Seco International Roaming

Study on International Roaming in Mobile Telecommunication Networks

Final Report

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Preface

The State Secretariat for Economic Affairs in Switzerland (SECO) has commissioned Copenhagen Economics to investigate whether or not Swiss end-users pay excessive international roaming prices, and if that is the case to provide insight and advice into how Swiss Authorities could react to these high prices in the light of the current EU proposal to regulate international roaming prices.

The report has been prepared by Mr. Christian Jervelund, Mr. Simen Karlsen and Mr. Torben Thorø Pedersen. The report is based on the specifications of the contract covering the study, the interim meeting with seco on August 30th and the valuable comments from SECO and other Swiss Authorities monitoring closely the area of telecommunications including their comments to the draft final report.

December, 2006
Christian Jervelund
Senior Economist, Copenhagen Economics

Chapter 1 Summary and recommendations

We find clear evidence of high international roaming prices for Swiss end-users compared to costs. However, international roaming prices in the EU are equally high

By comparing prices between a Swiss and a French end-user both calling from France to Switzerland and France, we find that the Swiss-end user pays at least twice that of the French end-user. The difference is even larger between a Swiss and Swedish end-user both calling from Sweden. As the traffic destinations are identical, the price difference cannot be ascribed to costs, but to the margin for providing an international roaming service. We find that the difference cannot be explained by differences in Value Added Tax (VAT) rates, the high overall price level in Switzerland, or other factors.

We find that international roaming prices do not differ markedly between Switzerland and similar EU countries. As excessive international roaming prices are an issue in the EU as well, the European Commission has proposed regulation of both international roaming wholesale and retail prices. The Commission estimates EU consumer savings to be in excess of 5 billion euros a year. Based on these figures and adjusting for the number of inhabitants in Switzerland, this would correspond to Swiss end-users saving 130-145 million Swiss francs a year.

The EU proposal implies large savings for Swiss end-users if Switzerland were to enter into a bilateral agreement with the EU. Currently, we find it unlikely however, that Switzerland will be able to honour its commitments to reduce international roaming wholesale prices implied by such an agreement

Hence, from a consumer perspective it seems to be in Switzerland's interest to enter into a bilateral agreement with the EU on international roaming. Despite similar agreements on other services such as land and air transport, we believe that a bilateral agreement with the EU covering international roaming services is unlikely as Switzerland will have a hard time honouring its commitments to regulate prices at the wholesale level. The primary reason being the lack of tools similar to the EU internal market provisions requiring instead Swiss authorities to designate Swiss mobile operators as having a dominant position in the wholesale market for international roaming services in order to regulate wholesale prices. This may prove arduous illustrated by the difficulties for the Member States to designate their own operators as having a dominant position.

Consequently, we believe that major changes in Swiss legislation would be necessary if Switzerland were to regulate international roaming wholesale prices, which would be a premise for a bilateral agreement between the EU and Switzerland.

While we believe it is possible that Swiss international roaming wholesale prices will decrease to EU levels even without an agreement with the EU, we believe it is to be unlikely that international roaming retail prices will follow suit to the benefit of consumers

Regardless of Switzerland entering into a bilateral agreement with the EU or not, the wholesale prices may decrease due to new technology which makes it possible for mobile operators to direct international roaming traffic to networks of operators charging the lowest wholesale roaming prices. This could spur competition at the wholesale level. Furthermore, Swiss mobile operators are part of alliances with EU based operators, which could contribute to lower international roaming wholesale prices in Switzerland following the proposed EU regulation. On the other hand, EU operators do have incentive to charge the Swiss operators prices above the (future) EU regulated prices.

However, we also find indications that international roaming retail prices for Swiss end-users may remain high even if wholesale prices fall as retail mark-ups are likely to increase. This is due to probably weak competition at the retail level caused by a lack of transparency of international roaming retail prices charged by different operators, but also by a lack of end-user awareness of the international roaming retail prices. At the current stage, we do not believe that the latest technological developments such as IP mobile telephony will resolve these market imperfections in the near future, but they may be able to do so in the longer run.

In the light of the example of high international roaming retail prices, a strengthening of the sectoral regulator and a shorter time until regulatory decisions take effect should be considered. In the meantime, Swiss authorities should examine temporary regulation at the retail level. Other measures, such as transparency enhancements, could also lead to lower retail prices

In a situation where the market outcome does not provide incentive for the mobile operators to reduce international roaming retail prices in the light of falling wholesale prices, regulation could be a solution. However, the process until the sectoral regulator's decision becomes effective is currently burdensome in Switzerland. Delaying effects of appeals lead to long procedures. This goes to the expense of end-users, who have to carry the high costs.

If new technology will only reduce retail prices in the longer run as we predict, Swiss end-users are paying a high price in the short to medium run. This implies the existence of a trade-off between securing lower retail prices through regulation on the one hand, and running the risk of distorting competition by overregulation on the other hand.

The European Commission has calculated the size of this trade-off estimating that no regulation of international roaming wholesale and retail prices will lead to only minor savings for European consumers while regulating wholesale and/or retail prices will lead to substantially higher savings. Based on these figures and adjusting for the number of inhabitants in Switzerland, Swiss end-users would stand to save around 37 million Swiss francs a year in case of no regulation (but strong political pressure), 51-56 million Swiss francs in the case of wholesale regulation, and 130-145 million Swiss francs in the case of both wholesale and retail regulation.

However, Swiss intervention at the retail level is difficult due to a lack of EU internal market provisions, but rather reliance on competition rules, sector specific rules or/and rules on pricing. This also weakens the possibility of (the prospect of) regulation having a deterrent effect on operators which alone could lead them to reduce prices.

In the absence of international roaming retail price regulation in Switzerland, we believe it could be beneficial to at least take some measures to increase competition at the retail level leading to lower prices. Four measures come to mind. A first possible measure would be to facilitate price comparisons of the different Swiss operators, e.g. by extending and promoting the existing comparisons for typical users on the Internet. Second, Swiss authorities could require that mobile operators provide end-users with information on roaming prices free of charge either via (push) SMS or a mobile call; this is in line with the EU proposal. Third, the mobile operators could provide information on applicable roaming charges when subscriptions are taken out. Fourth, Swiss authorities could use international retail roaming prices in the EU as benchmark for Swiss operators.

Regulating international roaming retail prices raises an issue not covered in this report, namely that regulation could spur Swiss mobile operators to increase prices of other services to maintain high profits, the so-called waterbed effect. If the Swiss market for mobile telephony is characterised by weak competition, dominant players could benefit from such actions. This issue must also be taken into account when discussing the pros and cons of regulation.

Chapter 2 International roaming prices

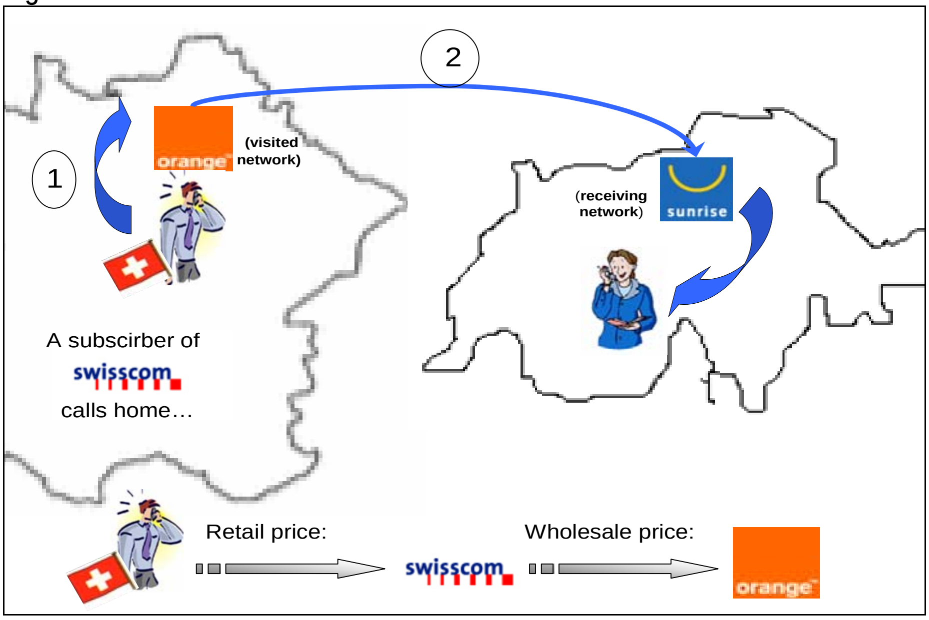
In this chapter we answer the question of whether or not Swiss end-users (businesses and consumer subscribers) pay excessive prices when using their mobile phones abroad. Before answering this question in section 2.2, we briefly describe the nature of international roaming.

2.1. What is international roaming?

International roaming is when end-users use their mobile phones abroad. Using an example of a Swiss end-user (subscribing to Swisscom) visiting France and making a mobile phone call home to his girlfriend in Switzerland (who subscribes to Sunrise), we illustrate below what happens in terms of mobile signals and payments.

In order to make the phone call from France, the mobile phone of the Swiss end-user first connects to a French network, say Orange France[1], cf. Figure 1. Orange France then transmits the phone call to the network of Sunrise in Switzerland. For this, Orange France demands a wholesale price of Swisscom. At the same time, Swisscom demands a retail price of the Swiss end-user as he subscribes to Swisscom.[2]

Figure 1: A Swiss end-user calls from France to Switzerland



Source: Copenhagen Economics

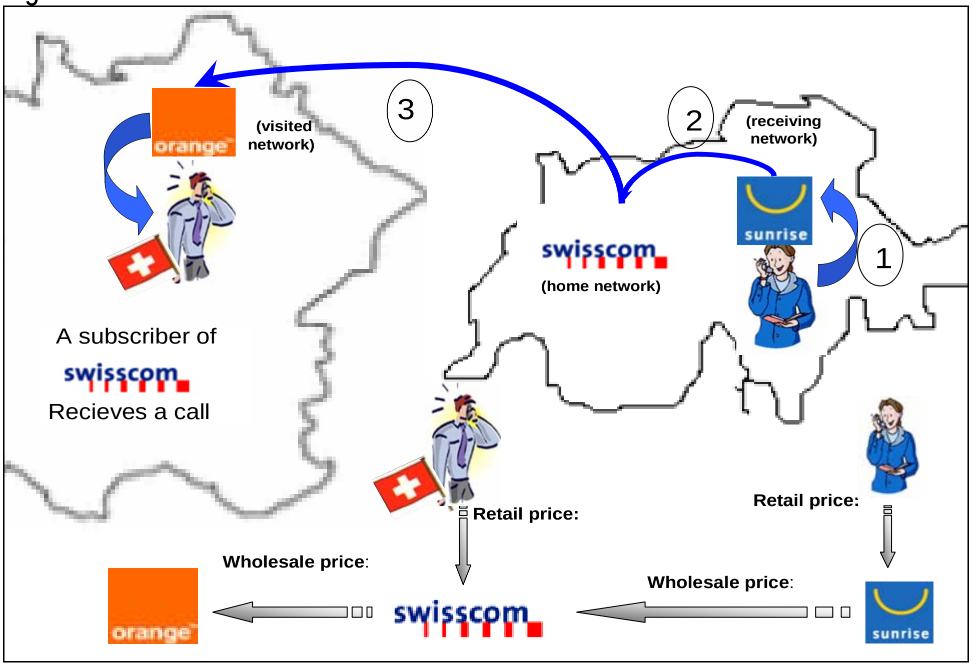
1 Which specific French network is of minor interest as the Swiss end-user could have been connected to any French network which Swisscom has entered into to an access and capacity agreement with.

2 In addition Sunrise receives a termination price either from the visited operator, Orange France, or a transit operator. Normally, the service of termination is included in the standard wholesale international roaming.

Calling back to the home country is just one option for the Swiss end-user when telephoning from France. Another option is to call another person in France. In this case, the phone call does not cross the French border. A third option is that the Swiss end-user calls somebody who lives in a third country, i.e. Germany.[3] In all three cases, the Swiss end-user may call somebody who uses a mobile phone or a fixed telephone. Moreover, in all three cases the Swiss end-user pays a retail price to his home operator, while the home operator pays the visited operator a wholesale international roaming price.

There is also a fourth option for the Swiss end-user when staying in France: He may receive a phone call from his girlfriend. He receives the call via a French network, say Orange France. His home operator (Swisscom) pays a wholesale price to the operator visited (Orange France)[4]. The operator of the girlfriend (Sunrise) pays the home operator (Swisscom) a wholesale price (actually a national termination fee). Moreover, both the Swiss end-user and his girlfriend pay a retail price. The traffic and payments are illustrated in Figure 2.

Figure 2: A Swiss end-user receives a call in France from Switzerland



Source: Copenhagen Economics

The reason that receiving a call has created a lot of attention is that the Swiss-user pays a retail price to his home operator (Swisscom in our example) in order to receive the phone call abroad. The logic behind this is that the calling party often does not know that the person she is calling is abroad. Consequently, the calling party only pays the national price while the called party pays the remaining price for calling abroad.

2.2. Do Swiss end-users pay excessive international roaming prices?

In order to answer this question, we make two types of price comparisons. *First*, we compare the international roaming retail prices that Swiss end-users pay when they use their mobile phone abroad with the prices that the end-users of the visited country pay for the same traffic destination. This tells us whether Swiss international roaming prices are excessive, meaning

[3] This option is less common. Most people call either back home or to another person in the same country. Consequently, we will focus on the two first options.

[4] Sometimes the home operator pays both an international transit fee, if the signals are transmitted via several networks, in addition to the termination fee.

above what may be justified by the costs of servicing the call. Even though both wholesale and retail prices are involved, we are only in a position to compare retail prices as wholesale prices are not publicly available. *Second*, we compare the international roaming retail prices that Swiss end-users pay when using their mobile phone abroad with the prices that end-users from a similar (EU) country pays when using their mobile phone abroad. This tells us whether Swiss international roaming retail prices are high compared to international roaming retail prices in other countries.

Are Swiss international roaming retail prices high compared to costs?
We compare the international roaming retail prices that Swiss end-users pay when they use their mobile phone in a visited country with the prices that the end-users from the visited country pay for the same traffic destination.

We have chosen France as the visited country as it is a popular destination for Swiss tourists and businesses. Furthermore, the French mobile prices have traditionally been among the highest in the EU[5]. Consequently, if the Swiss international roaming appears to be high in comparison to French prices, this is not due to particularly low domestic and international prices in France.

To further illustrate the level of Swiss international roaming prices, we make another price comparison choosing Sweden as the visited country. In contrast to France, Swedish mobile prices are among the lowest in the EU[6].

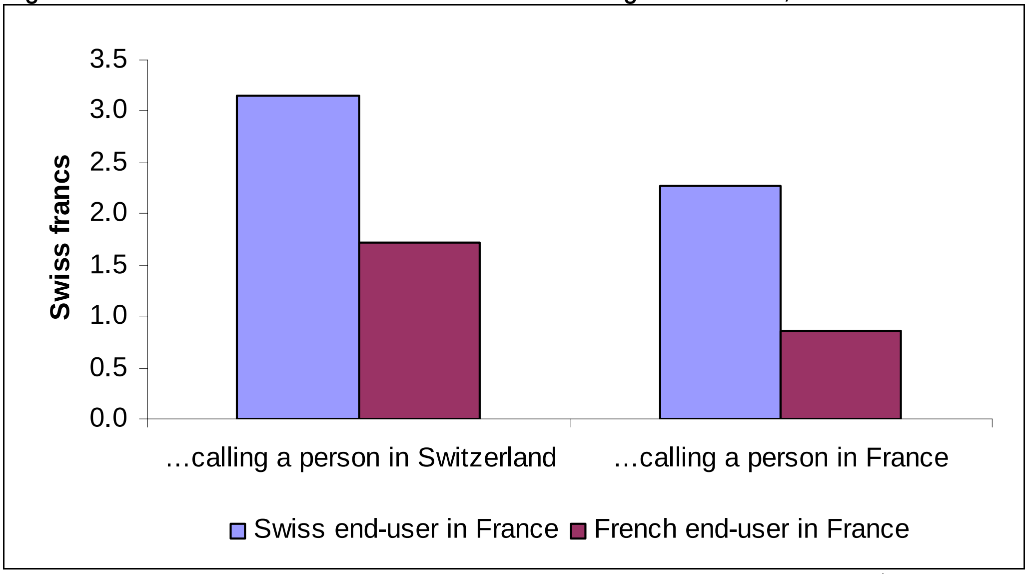
We compare the prices for the three most common types of international roaming:

- A Swiss end-user making a call in France (Sweden) to an end-user in Switzerland (Figure 1)
- A Swiss end-user making a call in France (Sweden) to another end-user in France (Sweden)
- A Swiss end-user receiving a call in France (Sweden) from an end-user in Switzerland (Figure 2)

We find that Swiss end-users pay much higher prices than the French end-users do for the same traffic destinations. In that sense, Swiss international roaming retail prices are excessive if one considers only the cost structure. The price is about twice as high for a Swiss end-user calling a person in Switzerland (3.2 Swiss francs) compared to a French end-user calling a person in Switzerland (1.7 Swiss francs). The difference in prices are even higher when calling another person in France (2.3 versus 0.9 Swiss francs), cf. Figure 3.

[5] See for instance European Commission (2006d)
[6] See for instance European Commission (2006d)

Figure 3: Prices for Swiss and French end-users calling from France, 2006



Source: Copenhagen Economics (2006) and web sites of the respective mobile operators (as of 19th of July 2006): Tele2 Mobile classic and pro, Sunrise "avec un abonnement sans option",[7] Swisscom Natel@basic liberty Euro Passport,[8] Orange Members[9] and SFR Le Compte 1h30.

Note: Prices are calculated for a two-minute-call and include VAT. Blue columns indicate the price a Swiss end-user pays for calling an end-user in Switzerland (first blue column) and France (second blue column). Red columns indicate the price a French end-user pays for calling a person in Switzerland (first red column) and France (second red column). The Swiss prices are a simple average of the prices of the four Swiss operators.

We also find that the price for receiving a call appears to be significantly above cost. The European Commission has estimated the net average costs for receiving a call in Europe to be 0.32 Swiss francs for a two-minute call.[10] The price for a Swiss end-user to receive a call in France is 1.2 Swiss francs, or almost four times as high.

The high international roaming prices cannot be explained by cost differences or any other factors, such as differences in VAT-levels. There are five reasons.

First, the higher Swiss international roaming prices may not be explained by a higher general price level in Switzerland than in France. The reason is that international roaming costs are mostly related to activities which take place abroad – not in Switzerland. Consequently, a high price level in Switzerland has almost no impact on the Swiss international roaming costs.

Second, the roaming-specific services do not represent a significant cost. According to the French regulator, ARCEP, the roaming-specific services related to exchange of information are less than 1.6 centimes per minute (ARCEP (2006)).

Third, the benchmark, French mobile prices, is probably above costs. France has among the highest mobile tariffs in the EU (see European Commission (2005)). Among other things the French mobile operators have been fined by the French regulator (ARCEP) for a price cartel leading to higher tariffs. Thus, it is not a good sign that Swiss international roaming prices are much higher than French domestic and international tariffs.

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7 Sunrise also offers also a somewhat lower minute-price, such as Sunrise Europe. However, customers have to pay to pay an additional fixed fee to benefit from a lower minute-price.

8 Swisscom also offers a somewhat lower minute-price, such as Vodafone World. However, customers have to pay to pay an additional fixed fee to benefit from a lower minute-price.

9 Orange also offers a somewhat lower minute-price, such as Travel Option. However, customers have to pay to pay an additional fixed fee to benefit from a lower minute-price.

10 European Commission (2006b)

Fourth, the French consumers pay a higher VAT than the Swiss consumers, 19.6% and 7.6%, respectively. Consequently, if we subtract the VAT, the differences are even larger between the Swiss international roaming prices and French ordinary prices.

Fifth, the perceived high Swiss termination rates are not able to explain the high international roaming prices experienced by a Swiss end-user. By comparing the prices French and Swiss end-users pay when calling to the same network, we neutralise the impact of the termination rates, while still finding a big difference. For example, we have just found that a Swiss end-user in France calling a person in Switzerland pays 3.2 Swiss francs for a two-minute call while a French end-user calling the same network in Switzerland pays only 1.7 Swiss francs. Hence, even in the light of high Swiss termination rates, this big difference is due to international roaming.

However, while the high Swiss termination rates cannot explain the *difference* between the two prices of 3.2 and 1.7 Swiss francs, they may partly explain the high price levels which could potentially be lower if Swiss termination rates were lower. But it is impossible to say how far, as we do not know the individual costs of the specific services that constitute the *bundled* service of international roaming. The reason for this is that when buying a wholesale international roaming service, the home operator normally buys a *bundled* service from the visited operator. The bundled service includes the entire route from the visited network to the destination network, including termination and transition.

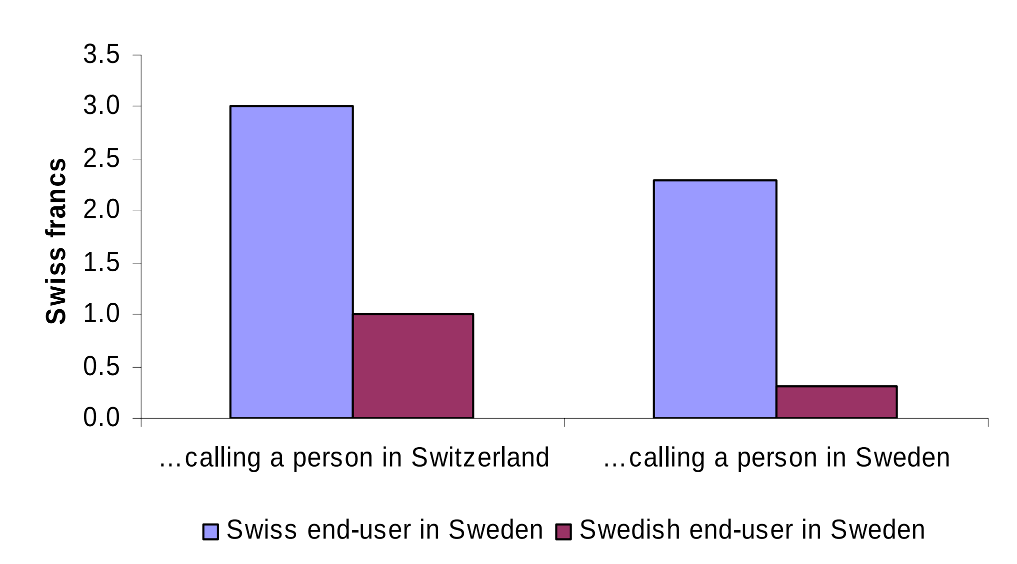
Our findings of high Swiss international roaming prices are not due to the choice of France as the visited country. Actually, as French mobile prices have traditionally been some of the highest in the EU, we probably underestimate the difference between Swiss international roaming prices and domestic and international prices across many visited countries, when choosing France as the visited country.

This is confirmed when instead choosing Sweden, a country with low mobile prices compared to other EU Member States, as the visited country. We find that Swiss end-users pay much higher prices than Swedish end-users do for the same traffic destinations; and that this difference is larger compared to using France as the visited country.

The price is about three times higher for a Swiss end-user calling a person in Switzerland (3.1 Swiss francs) compared to a Swedish end-user calling a person in Switzerland (1.0 Swiss franc), cf. Figure 4. Using France as the visited country, we previously found the price difference to be only twice as high (3.2 versus 1.7).

The same picture emerges when comparing prices for calling another person in the visited country. It costs 2.3 Swiss francs for a Swiss end-user when calling another person in Sweden, and only 0.3 Swiss Francs for a Swedish end-user when calling another person in Sweden – a price difference of almost eight times. Using France as the visited country, the price difference is less than three times (2.3 versus 0.9).

Figure 4: Prices for Swiss and Swedish end-users calling from Sweden, 2006



Source: Copenhagen Economics (2006) and web sites of the respective mobile operators (as of 31st of October 2006): Tele2 Mobile classic and pro, Sunrise "avec un abonnement sans option", Swisscom Natel@basic liberty Euro Passport, Orange Members and Tele 2 Sweden Knock-out.

Note: Prices are calculated for a two-minute-call and include VAT. Blue columns indicate the price a Swiss end-user pays for calling an end-user in Switzerland (first blue column) and Sweden (second blue column). Red columns indicate the price a Swedish end-user pays for calling a person in Switzerland (first red column) and Sweden (second red column). The Swiss prices are a simple average of the prices of the four Swiss operators. Tele2 Sweden charges different prices to mobile and fixed telephone abroad. We have used the average of the two prices.

Our findings of high Swiss international roaming prices compared to similar traffic destinations of a French and Swedish end-user are of course only to be taken as illustrative examples in the sense that the pricing structure often changes while our prices only cover a few subscriptions and represents a single point in time.

Nevertheless, our findings are entirely consistent with the findings of the European Commission and national regulators in EU Member States which estimates international roaming prices in Europe to be several times higher than domestic prices. At the same time, there is nothing to suggest that their findings should not also hold for Switzerland. The findings of the European Commission are further described in Box 1.

Box 1. European Commission's findings of excessive international roaming in the EU

The European Commission assesses that European international roaming retail prices are four times higher than domestic prices. Based on confidential figures, the Commission estimates international roaming prices to be excessive both at the wholesale and retail level.

On average, the international roaming wholesale prices are ascertained to be four times the costs. Moreover, the international roaming retail price in Europe is about 50 % higher than the average wholesale price. On average the international roaming retail price is 3.6 Swiss Francs (2.30 Euros) for a two-minute call in the EU.

These numbers suggest that Swiss international roaming prices for making a call in France (between 2.3 and 3.2 Swiss francs) are slightly below the EU average of 3.6 Swiss francs. However, this is not the case as the EU average includes traffic with higher transition costs because it includes calling to a third country; for instance a Dane who calls somebody in Poland from Greece. A more correct EU average without this traffic is lower bringing Swiss and EU prices even closer.

Source: European Commission (2006b) and Copenhagen Economics.

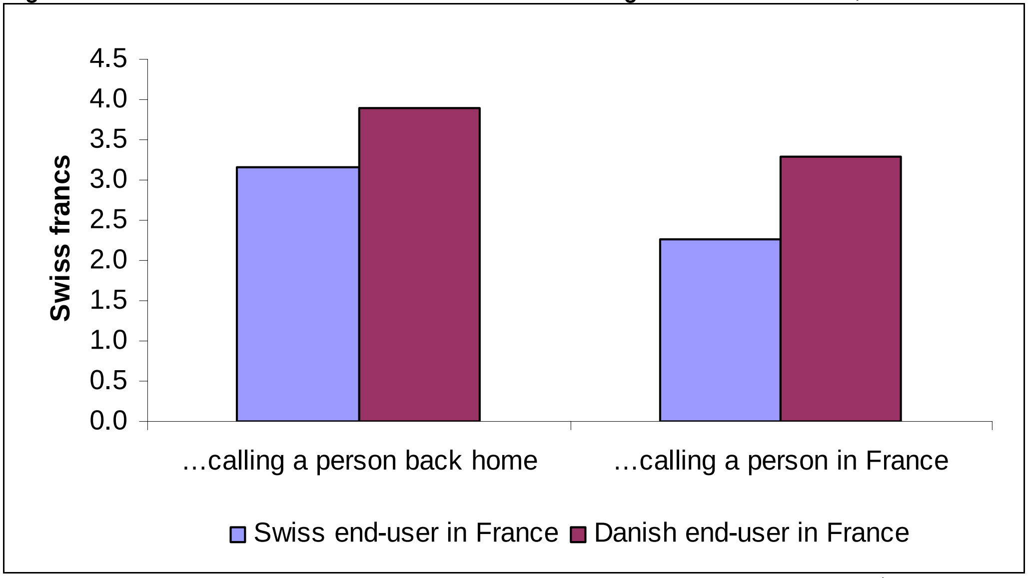
Are Swiss international roaming retail prices high compared to those of other countries?
So far we have only compared Swiss international roaming prices with prices paid by the visited countries' end-users for similar traffic destinations. We found this difference to be very high, meaning that Swiss international roaming prices are indeed high compared to the costs of providing this service. However, the does not imply that Swiss international roaming prices are higher than international roaming prices incurred by end-users in other countries.

To investigate this issue, we compare the Swiss international roaming prices with those of a similar (EU) country. We choose a similar country in order to neutralise the potential impacts from a high overall price-level, low population density etc.

We have chosen Denmark and Danish international roaming prices as a benchmark. Denmark has been at the forefront of telecoms and regulations, particularly in the mobile sector. Moreover, in line with Switzerland, Denmark is a low-populated and high-cost country. Furthermore, Switzerland and Denmark experience a deficit on net-travelling to their countries implying that they ought to be in a similar bargaining position when negotiating international roaming agreements with foreign operators, e.g. Orange in France.

We find that the Swiss international roaming prices are similar in size to the Danish international roaming prices, albeit slightly lower, cf. Figure 5.

Figure 5: Prices for Swiss and Danish end-users calling home from France, 2006



Source: Copenhagen Economics (2006) and web sites of the respective mobile operators (as of 19th of July 2006): Tele2 Mobile classic and pro, Sunrise "avec un abonnement sans option", Swisscom Natel@basic liberty Euro Passport, Orange Members in Switzerland and TeliaSonera's international roaming, 3's international roaming for private, basic subscriptions, Sonofon's international roaming for private subscriptions, TDC's international roaming for private subscriptions in Denmark.

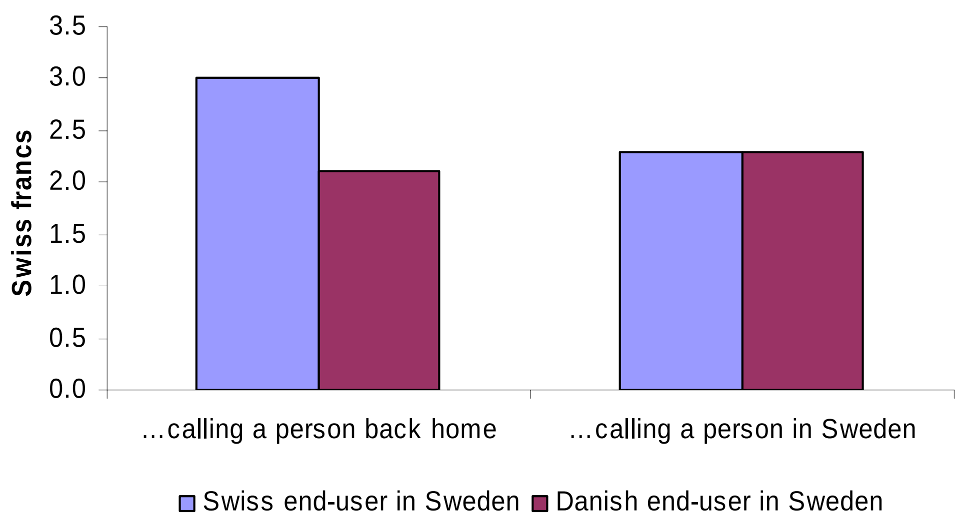
Note: Prices are calculated for a two-minute-call and include VAT. Blue columns indicate the price a Swiss end-user pays for calling a person in Switzerland (first blue column) and France (second blue column). Red columns indicate the price a Danish end-user pays for calling an end-user in Denmark (first red column) and France (second red column). The Swiss and Danish prices are a simple average of the prices of the four Swiss and Danish operators, respectively.

The slightly higher Danish international roaming prices can be explained by higher VAT in Denmark (25 %) compared to Switzerland (7.6 %). Consequently, if we subtract the VAT, the price difference disappears.

Our findings of Swiss international roaming prices being of the same size as international roaming prices in similar countries, is confirmed when using Sweden as the visited country, cf.

Figure 6. Again we find that the Swiss international roaming prices are of the same size as the Danish international roaming prices. The situation gets more disadvantageous for Swiss consumers if we consider the lower VAT rate in Switzerland.

Figure 6: Prices for Swiss and Danish end-users calling from Sweden, 2006



Source: Copenhagen Economics (2006) and web sites of the respective mobile operators (as of 31st of October 2006): Tele2 Mobile classic and pro, Sunrise "avec un abonnement sans option", Swisscom Natel@basic liberty Euro Passport, Orange Members in Switzerland and TeliaSonera's international roaming, 3's international roaming for private, basic subscriptions, Sonofon's international roaming for private subscriptions, TDC's international roaming for private subscriptions in Denmark.

Note: Prices are calculated for a two-minute-call and include VAT. Blue columns indicate the price a Swiss end-user pays for calling a person in Switzerland (first blue column) and Sweden (second blue column). Red columns indicate the price a Danish end-user pays for calling an end-user in Denmark (first red column) and Sweden (second red column). The Swiss and Danish prices are a simple average of the prices of the four Swiss and Danish operators, respectively. Tele2 Sweden charges different prices to mobile and fixed telephone abroad. We have used the average of the two prices.

Box 2 below presents the details about data behind the price comparisons above[11].

[11] We focus on voice calls as the proposal to an EU regulation mainly addresses these types of calls. As the European Commission believes that there are fewer grounds for concerns for SMS and MMS, the Commission's only warrants that national regulators shall monitor closely the two types of messages.

Box 2. The price data

We have collected retail international roaming data[A, B] from the web pages of the four principal mobile operators in Switzerland and Denmark: Swisscom, Sunrise, Orange Tele2 (Switzerland), TDC Mobile, Sonofon, Telia and 3 (Denmark). As a benchmark from France and Sweden, we have chosen a relatively low usage subscription, which implies a low fixed fee and high fees per minute[C]: SFR Le Compte 1h30 (France), and Tele 2 Sweden Knock-out (Sweden).[D] These are the prices that consumers and small and medium size enterprises typically pay. Larger enterprises often achieve large-scale competitive contracts not publicly available; therefore they already face lower international roaming prices.[E]

For currency conversion we have used the ECB's average exchange rate of June of 1.56 Swiss Francs for one euro, while we have used the Danish Central Bank's average exchange rate of June, 4.78 Danish kroner for one Swiss franc. We have used the Swedish Central Bank's average exchange rate of June, 5.92 Swedish kroner for one Swiss franc.

As explained in 'A' below, prices concerning France as the visited country are from July 19 while prices concerning Sweden as the visited country are from October 31. The different dates have no impact on the results that Swiss end-users pay excessive roaming prices when visiting these two countries. Actually, as the Commission proposal to regulate may have lead operators to lower international roaming prices during the fall of 2006 (due to the element of 'threat'), the findings that Swiss roaming prices in Sweden are in fact much higher than Swiss roaming prices in France, only accentuates the robustness of the results that roaming prices are excessive.

The reason for why we collected price data at two different dates is that after having collected prices for France as the visited country, it was brought to our attention that in order to further illustrate the level of Swiss international roaming prices, we should make another price comparison choosing Sweden as the visited country as Swedish mobile prices are among the lowest in the EU in contrast to French mobile prices (see European Commission 2006d). Comparing Swedish and Swiss mobile prices in Sweden would therefore be likely to demonstrate the 'upper limit' of how excessive Swiss international roaming prices are.

A: All prices concerning France as the visited country are of July 19 2006 while all prices concerning Sweden as the visited country are of October 31 2006B: All the prices are based on a two minute call. The reason is that some operators charge a different price for the first minute. Moreover, several operators charge a connection fee. Besides we look at the price at peak time. Some operators charge lower price at non-peak time. However, non-peak time is typically defined after 8-9 pm and before 6 am.

C: Some operators maintain that high minute charges on international roaming may be due to that end-users do not pay a fixed fee to the visited operator when using their mobile phone abroad. To take this issue into account, we look at a French subscription based on fairly low consumption and with a fairly high minute price.

D: Source: SFR (2006), http://www.sfr.fr/pdf/offre/tarifs/tarifs_lecompte.pdf

E: As larger companies often achieve special individual terms, these terms are normally not publicly available.

Source: Copenhagen Economics.

Chapter 3 Dealing with high international roaming prices

Having established that Swiss end-users pay excessive international roaming prices compared to costs (but similar to international roaming prices faced by end-users in other countries), we now look at the possibilities of reducing the prices. Generally speaking, there are three ways through which Switzerland can hope to reduce high international roaming prices. These are through International (EU) intervention, letting the market find the best solution (laissez-faire) or through national intervention.

Only by means of an international intervention is it possible to regulate *wholesale* prices as they are agreed upon between telecommunication operators in different countries. As the European Commission has recently launched a proposal for coordinated EU intervention in this area, we start by looking at how the proposal may affect the roaming prices faced by Swiss end-users (section 3.1).

However, it may actually turn out that the market solution is able to provide lower *wholesale and/or retail* prices in the future, even though it has not been able to so far. Furthermore, any public intervention always implies the risk of distorting competition in the market. We will look into the necessary conditions for Switzerland to experience lower prices through a market based or laissez-faire approach in section 3.2.

Finally, in section 3.3, we discuss the tools available for Swiss authorities to independently address possible market imperfections at the *retail* level as an alternative to an international (EU) intervention and the laissez-faire approach.

3.1. EU intervention

High international roaming prices in the EU have motivated the European Commission to make a proposal to regulate prices both at the wholesale and retail level.[12] As this proposal is based on EU internal market acts and not on competition acts, the regulation will apply to all mobile operators in the EU – not only to dominant operators.

[12] In general, a European regulation applies equally in all 25 Member States. It comes into effect as soon as it is adopted by the European Parliament and the Council of Ministers and published in the Official Journal of the European Union; it requires no further transposition into national law. The Commission hopes that the new EU regulation will be approved by the European Parliament and the Council of Ministers by summer 2007. Since the EU regulation on mobile roaming is an internal market measure with relevance for the European Economic Area (EEA), we expect that the regulation will also be extended to the EEA EFTA countries Iceland, Liechtenstein and Norway. Source: European Commission (2006b).

The Commission intends to regulate wholesale prices based on the average peak EU mobile termination rats (MTR) for operators with significant market power weighted by active subscribers; this rate amounts to about 20 Swiss centimes in October 2005 (12.64 eurocents). The Commission proposes to use price ceilings:

- A limit of twice the MTR would be applied to wholesale prices for calls within the visited country;
- A limit of three times the MTR would be used for calling back home or to another EU country;
- A maximum of 30% margin above the wholesale rate would be set at a retail level;
- A limit at one MTR plus a margin of 30% would be set for receiving calls abroad.

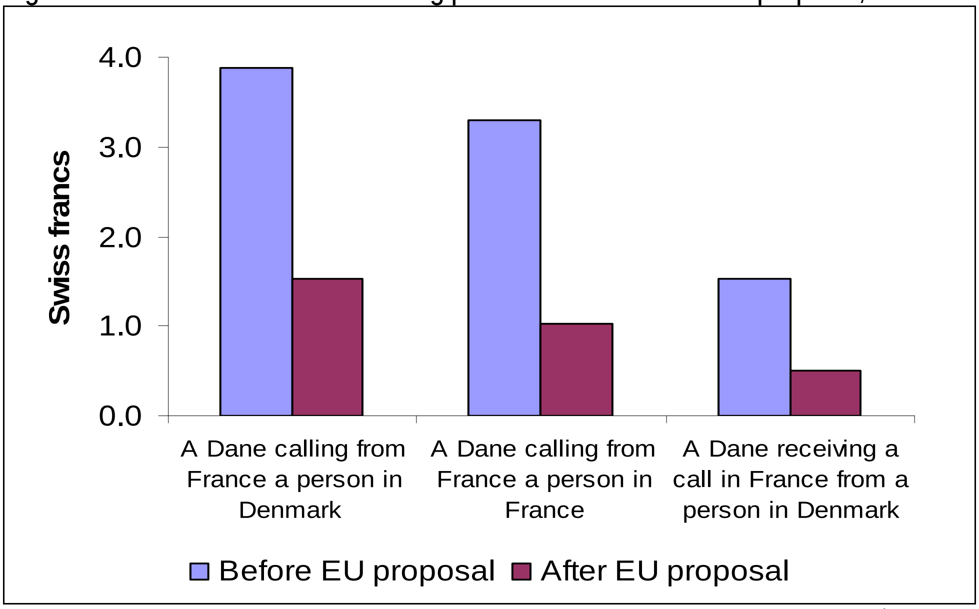
Furthermore, the Commission will require mobile operators to provide information to end-users on roaming charges free of charge, either via SMS or a mobile call. According to the proposal, national regulators shall monitor that the mobile operators meet the requirements.[13]

The European Commission anticipates that the EU proposal will enter into force in summer 2007. As this is a proposal to a regulation, the rules will have direct legal effect in Denmark and in other EU Member States.

Consequences for the EU Member State Denmark

If implemented in its current form, we estimate that the EU proposal will save Danish end-users around 80 million Swiss francs a year. This is the result of an expected drop in international roaming prices of more than 50 %[14], cf. Figure 7.

Figure 7: Danish international roaming prices before and after EU proposal, 2006



Source: Copenhagen Economics and web sites of the respective Danish mobile operators (as of 19th of July 2006): TeliaSonera's international roaming, 3's international roaming for private, basic subscriptions, Sonofon's international roaming for private subscriptions, TDC's international roaming for private subscriptions.

Note: Prices include VAT. The blue columns indicate the price a Dane currently pays, while the red columns indicate the price a Dane is expected to pay if the proposal is implemented.

[13] As the European Commission believes that there are fewer grounds for concerns for SMS and MMS, the Commission's only warrants that national regulators shall monitor closely the two types of messages.

[14] The EU market for international roaming is estimated at around 13.6 Billion Swiss francs (8.5 billion Euros) a year, cf. European Commission (2006b). Under the new regulation, the European Commission (2006b) expects EU end-user to safe more than 50 % or 8 billion Swiss francs (5 billion euros) compared to today. Adjusted for the number of inhabitants in the Denmark, Danish end-users will stand to save more than 80 million Swiss francs.

Consequences for Switzerland

If the Swiss international roaming prices were reduced as much as the average EU international roaming prices, we estimate that Swiss end-users will save almost 130-145 million Swiss francs a year. Or put differently, if the Swiss international roaming prices stay at their current level, the Swiss end-users will be paying around twice as much as an average EU end-user.

Consequently, it could be in Swiss interest to be covered by the same regulation. However, as Switzerland is neither part of the EU nor the EEA (European Economic Area), Switzerland must instead enter into a bilateral agreement.

In principal such an agreement is possible as the EU and Switzerland have entered into similar agreements on other services; for instance agreements on land and air transport. However, in practice it may prove difficult to achieve a similar bilateral agreement encompassing international roaming as a bilateral agreement would contain commitments on both parties. Particularly, Swiss authorities would have to regulate wholesale international roaming services ex-ante in order for EU end-users travelling to Switzerland to benefit from the agreement. However, the sector specific authorities in Switzerland do not currently have the competence to regulate international roaming wholesale prices. Moreover, the Swiss sector specific legislation is based on the principle of ex-post regulation (with lengthy appealing procedures); not ex-ante. Changing these two features would require a reform of the telecommunications act, which is very unlikely to happen as the act was recently reformed and took several years.

Furthermore, the lack of EU internal market provisions in Switzerland makes it necessary for the Swiss authorities to designate Swiss mobile operator(s) as having a dominant position in the wholesale market for international roaming services in order to regulate wholesale prices. This may prove difficult illustrated by the fact that the European Commission chose to regulate through the internal market provisions for the same reason that is was difficult for the Member States to designate their own operators as having a dominant position in the market for international roaming services.

Conclusions

The EU proposal is expected to reduce international roaming prices by 50 percent for EU Member States by regulating both wholesale and retail prices. If Switzerland were to engage in a bilateral agreement with the EU, we believe that Swiss consumers and businesses would experience similar price reductions. The European Commission estimates that the highest consumer savings require regulation of international roaming prices at both wholesale and retail level which would save EU end-users between 5.3-5.9 billion euros in the EU. Adjusted for the number of inhabitants in Switzerland, Swiss end-users would save about 130-145 million Swiss francs a year (83-93 million euros).

However, despite similar agreements on other services such as land and air transport, we believe that a bilateral agreement with the EU covering international roaming services is unlikely. The reason is that we do not believe that the Swiss authorities have the necessary competences to fulfil the likely commitments of regulating international roaming wholesale prices because the sector specific authorities cannot regulate international roaming, and because an agreement would require designating Swiss mobile operators as having a dominant position in the roaming market, which seems technically difficult.

Therefore, some kind of more far reaching change in Swiss legislation would be necessary to enter into an agreement with the EU. By the time negotiations and adaptations were complete, technological developments and potentially also commercial negotiations leading to lower international roaming prices might have made the agreement obsolete and therefore the changes in legislation unnecessary.

3.2. Laissez-faire

It could be the case that an agreement with the EU on international roaming is unnecessary from a Swiss point of view, anyway. For example, new technologies and pan-European groups and alliances emerge, which may provide a market solution with lower international roaming wholesale and retail prices. This possibility is important to take into account as any intervention may distort competition and investment incentives on international roaming services and other related products. We investigate this possibility below.

International roaming wholesale prices

Even without a bilateral agreement, there is a chance that Swiss operators will experience lower international roaming wholesale prices. The reason is the emergence of new technologies combined with the fact that Swiss mobile operators are either part of an international group, or are members of international alliances mainly based in the EU.

During the last couple of years, new technologies have been implemented permitting mobile operators to direct their subscribers' roaming traffic onto specific networks[15]. Consequently, mobile operators may direct international roaming traffic to networks of operators charging the lowest prices which could spur competition on the wholesale level leading to lower prices.

Furthermore, the Swiss mobile operators could choose to direct the roaming traffic of their subscribers onto the networks of their EU based partners. The latter may in turn choose to keep international roaming wholesale prices identical between other EU operators and their Swiss partners. As international roaming wholesale prices in the EU are expected to drop as a result of the EU proposal, this implies that Swiss operators would experience lower wholesale prices. The major mobile operators in Switzerland are in fact closely connected to EU based mobile operators either through ownership or alliances, cf. Box 3.

Box 3: Overview of Swiss operators' relationship to different groups and alliances

The largest Swiss mobile operator, Swisscom Mobile is in an alliance with the largest European operator Vodafone. The number two operator, Sunrise, is owned by the Danish mobile operator TDC and is member of the European alliance, Starmap Alliance containing operators from most of the EU countries. Orange Switzerland is similarly owned by the French group Orange and is part of the international alliance named Freemove Alliance also containing operators from most of the EU countries.

Source: Copenhagen Economics.

Nevertheless, charging lower wholesale prices solely due to partnerships are in stark contrast to the fact that EU operators would have incentive to charge higher prices than the EU regulated prices to the Swiss operators. Consequently, it is of course not certain that an EU regulation of international roaming wholesale prices will actually result in lower international roaming wholesale prices for Swiss operators. But it is possible.

The relationship between wholesale and international roaming retail prices

For end-users, ultimately lower wholesale prices only matters if retail prices decrease as well. However, market imperfections may exist at the retail level preventing end-users in Switzerland from benefiting from lower international roaming wholesale prices. There are two primary reasons for why market imperfections may exist at the retail level.

[15] According to the European Commission (2006b), approximately 80 % of all traffic in the EU today is directed to specific networks.

First, most end-users have little incentive to pay close attention to the international roaming prices when choosing a subscription. International roaming prices are included in the mobile subscriptions along with other traffic types such as local calls to fixed and mobile networks, international calls, prices on the mobile terminals, and the subscription fee itself. For most end-users international roaming constitutes a fairly low part of their mobile expenditure. The implication is that many end-users, specifically consumers, do not pay attention to which operator offers the lowest international roaming prices when deciding on a subscription; rather she pays attention to other more economically important parts of the subscription.

Second, the end-users' lack of focus on international roaming prices is accentuated by lack of transparency. Today it is difficult for most end-users to acquire an overview of which operators offer the *de facto* lowest international roaming prices. Even if the price schemes are getting simpler, the prices may vary depending on whether the end-user is making a local call in the country (s)he is visiting, calling back home, calling to a third country or receiving a call while abroad. Furthermore, prices between operators may also vary on peak hours, on non-peak hours, and on calling to somebody with a fixed or mobile phone. Moreover, the different operators may charge per second, per 15 seconds, per 30 seconds or per minute. All of this reduces transparency.

These two market imperfections are confirmed in two recent surveys conducted by the national regulatory authorities for telecommunications in Norway and Finland. A more detailed description of their findings is presented in Box 4.

Box 4. Two surveys on end-user awareness of international roaming prices

In 2005 both the Norwegian and Finnish telecommunications regulators carried out a survey on end-user awareness of international roaming prices. Both surveys reveal that most customers are little aware of the price for making a mobile call abroad. Only 10% and 20% of the respondents in Finland and Norway, respectively, knew the prices when they were abroad. Approximately 90% of all respondents in the two surveys replied that they use the network that automatically appears on their mobile phones. In fact only 4% of the respondents in survey chose to buy an additional SIM-card in order to benefit from lower prices abroad.

Moreover, the Finnish survey shows that only 4% of the respondents pay attention to roaming prices when they choose their mobile subscriptions. Other services are more important for the choice of mobile subscriptions.

Source: FICORA (2005) and Norwegian Post and Telecommunications Authority (2005).

Against this background, the incentive seems weak for mobile operators to reduce international roaming retail prices in order to attract customers. This in turn implies that lower international roaming wholesale prices will only partly be passed on to end-users. Two indications support this view.

A first indication is the lack of correlation between international roaming wholesale and retail prices. Even though we do not have access to information on wholesale prices, we know that mobile operators tend to offer discounts on wholesale international roaming to preferred operators, such as operators in the same group or alliance[16]. Nevertheless, we find that Orange Switzerland, which is wholly-owned by Orange France (which in turn is owned by France Telecom), does not offer lower retail prices if a Swiss end-user calls from France to a person in Switzerland using Orange France's network. The price is 3.4 Swiss francs for a two minute call regardless of which French network is used, cf. Table 1.

[16] See European Commission (2006b) and various national regulators.

Table 1: International roaming prices for Swiss end-users in France, 2006

Call from / to	Via	To Switzerland	To France	Receiving calls
		---------- Swiss francs ----------		
Swisscom Mobile	Orange	2.2	2.2	1.2
	Bouygues	2.2	2.2	1.2
	SFR	2.2	2.2	1.2
Sunrise	Orange	3.4	2.2	1.2
	Bouygues	3.4	2.2	1.2
	SFR	3.4	2.2	1.2
Orange	**Orange**	**3.4**	2.2	1.2
	Bouygues	**3.4**	2.2	1.2
	SFR	**3.4**	2.2	1.2
Tele2	Orange	3.7	2.6	1.2
	Bouygues	3.6	2.4	1.2
	SFR	3.6	2.5	1.2
Swiss Prices	Average	3.2	2.3	1.2
French Prices	SFR	1.7	0.9	0.0

Source: The web sites of the respective mobile operators (as of 19th of July 2006): Tele2 Mobile classic and pro, Sunrise “avec un abonnement sans option”, Swisscom Natel@basic liberty Euro Passport, Orange Members.
Note: The columns show the prices for a Swiss subscriber, of either Swisscom, Sunrise, Orange Switzerland or Tele2 making a two-minute call from France, either via Orange, Bouygues or SFR France, *to Switzerland* or *to France* or *receiving calls* in France.

The table also shows that Swisscom Mobile does not offer lower international roaming retail prices when using the network of SFR, despite both companies are in an alliance with Vodafone. Retail prices are always 2.2 Swiss francs for a two minute call.

There is one exception when it comes to Danes calling from France. TeliaSonera offers much lower prices to end-users subscribing to its alliance partner Orange. The price for a two-minute call to Denmark is 3.1 Swiss francs instead of 4.2 Swiss francs, cf. Table 2.

Table 2: Two-minute international roaming prices for Danes in France, 2006

Call from / to	Via	To Denmark	To France	Receiving calls
		---------- Swiss francs ----------		
TDC Mobile	Orange	4.3	2.8	1.9
	Bouygues	4.3	2.6	1.9
	SFR	4.3	2.6	1.9
Sonofon	Orange	3.5	2.7	1.7
	Bouygues	3.5	2.6	1.7
	SFR	3.5	2.6	1.7
TeliaSonera	**Orange**	**3.1**	3.1	1.2
	Bouygues	**4.2**	4.2	1.2
	SFR	**4.2**	4.2	1.2
3	Orange	4.0	4.0	1.3
	Bouygues	4.0	4.0	1.3
	SFR	4.0	4.0	1.3
Danish prices	Average	3.9	3.3	1.5
French prices	SFR	1.7	0.9	0.0

Source: The web sites of the respective mobile operators (as of 19th of July 2006): TeliaSonera’s international roaming, 3’s international roaming for private, basic subscriptions, Sonofon’s international roaming for private subscriptions, TDC’s international roaming for private subscriptions.

Note: The prices include VAT. The columns show the prices for a Danish subscriber, of either TDC Mobile, Sonofon, TeliaSonera or 3, making a two-minute call from France, either via Orange, Bouygues or SFR France, *to Denmark* or *to France* or *receiving calls* in France.

However, this does seem like a rare case. For instance, TDC, which is a partner in the Vodafone group, does not offer any retail international roaming discounts when end-users use the network of SFR which is partly-owned by Vodafone.

These are just illustrations of how lower wholesale prices due to alliances do not necessarily imply lower retail prices; however, they are supported by European Commission inquiries revealing that retail prices do not drop when EU operators offer discounts on wholesale international roaming to preferred operators. In fact, the retail prices remain fairly unchanged implying that the retail international roaming operators increase their mark-up and earnings at the expense of consumers. More details on this issue are provided in Box 5.

Box 5. European Commissions inquiries into retail margins

Confidential information indicates that retail margins increase when wholesale international roaming drops. On average retail margins are well above 100 % for international roaming calls and up 200 % for operators which obtain discounts on wholesale international roaming.

Larger operators which are either part of an international group or alliance pay at least 38% less than operators which do not belong to a group or alliance. Consequently, these operators do not pass on lower wholesale international roaming charges to their subscribers.

What is more, Commission’s figures reveal that operators have a margin 300-400% for received calls abroad. As there are no wholesale international roaming charges on this type of calls, operators could easily have reduced the retail prices.

Source: European Commission (2006b)

Rising retail mark-up in the light of decreasing wholesale prices would benefit operators in countries with a deficit on net-travel to their countries. As Switzerland experiences a net-deficit, Swiss operators would profit from lower international roaming wholesale prices and higher retail mark-ups.

A second indication is the excessive prices on receiving a call abroad. For instance, the price a Swiss end-user pays for receiving a call in France is almost four times higher than the costs even though the operator of the visiting network only charges an ordinary termination price – no wholesale international roaming price. Part of the reason that these retail prices are so high, may be that retail operators fear that their subscribers would otherwise choose to receive calls instead of making a call when abroad. This would force Swiss and other European operators to reduce their international roaming retail prices.

All in all, it seems that neither international alliances nor the current technology are able to eliminate high international roaming *retail* prices in the short term to medium term. Nevertheless, the European Regulators Group, containing national regulatory authorities in mostly EU countries, recommends to await any retail regulation until it is unambiguously observed that lower wholesale prices are not passed on to end-users in the form of lower retail prices (see ERG (2006)).

New technology and international roaming retail prices

Below we look into the possibility that new technological developments may lead to lower international roaming prices at the retail level. Naturally, high international roaming prices may stimulate innovation and development in new international roaming technologies. Below we look at two technological alternatives with the greatest potentials for reducing international roaming retail prices – in our opinion. However, we estimate that neither of these alternatives will be able to bring down international roaming retail prices for Swiss end-users in the short to medium run, only in the longer run.

The first new technological alternative is Voice over IP (internet protocol) which has already had a major impact on fixed telephony. The upcoming of 3G and wireless networks technologies, such as Wi-Fi, as well as new terminals, makes it technically possible to also use IP mobile telephony. However, it is expected that most end-user will not benefit from cheaper international roaming prices based on IP telephony in the short to medium term (see European Commission (2006b)).

The second alternative is international SIM cards which enable end-users to call from abroad at much lower prices. Operators such as Riing mobile and United mobile offer these technologies. In order to offer end-users abroad low prices, these operators either acquire international interconnections at low prices or have their own international networks. However, this solution often requires end-users to obtain a new mobile number which means that they must inform people likely to call them of their new number. This is very inconvenient. Hence, this solution is only desirable for customers who travel a lot such as business customers.

Conclusions
The European Commission has little faith that a market based solution would, any time soon, provide lower international roaming prices. Without regulation, the European Commission calculates that consumer savings would increase by approximately 1.5 billion euros in the EU. This is based on extrapolating current market developments and assuming significant political pressure. Adjusted for the number of inhabitants in Switzerland, Swiss end-users would save about 37 million Swiss francs a year (24 million euros).

If a market based solution is to provide low international roaming prices, competition must function well. A driver for competition is new technology and end-user focus on prices.

New technology now makes it possible for mobile operators to direct international roaming traffic to networks of operators charging the most beneficial conditions which could introduce pricing competition at the wholesale level. Furthermore, alliances between Swiss and EU operators *could* contribute to lower international roaming wholesale prices for Swiss operators in light of the diminishing effect of the EU proposal on EU wholesale prices.

However, we find that lower wholesale prices may not translate into lower retail prices; lack of transparency and lack of end-user focus on international roaming retail prices are the primary reason why. Furthermore, we do not believe that the latest technological developments such as IP mobile telephony are able to resolve these market imperfections in the short to medium run, but may be able to do so in the longer run.

Therefore, we believe that a lack of intervention could very well result in unchanged retail prices in the short to medium run, even in the light of falling wholesale prices. We therefore turn to the possibility of Switzerland addressing market imperfections at the retail level using national intervention.

3.3. National intervention

In this section, we address the possibilities of Swiss authorities to regulate international roaming retail prices irrespective of wholesale prices. As we have just argued in favour of Swiss end-users facing fairly unchanged international roaming retail prices even in the light of lower wholesale prices, the possibilities of Swiss authorities to regulate at the retail level becomes a real issue.

Furthermore, Swiss international roaming retail prices will most probably not be affected by the EU proposal, or any EU intervention for that matter. There are two reasons for this. First, EU intervention on international roaming retail prices will not lead to lower input prices for Swiss operators. Second and most importantly, lower EU retail prices will not restrain Swiss operators' price settings on retail international roaming since there is no competition between Swiss and EU operators in providing retail international roaming to Swiss end-users.

Naturally, Swiss intervention at the retail level is difficult due to lack of EU internal market provisions, but rather reliance on competition rules, sector specific rules or/and rules on pricing. For one, in Switzerland, the sector specific authority, which is the Fedcomcom, does currently not have competences in international roaming prices and procedures are lengthy due to delaying effects in case of appeals. The Price Surveillance Authority has to cooperate with the Competition Commission in order to impose appropriate measures: the Competition Commission must first establish dominant position in order for the Price Surveillance Authority to impose appropriate measures. Alternatively, the Competition Commission can, by applying art. 7 par. 2 lit. c of the Federal Act on Cartels, refer directly to inappropriate pricing of dominant undertakings. However, this provision has not yet been interpreted by higher courts and such a case would also be subject to delaying effect in case of appeal. Furthermore, an intervention in Switzerland would probably not solve the issue of high prices that the Swiss end-users pay abroad.

In contrast, for example, the Danish organisation of competencies would not imply the same difficulties. In a hypothetical situation where Denmark was not a member of the EU and therefore did not have at its disposal the EU internal market provisions, the Danish sector specific authority would be competent to fulfil all tasks required. It has competence in all electronic communication markets, including international roaming. Furthermore, it has the competence to conduct market analyses on its own in order to establish dominant position and to impose appropriate measures on dominant operators.

Consequently, given the lack of EU internal market provisions in Switzerland, the emphasis should be on how to organise the telecommunication competencies as efficiently as possible. As of now, we believe that the issue of spread and/or conflicting competence may not be optimal. Accordingly, the example of international roaming implies that Switzerland should consider institutional strengthening of the sector regulator, at the same minimising the costs of long appeal procedures and delaying effects, which are today borne by the end-users.

If Switzerland were to regulate international roaming retail prices, it also could run the risk of overregulation. The Danish principle of minimum regulation would reduce this risk. To illustrate the principle; previously the Danish sector specific authority regulated access and call origination on mobile networks through price regulations. However in the last market review, the authority did not find evidence that any operator had a dominant position in the relevant market. Accordingly, the authority withdrew all obligations. Presently, there are no obligations in the relevant market of access and call origination on mobile networks. Another remedy to reduce the risk of overregulation could be to introduce a sunset clause.

In the absence of international roaming retail price regulation, we believe it could be beneficial to take softer measures to remedy the two market imperfections at the retail level: lack of pricing transparency and lack of end-user focus. As we have seen, lack of transparency and bundling of call services make end-users less sensitive to high international roaming prices. Possible measures to make end-users more sensitive could be to publish prices on the Internet comparing retail prices of the different Swiss operators. Furthermore, in line with the proposal of the European Commission, Swiss authorities may require that mobile operators provide end-users with information on roaming prices free of charge either via SMS or a mobile call. Moreover, the mobile operators could provide information on applicable roaming charges when subscriptions are taken out. Finally, Swiss authorities may use international roaming prices in the EU as benchmark for Swiss operators in order to promote lower international roaming prices for Swiss end-users. However, this last suggestion will not be effective if roaming prices in the EU are equally excessive as in Switzerland.

Conclusions
We have previously shown that retail mark-ups may very well increase when international roaming wholesale prices drop. Accordingly, the European Commission estimates that EU consumers will save an additional 3.2-3.8 billion euros by regulating retail prices in addition to wholesale prices (see European Commission (2006b)). Adjusted for the number of inhabitants in Switzerland, Swiss end-users would save 78-93 million Swiss francs a year (equivalent to 50-60 million euros).

While this speaks in favour of Switzerland regulating at the retail level, we also find it unlikely that Switzerland currently is able to do so.

Apart from direct regulation, several softer measures exist which Swiss authorities may easier be able to implement in order to correct the two main market imperfections of lack of pricing transparency and end-user focus. Examples of soft measures are benchmarking of Swiss retail prices with EU retail prices and requirements for mobile operators to provide end-users with information on roaming prices free of charge either via SMS or a mobile call. However, the telecommunication authorities do not currently have the competence to impose such soft law measures.

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