iPhone 4S 16 GB	May-2012	111.58	Pay monthly	Tarifa @XL , TP Smartphone 2048 MB	24	162.94
Spain	Vodafone	Samsung Galaxy S II i9100 (16	Feb-2012	0.00	Pay monthly	Tarifa @XL , TP Smartphone 2048 MB	24	162.94
United Kingdon	O2	Apple iPhone 4S 16 GB	Mar-2012	0.00	Pay monthly	Pay Monthly Online Unlimited , Data 1024 MB, 24 months	24	132.54
United Kingdon	O2	Samsung Galaxy S II i9100 (16	Mar-2012	0.00	Pay monthly	Pay Monthly Online Unlimited , Data 1024 MB, 24 months	24	132.54
United Kingdon	T-Mobile	Apple iPhone 4S 16 GB	Mar-2012	0.00	Pay monthly	Pay Monthly 2000 Mins - Texts Booster , Data 3072 MB, 2	24	70.86
United Kingdon	T-Mobile	Samsung Galaxy S II i9100 (16	Mar-2012	0.00	Pay monthly	Pay Monthly 2000 Mins - Texts Booster , Data 3072 MB, 2	24	70.86
United States	AT&T Mobility	Apple iPhone 4S 16 GB	Feb-2012	199.99	Pay Monthly	Nation 450 , 3000 SMS, Data 3072 MB, 24 months	24	121.44
United States	AT&T Mobility	Samsung Galaxy S II i9100 (16	Jan-2012	149.99	Pay Monthly	Nation 450 , 3000 SMS, Data 3072 MB, 24 months	24	121.44
United States	Verizon Wireless	Apple iPhone 4S 16 GB	Feb-2012	199.99	Pay Monthly	Talk 450 , 1000 SMS, Data 2048 MB, 24 months	24	111.95
United States	Verizon Wireless	Samsung Galaxy S II i9100 (16	NA	NA	Pay Monthly	Talk 450 , 1000 SMS, Data 2048 MB, 24 months	24	111.95

Table 8. Basket mobile 100 calls + 500 MB, including VAT, per month, February 2012

	100 calls + 500 MB	Pre-Paid and Post-paid	USD/PPP including VAT per month						USD including VAT per month					
			Fixed	Voice	Message	Data	Handset	Grand Total	Fixed	Voice	Message	Data	Handset	Grand Total
Australia	Australia, Optus	Boost Pre-paid - Super Cap $30 , MyData 500 MB	21.40	0.00	0.00	0.00	11.05	32.45	35.53	0.00	0.00	0.00	18.34	53.87
United Kingdom	UK, O2	Pay & Go O2 Text & Web , £10 top up, Data 500 MB, Your o2 Numbers Calls to 10 sel.num.	19.83	0.00	0.00	7.21	15.77	42.82	25.98	0.00	0.00	9.45	20.66	56.09
France	France, Orange	Sosh - 24/7 , Unlimited data, SIM only	27.75	0.00	0.00	0.00	19.14	46.89	32.75	0.00	0.00	0.00	22.59	55.34
Netherlands	Netherlands, KPN	SIM-only Bel-SMS-Web 350 , 24 months	34.40	-	-	-	18.95	53.34	38.87	-	-	-	21.41	60.28
Italy	Italy, Vodafone	Smart 300 , Data 500 MB, 12 months, Calls to 1 sel.num.	45.78	0.00	0.00	0.00	8.77	54.55	46.24	0.00	0.00	0.00	8.86	55.10
Korea	Korea, SK Telecom	All-In-One 45-special discount , 2 year contract	37.65	0.00	0.00	0.00	17.18	54.83	30.87	0.00	0.00	0.00	14.09	44.96
Japan	Japan, KDDI au	Plan M , Simple + Everybody Discount with 24M, PacketWIN Single Measured Rate 15000 MB, 24 months	36.18	0.93	0.00	13.32	9.79	60.21	56.08	1.44	0.00	20.64	15.17	93.33
Spain	Spain, Telefonica	Habla Movistar y Navega 21 , Data 500 MB	57.15	0.00	0.00	0.00	7.15	64.30	61.72	0.00	0.00	0.00	7.72	69.44
Canada	Canada, Rogers	Voice & Data $55 , Unlimited Messages, Data 1024 MB, 1 months, Voicemail option	59.08	4.29	0.00	0.00	3.82	67.19	76.22	5.54	0.00	0.00	4.93	86.69
United States	USA, AT&T	Pay As You Go , Monthly Unltd Plan, Unlimited data	55.00	0.00	0.00	0.00	19.12	74.12	55.00	0.00	0.00	0.00	19.12	74.12
Germany	Germany, Vodafone	SuperFlat Mobil , + Messaging Flat - 24 months	30.82	29.85	6.50	1.43	7.95	76.56	33.91	32.84	7.15	1.58	6.64	82.11
Mexico	Mexico, Telcel	Amigo Fidelidad , $500 Top-up, Low Consumption 450 MB	6.70	31.48	10.82	13.40	36.01	98.40	22.08	11.90	3.37	15.36	24.49	77.20

Table 9. Basket Mobile 300 calls + 1 GB, including VAT, per month, February 2012

	300 calls + 1GB	Pre-Paid and Post-paid	USD/PPP including VAT per month							USD including VAT per month					
			Fixed	Voice	Message	Data	Handset	Grand Total		Fixed	Voice	Message	Data	Handset	Grand Total
Australia	Australia, Optus	Boost Pre-paid - Super Cap $40 , MyData 3072 MB	25.65	0.00	0.00	0.00	11.05	36.70		42.58	0.00	0.00	0.00	18.34	60.92
United Kingdom	UK, T-Mobile	Pay Monthly 300 Mins - Unlimited T-Mobile Talk Booster , Data 1536 MB, 24 months	37.26	0.00	0.00	0.00	5.48	42.74		48.82	0.00	0.00	0.00	7.17	55.99
France	France, Orange	Sosh - 24/7 , Unlimited data, SIM only	27.75	0.00	0.00	0.00	19.15	46.90		32.75	0.00	0.00	0.00	22.60	55.34
Italy	Italy, Vodafone	Smart 600 , Data 1024 MB, 12 months, Calls to 1 sel.num.	58.80	0.00	0.00	0.00	6.59	65.39		59.39	0.00	0.00	0.00	6.65	66.04
United States	USA, AT&T	Pay As You Go , Monthly Unltd Plan, Unlimited data	55.00	0.00	0.00	0.00	19.13	74.13		55.00	0.00	0.00	0.00	19.13	74.13
Canada	Canada, Rogers	Voice & Data $50 , 250 SMS, Data 500 MB, 1 months, My5 Canada-Wide Calls and SMS to 5 sel.num., Voicemail option	59.08	10.10	0.00	4.45	3.70	77.34		76.22	13.03	0.00	5.75	4.78	99.77
Korea	Korea, KT	Show I special , 3 year contract-smart sponser, Unlimited data	67.66	0.00	0.00	0.00	20.27	87.92		55.48	0.00	0.00	0.00	16.62	72.10
Japan	Japan, KDDI au	Plan LL , Simple + Everybody Discount w ith 24M, PacketWIN Single Measured Rate 15000 MB, 24 months	73.47	1.79	0.00	13.32	9.79	98.37		113.88	2.77	0.00	20.64	15.17	152.47
Netherlands	Netherlands, KPN	Bel-SMS-Web 650 , 1000 SMS, 24 months	102.80	0.00	0.00	0.00	4.25	107.05		116.17	0.00	0.00	0.00	4.80	120.97
Spain	Spain, Vodafone	Tarifa @M , TP Smartphone 1000 MB, Calls to 2 sel.num.	68.97	15.65	0.00	11.49	12.28	108.40		74.49	16.91	0.00	12.41	13.26	117.07
Germany	Germany, Vodafone	SuperFlat Allnet , + Messaging Flat, Internet by time 0 MB, SIM only, 24 months	108.54	0.00	16.47	3.59	4.36	132.96		119.39	0.00	18.12	3.95	4.80	146.25
Mexico	Mexico, MoviStar	Plan Siempre Conectados - Plan D , 200 SMS, Data 1000 MB, Calls and SMS to 3 sel.num.	111.71	1.19	-	23.27	0.00	136.17		75.96	0.81	-	15.83	0.00	92.60

Table 10. Basket Mobile 900 calls + 2 GB, including VAT, per month, February 2012

	900 calls + 2 GB	Pre-Paid and Post-paid	USD/PPP including VAT per month							USD including VAT per month					
			Fixed	Voice	Message	Data	Handset	Grand Total		Fixed	Voice	Message	Data	Handset	Grand Total
Australia	Australia, Optus	Boost Pre-paid - Super Cap $40 , MyData 3072 MB	25.65	0.00	0.00	0.00	11.05	36.70		42.58	0.00	0.00	0.00	18.34	60.92
France	France, Orange	Sosh - 24/7 , Unlimited data, SIM only	27.75	0.00	0.00	0.00	19.15	46.90		32.75	0.00	0.00	0.00	22.60	55.34
United Kingdom	UK, T-Mobile	Pay Monthly 2000 Mins - Texts Booster , Data 3072 MB, 24 months	64.91	0.00	0.00	0.00	3.21	68.12		85.03	0.00	0.00	0.00	4.20	89.24
United States	USA, AT&T	Pay As You Go , Monthly Unltd Plan, Unlimited data	55.00	0.00	0.00	0.00	19.13	74.13		55.00	0.00	0.00	0.00	19.13	74.13
Korea	Korea, KT	Show I Premium , 3 year contract-smart sponser, Unlimited data	79.61	0.00	1.20	0.00	20.14	100.95		65.28	0.00	0.98	0.00	16.52	82.78
Canada	Canada, Rogers	Voice & Data $60 , Unlimited Local Calling, 2500 SMS, Data 2048 MB, 1 months, Voicemail option	72.45	28.79	0.00	0.00	3.70	104.94		93.46	37.14	0.00	0.00	4.78	135.38
Italy	Italy, TIM	Tutto Compreso 1500 , Opzione Full Maxi, Unlimited data, TIMx2 Calls to 1 sel.num.	121.55	0.00	0.00	0.00	8.58	130.14		122.77	0.00	0.00	0.00	8.67	131.44
Germany	Germany, Vodafone	SuperFlat Allnet , + Messaging Allnet, Internet by time 0 MB, SIM only, 24 months	126.47	0.00	0.00	11.96	4.36	142.79		139.12	0.00	0.00	13.15	4.80	157.07
Spain	Spain, Vodafone	Tarifa @XL , TP Smartphone 2048 MB	160.79	0.00	0.00	17.24	3.39	181.41		173.65	0.00	0.00	18.62	3.66	195.93
Japan	Japan, KDDI au	Plan LL , Simple + Everybody Discount with 24M + Call Designation Flat Rate, PacketWIN Single Measured Rate 15000 MB, 24 months, Calls and SMS to 3 sel.num.	76.01	98.36	3.08	13.32	9.79	200.56		117.82	152.46	4.78	20.64	15.17	310.87
Mexico	Mexico, MoviStar	Plan Siempre Conectados - Plan F , 200 SMS, Data 2024 MB, Calls and SMS to 10 sel.num.	172.11	3.56	0.00	32.58	0.00	208.25		117.04	2.42	0.00	22.16	0.00	141.61
Netherlands	Netherlands, Vodafone	Business Bundle SIM-Only Web 1600 , Zorgeloos SMS, SIM only, 24 months	178.77	29.14	0.00	34.62	0.00	242.54		202.01	32.93	0.00	39.12	0.00	274.06

ENDNOTES

1 Information provided by the Swedish government.

2 The Inquirer, August 8 2011- "*According to data from industry analysts at Kantar Worldpanel Comtech, the subsidy model - where consumers are given a free smartphone if they take a longer and more expensive contract - appeals to consumers, despite the fact that it will eventually cost them more. The firm's global consumer insight director, Dominic Sunnebo said, "The two countries which sell the most smartphones (GB and Australia) are also the same two where the highest proportion of smartphones are given free to consumers signing up to contract tariffs (61 [per cent] free in Great Britain, 44 [per cent] free in Australia)." He explained, "Consumers find it very compelling to be offered a free smartphone with little to no increase in tariff. This is a very different story in countries like Italy, where the vast majority of the market is prepay, meaning that handset subsidies, if they exist at all, are minimal."* www.theinquirer.net/inquirer/news/2100156/operator-subsidy-model-sells-smartphones.

3 "Is Apple About to Cut Out the Carriers?", Oct 27, 2010.

4 www.mobilebusinessbriefing.com/articles/dutch-operators-probed-over-alleged-mobile-pricing-cartel/20618/ , www.computerweekly.com/news/2240042208/Dutch-firms-raided-in-cell-phone-subsidies-enquiry.

5 *"A handset subsidy for a new subscriber is essentially a means of lowering the cost of the subscriber's entry to the mobile service market (Gruber, 1999). In the absence of number portability, there is a lock-in effect on the subscriber to mobile communication services (Valletti & Cave, 1998). This is because the subscriber has to pay a switching cost when he/she transfers from one mobile communication carrier to another (Shapiro & Varian, 1999). So customer ownership is becoming a key driver of revenue with the growth of competition (Kamel, 2000). The new entrants in the mobile communication service market have made their top priority attracting new customers as well as luring subscribers away from other carriers. For them, the mobile handset subsidy can easily become a direct method of competition."*

6 www.independent.co.UnitedKingdom/news/UnitedKingdom/home-news/mobile-operators-pull-prepay-phone-subsidies-2290895.html.

7 CRTC Telecom Notice of Consultation CRTC 2012-557. Proceeding to establish a mandatory code for mobile wireless services.

https://services.crtc.gc.ca/pub/instances-proceedings/Default-Defaut.aspx?Lang=eng&YA=2012&S=C&PA=t&PT=nc&PST=a#2012-557.

8 http://koodomobile.com/en/qc/tab.shtml.

9 "If T-Mobile's Chief Marketing Officer, Cole Brodman, could change one thing about the mobile phone industry it would be making customers fork up more money for smartphones by doing away with carrier subsidies."

10 "*Now, carriers are adding fees to discourage customers from getting new phones. Verizon imposed a $30 upgrade fee for some customers last month, and both AT&T and Sprint have doubled their upgrade fees to $36 in recent months. Customers pay the fees when they get a new phone."*

11 AT&T, *Early Termination Fees*, available at www.wireless.att.com/learn/articles-resources/early-term-fees.jsp.

12 Verizon Wireless, *Customer Agreement and Important Information*, available at youreguide.vzw.com/legal-customer-agreement/.

13 Sprint, *Learn About Early Termination Fee*, available at support.sprint.com/support/article/Learn_about_early_termination_fee/case-sp061027-20110823-171256.

14 Law of 14 July 1991: *SECTION5.-De l'offre conjointe de produits ou de services. Art. 54. Il y a offre conjointe au sens du présent article, lorsque l'acquisition, gratuite ou non, de produits, de services, de tous autres avantages, ou de titres permettant de les acquérir, est liée à l'acquisition d'autres produits ou services, même identiques. Sauf les exceptions précisées ci-après, toute offre*

conjointe au consommateur effectuée par un vendeur est interdite. Est également interdite toute offre conjointe au consommateur effectuée par plusieurs vendeurs agissant dans une unité d'intention.

15 Case 2005/29/EC.

16 26/05/2011, Christophe Laporte « *L'iPhone enfin subventionné en Belgique* », www.igeneration.fr/iphone/l-iphone-enfin-subventionne-en-belgique-47522.

17 Source: *Annual Reports. See also* 26-06-2012, BELGACOM NEWS: New fixed and mobile contracts, including promotional offers, will be non-binding as of July for the residential market. This means that a new customer can sign a contract and benefit from promotional advantages while being free to terminate the contract at any time, without charge.

18 For example, the Copenhagen Economics paper about how handset subsidies affect innovation states the following: "Others argue that handset bundling benefits consumers because it induces innovation. From 1996 to April 2006, handset bundling was totally banned in Finland. In April 2006, the ban was lifted, but only for 3G mobile phones. After this change, the penetration of 3G increased from about 0.5 percent to about 10 percent in one year. Moreover, the competition shifted from a focus on price to focusing on service. Finally, the market churn declined after the regulatory change. It is, however, not evident that handset bundling is the main explanation of the development in Finland." See also: "Modular Confines of Mobile Networks: are iPhones Iphony?", George Mason University Law and Economics Research Paper Series, 7 May 2009.

19 "*The growth of cellular mobile data traffic in Finland was 200% from third quarter 2005 (PRE) to third quarter 2006 (POST) and 78% from second quarter 2006 to third quarter 2006 (Ficora, 2006). Taking into account the main observations of the framework—the bundling-driven increase of 3G handset penetration and the positive usage impact of faster 3G connections—it seems evident that handset bundling enabled a rapid exploitation of cumulated 3G potential in Finland during 2006. The possible negative usage impact of bundling, the relative tariff increase, did not materialize probably because the regulator required the operators to provide the bundled services also as unbundled and to itemize the price of handset and service in advertisements*.

20 Text directly quoted from questions AGCOM's reply to OECD questions.

21 (iPhone 4S 16 GB and Samsung Galaxy S II 16 GB).

22 There is no minimal contract durations, but service discounts are applicable when subscribing for up to 24 months

23 Sources of Operators Webpages and iStore: http://mobile-shop.orange.fr/telephones-portables/1/Apple/7/iphone-4s, www.sfr.fr/mobile/telephone-offres/iPhone-4S-64Go-Blanc-Apple/toutes-les-offres-sfr?vue=000029&tab=FORFAITS, www.laboutique.bouyguestelecom.fr/offres/offres-forfaits-mobiles/forfait-eden-smartphone-iphone.html, store.apple.com/us/browse/home/shop_iphone/family/iphone/iphone4s, www.verizonwireless.com/b2c/store/controller?item=phoneFirst&action=viewPhoneOverviewByDevice&deviceCategoryId=1, www.wireless.att.com/cell-phone-service/packages/iphone-packages.jsp

24 Nevertheless, the final benchmarking results may still be significantly affected by other factors, including significant international differences in mobile usage. *See* FCC's 15th Annual Mobile Wireless Competition Report, Table 44.

25 http://www.telecompaper.com/pressrelease/smartphone-penetration-increased-to-58--899740

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