Working papers prepared for the Productivity Commission

The Productivity Commission distributed a confidential pre-release draft of its report "International Benchmarking of Australian Telecommunications Services" in December 1998, and asked for comments. Telstra asked NECG to comment on the report. In so doing, we prepared six working papers:

- "*Financial performance and comparability*" examines some of the factors that drive differences in telecommunications services in different countries, and comments on the problems of using prices as an indicator of productive efficiency;

- "*Nominal exchange rates and PPP's*" discusses the use of different exchange rate measures in comparing telecommunications services prices;

- "*The USO and the impact of geography on costs*" addresses the impact of demography on telecommunications costs;

- "*Rebalancing*" discusses how price re-balancing such that prices reflect costs impact on relative prices in the different telecommunications markets; and

- two papers, "*Commentary on the Finnish telecommunications market*" and "*Commentary on the Swedish telecommunications market*" describe some of the features of the two lowest priced countries in the Commission's analysis.

The material was provided to the Commission for the following purposes:

- to point out areas where the analysis was an insufficient basis for the initial conclusions. For example, in the pre-release draft the Commission concluded that the price differences between Scandinavian countries and Australia were the result of differences in productive efficiency, yet the Commission provided no material on input costs or input quantities which would sustain such a view;

- to suggest areas where the balance of the Commission's arguments could be improved. For example, the pre-release draft down-played the impact of demographics on costs, in contrast to the weight of evidence that suggests that low customer density (large median distances between subscribers) has a significant impact on costs; and

- to provide some background information on Sweden and Finland, the lowest priced countries in the sample. We specifically asked the Commission to note their light-handed regulation, their lack, in practice, of any industry specific behavioural regulation, their reliance on general competition law, their willingness to sustain significant price re-balancing, and their strong preference for commercially negotiated outcomes over regulated outcomes.

Our most important conclusion is that the balance of the evidence suggests better outcomes occur when telecommunications falls under the same competition rules as any other business in the economy. The evidence, to the extent that one can draw policy conclusions from price comparisons, does not provide an unequivocal endorsement of telecommunications specific behavioural regulation.

We have not attempted to draw together the working papers into a single report, but include them largely in the same form as they were originally provided to the Commission. As a result, the papers include some repetition. And inevitably, the Commission will have made changes to its pre-release report to which we are not privy. Hence, some of the observations we have made may not be germane to their final report.

Financial performance and comparability

In its pre-release draft, the Commission identifies considerable telecommunications services price variation across a sample of countries, and then draws conclusions with respect to productive efficiency from those differences. In so doing, the Commission:

- fails to adequately address important factors that might result in price differences that are unrelated to productive efficiency; and
- erroneously states that the financial performance of some of the comparator companies is similar, and on that basis, concludes that price differences must be a function of productivity differences.

We strongly suggest that Commission review their report to take into account these shortcomings. In particular, we would ask the Commission to undertake a much more exhaustive analysis of financial performance before making their conclusions. A deeper examination of the Commission's data suggests that the most plausible conclusion that can be drawn is that differences in financial performance is a significant factor in the price differentials. This is not the conclusion that they reach.

Factors that influence prices

The Telcos in the sample are all required to remain free-standing, financially viable, telecommunications companies. This clearly means that they must earn sufficient revenue to cover all of their operating costs, make an appropriate return on the capital, and be assured of being able to finance investment costs. Given this, the most we can conclude is that a high price compared to its peers (assuming we have used appropriate exchange rates) could be the result of several different factors, *inter alia*:

- differences in the cost of capital for each of the firms or the returns that each firm must pay to its shareholders – ie financial performance;
- external factors such as demographics that are outside the control of the Telco, but which none the less have an impact on costs;
- differences in the accounting conventions used in price determinations, to the extent that it can pass these costs on to customers; and
- differences in the average age of the assets employed in the network, which in turn depends on the accounting conventions used.

1. Financial performance

The Commission states that:

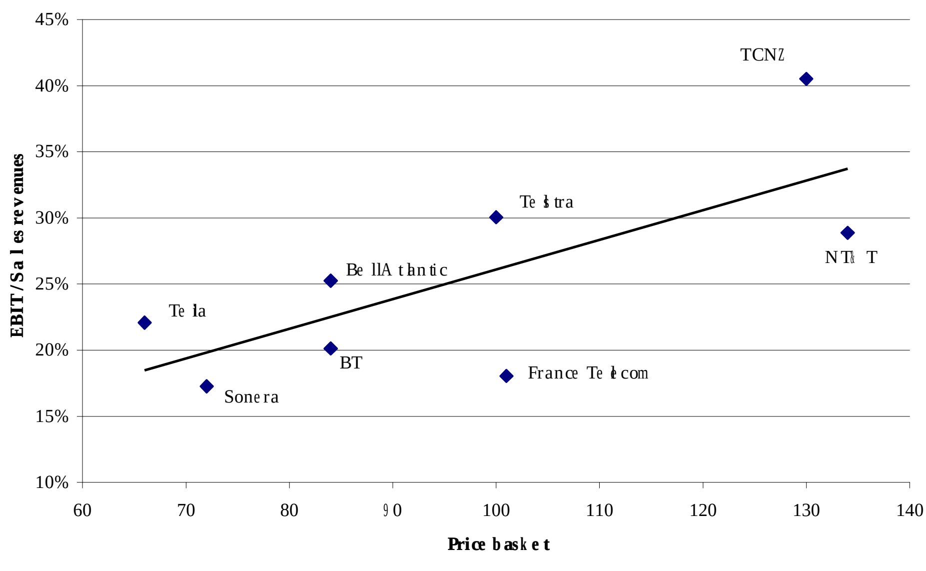
> *"A number of carriers have similar financial performances. This suggests that productivity differences are approximately reflected in their relative prices subject to… . qualifications and assumptions"*

This statement is questionable on the basis of the data presented in the report itself. We doubt whether such divergent returns would be described as *"similar"* by most investors.

The observation that low returns may be a significant driver of low prices in Finland and Sweden is in accords with generally accepted views on these markets; they have historically earned low rates of return. In the case of Finland, ownership arrangements that effectively pay dividends in the form of lower prices (see our discussion paper on Finland) further support this observation.

Finally, there would appear to be at least some relationship between financial performance, as measured by EBIT, and the price baskets presented by the Commission, as shown in Figure 1.

Figure 1. Relationship between EBIT and price basket



Source: Merrill Lynch Global Valuation & Statistical Review (4 August 1998), Sonera and Telia

Of course, the foregoing analysis is simplistic and it would benefit, as would the Commission's study, from a rigorous analysis. This should include economic value added (EVA), which would take into account many other factors, not least of which is the risk free interest rate in each market.

There is no discussion at any stage in the report as to whether the prices of a particular Telco drive a return is that is efficient in the sense that it rewards investors appropriately. Hence:

- since financial performance is likely to be a key driver of prices, but has not been addressed properly by the Commission; and

- since from an economic perspective it is not possible, *a priori*, to say whether low prices are better that high prices,

the Commission is in no position to judge whether prices are efficient, let alone whether Telcos are productively efficient.

We would urge the Commission to undertake a much more exhaustive analysis of financial performance before making any conclusions. A deeper examination of the Commission's data suggests that the most plausible conclusion that can be drawn is that differences in financial performance are a significant factor in the price differentials. It is easy to see the economic damage that could result from failing to recognise this issue. A regulator that confused productive inefficiency with price differences resulting from an efficient but higher return on assets could be likely to impose price regulations that stifle efficient investment.

2. Other factors that influence performance

Productive efficiency

The Commission concludes that productive inefficiency explains the observed price differences. However, the Commission cannot reasonably do so without a more rigorous analysis of the alternatives.

Even if one were to assume that price differences were the result of a productivity differential (and we have compelling evidence that this is not the case), then it does not follow that the productive efficiency is controllable in the short term. For example, if the productive inefficiency were the result of legacy assets in the network or regulatory intervention it is unlikely that price differentials will be eroded quickly.

External factors

There are a range of external factors that have a large influence on a Telcos costs. The most important is probably population density. Very low density areas such as rural Australia are considerably more expensive to serve than urban or inner city areas, an issue we have discussed in our previous paper on the USO, but which is inadequately addressed by the Commission.

Other factors may also play an important role in some markets. For example, a requirement to place cables in underground ducts as opposed to overhead cables can dramatically increase costs, as can the nature of the terrain to be served. Whilst these might not be large factors in respect of an integrated national Telco serving a heterogeneous customer base, they are likely to be of some importance when comparators do not have this characteristic. We understand that, in the case of the US and Finland, that the figures presented by the

Commission were based solely on urban and metropolitan districts. These, of course, cannot easily be compared to Telstra, which has a much more diverse customer base.

Differences in accounting conventions

Telcos that derive their prices based on a return on historic cost asset values are likely to develop a time profile of prices somewhat different from those using current cost values, or those forward looking cost models. There is no discussion of this issue in the Commission's study, except briefly in section 8.4 where they state that accounting differences [in Table 8.1] reduce the comparability of the financial performance measures.

Differences in the age of assets

The average age of the assets can be an important determinant of prices, particularly where assets are long-lived and regulated prices are based on a backward rather than forward looking cost model.

Summary

This is just a sub-set of the factors that can influence performance generally and financial performance specifically. The Commission's report would greatly benefit from a full analysis of these factors before drawing any inference from observed price differences.

Nominal exchange rates and PPP's

In its draft, the Commission uses PPP exchange rates to compare telecommunications prices across different countries. This note comments on the issues involved in using PPPs relative to nominal exchange rates.

As a general manner, nominal exchange rates provide the market's best estimate of the international value of claims in domestic currency. Use of these exchange rates minimises the risk of over- or under-stating the international purchasing power that could be obtained for a given unit of domestic resources. However, in the pre-release draft, the Commission preferred PPP, stating that:

> *"the impact of differences in input prices among countries is compensated for by the use of Purchasing Power Parity exchange rates, rather than market exchange rates... The PPP comparisons measure the burden on consumers of telecommunications prices in relation to the general level of prices in the economy, and also give an indication of the relative productivity of the telecommunications industry vis-à-vis the general level of industry productivity."*

PPP's are not designed to reflect the international value of domestic resources; nor do they allow any inferences to be made concerning productive efficiency; nor do they compensate for differences in input prices. Rather, they are an attempt to 'price' a given basket of goods and services across a range of markets. All a PPP exchange rate does is indicate the terms on which the benchmark basket is available in the markets being compared. This indicator is useful to the extent to which an economic interpretation can be put on that basket, and only to that extent.[1]

If the PPP converted price of a particular commodity turns out to be higher in one country than another, it means that the price of the commodity in question is higher relative to other domestic prices. Thus, PPP conversion compares relative prices of goods in the two countries. Relative prices of goods can vary between countries for many reasons other than differentials in productivity. For example, population density and other factors mean that land prices in Japan tend to be higher, relative to other domestic prices, than in Australia. This is reflected in relative housing prices. But the observation that we can purchase more phone calls from a foregone land purchase in Japan than in Australia tells us little about telecommunications.

If PPP is to be used, it is important to know why, and to ensure that the application is appropriate. If the purpose is simply to avoid the fluctuations that characterise nominal exchange rates, then this could be achieved by using an average of the nominal rates taken over some period of time. Conversely, if the purpose is to price the good relative to some basket, then the nature of that basket should be set out.

For example, where inferences are being sought about productive efficiency, it may be meaningful to compare output prices for telecommunications services across countries using

[1] The OECD uses PPPs to ensure that real measures of expenditure on the components of GDP reflect only volume changes. The OECD cautions that they are not relevant as measures of equilibrium exchange rates (taken from the OECD's Technical Notes on GDP measures).

an exchange rate that takes account of international differences in the prices of the inputs used to produce those services. On the (strong) assumption that telecommunications uses about the same inputs as economic activity as a whole, this could be the PPP rate for national income at factor cost. Alternatively, recognising that telecommunications services are highly capital intensive, the PPP rate for machinery and equipment could be used.

If the attempt is to make comparisons of relative output prices (that is, of how telecommunications prices compare to prices for other goods) than the PPP basis used should reflect the demand pattern for telecommunications. It can be seen from the Input Output tables that telecommunications is primarily an intermediate input, with final demand accounting for less than a third of all sales. As a result, the appropriate PPP rate is that corresponding to intermediate inputs.

It is not easy to put an economic interpretation on the international price of a single item, when domestic prices for that item are translated using PPPs. Such a comparison will partly reflect the extent to which the price for that item is high or low relative to the domestic price for the basket. What this means in economic terms is not clear.

Assume for example, that housing costs in Australia are low relative to those in Japan, and that this difference is picked up in PPP's but not in nominal exchange rates. Compared to Japan, US$1 in Australia will therefore buy more when evaluated at PPPs than at nominal exchange rates. Now, assume that the costs of supplying widgets do not depend to any significant extent on housing costs, that widgets are not traded and that productivity levels in widgets are the same in Australia and Japan. As a result, the price of widgets expressed in terms of traded resources, for which the nominal exchange rate is used, will be the same in both countries.[2] However, translated at PPP's, widgets will be more expensive in Australia than in Japan. No normative consequence follows from this observation.

The problems of interpretation are particularly acute when the good being priced differs in important respects from those comprising the basket. An example is when the good being priced is an intermediate input, while the baskets is designed to capture the pattern of final consumer outlays. Expressing the world price of the intermediate input in terms of PPP exchange rates defined from comparisons of final consumer good prices will likely have little economic meaning.

In short, the Commission needs to make it clear:

- why it has chosen to use PPP's rather than nominal exchange rates, and why that purpose is better served by PPP's than by some average of the nominal rates;

- what PPP basis it has used for the conversion, and what economic interpretation can be put on the basis it has chosen; and

- whether the results would be altered by using a different basis.

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2 Hence, for example, if we exchanged Japanese widgets for Yen and Yen for oil, we would get exactly the same amount of oil as if we exchanged Australian widgets for A$ and A$ for oil.

The USO and the impact of geography on costs

1. Introduction

In section 3.1 of its report, the Commission has discussed the impact of the Universal Service Obligation (the USO) on costs. The Commission rightly points out that the USO is designed to ensure access to a minimum standard of essential communications services[3] for all persons in Australia. Telstra is the nominated USO provider, although others carriers are not precluded from providing the service. The Telecommunication Act does not specify the pricing of the USO, but suggests that the question of affordability should be tackled through mechanisms such as competition, price control and targeted assistance.

We would ask the Commission to consider a number of concerns that we have with their discussion of the USO:

- the Commission does not take a position on the various estimates of the USO that have been presented. However, in so doing it has produced a somewhat singular report in that it does not appear to accept that demographics, particularly population density, is a major driver of costs. This is despite considerable evidence that subscriber density has a huge impact on costs and that Australian demographics are particularly extreme in this regard. The reader could easily infer, incorrectly, that the Commission accepts the view that USO costs should be close to 1% of revenues in all countries, irrespective of their demographics. The Commission's study would benefit from an explicit analysis of the impacts of Australian conditions on costs;

- the Commission falls into the trap of making conclusions in respect of efficiency solely on the basis of price comparisons, through its statement that even if one were to accept the upper estimates of the USO, there would still be a performance gap. The Commission simply has no evidence to sustain this position;

- in benchmarking studies, it is usual to adjust measures of performance to take account of external factors. Notwithstanding our concerns over prices as a measure of performance, the report would be much more valuable if the impacts of external factors were rigorously explored; and

- the Commission should consider that there are significant and costly universal service obligations in UK, and to a lesser extent in Finland and Sweden, although they do not have explicit mechanisms for sharing the cost of the USO across carriers.

3 The Minister is empowered to change the type and level of service that should be included within the USO.

2. Structure of this note

This note contains the following additional sections:

- *§3* outlines evidence that shows that Australia faces high costs as a result of its demography, and the impact this might have on the USO. We would urge the Commission to build this discussion into their report; and

- *§4* outlines some features of the USO in three of the sample countries.

3. Factors influencing the USO in Australia

The Commission correctly states that there is some disagreement over the true extent of the cost of the USO, and presents several different assessments. However, in our view the Commission fails to adequately reflect the balance of the evidence in either its discussion of the USO in section 3, and in the conclusions that it draws in respect of its impact on prices. As we noted in our other discussion papers, the Commission should not make any inference concerning efficiency solely from price differences. Such conclusions are of particularly concern when a large component of the apparent differences can be ascribed to factors outside the control of the Telcos. The impact of the demographics of the Australian population is just such a factor. We specifically wish to draw to the attention of the Commission to three areas where the draft report would benefit from revision:

- its characterisation of the current USO payment;

- the balance of its arguments in respect of estimates of the USO; and

- the evidence in respect of the impact of geography and costs, and on the impact of these factors on the sample of international Telcos used in the study.

The current USO payment

In section 3.1 of the report (page 46), the Commission states that:

> *"In 1996-97 the cost of the USO was estimated at $252 million which represented around 1.3% of the total industry revenue in that year."*

This is misleading. The $252m figure was agreed to be convenient through a process of commercial negotiation. There is no general agreement (and certainly no acceptance by Telstra) that the figure is a reasonable estimate of the USO costs. On the contrary, the ongoing disagreement as to the level of the USO triggered the ACA decision to develop a new model. The explicit objective of this exercise was to develop a better estimate of the underlying costs of the USO. The initial results of this exercise resulted in the $1.8bn USO estimate. Accordingly, we would urge the Commission to revise the wording in the report to reflect this.

The balance of the evidence

The Commission discusses a number of alternative estimates of the USO including the 1989 estimates prepared by the Bureau of Transport and Communications Economics (BTCE) and the results from the ACA supervised Bellcore modelling, which yielded the $1.8bn figure. In addition, the Commission cites a report by Ovum, which purports to show that, in the US, the USO represents less than 1% of the industry's total revenue, and Oftel's estimate of the UK USO, being between £50m and £100m compared with an industry turnover of £16bn, or less than 1% of industry revenue. In respect of Oftel, a comparative study prepared for Oftel explicitly notes the impact of population density on Australia.[4]

The Commission states that it is not in a position to assess which of the estimates is appropriate, nor of the USO's impact on prices, although it appears to accept that it does have an impact on costs. In so doing, the Commission leaves the false impression to the reader that the costs of the USO in other jurisdictions are a good guide to the cost of the USO in Australia. This is reinforced by the lack of a detailed discussion of the impact of population density on costs.

The Commission seems to seek to support the implicit conclusion that demographics are relatively unimportant by the use of Ovum's analysis of access charges and interconnection. Ovum's analytical approach, particularly in its review of the Telstra Undertaking, has several serious shortcomings.

Most importantly for the present purpose, Ovum's attempts to correct for differences between countries in the factors affecting costs are deeply flawed. The study does not include two key explanators of costs, total land area and population density. More egregiously, it appears to use the proportion of the population resident in the five biggest cities as a measure of urbanisation (and hence of the extent to which costs should be influenced by the need to serve areas with low population densities). If this were to be a reasonable explanatory factor, it would require that countries are broadly similar in terms of the population density within towns. This is patently unrealistic as can be seen from a simple comparison of urban populations in the US, UK and Australia.[5]

Figure 2 shows the proportion of population living in the largest 5 cities – the indicator used by Ovum. If this measure is assumed to represent some measure of urbanisation, it would imply, quite unreasonably, that Australia is substantially more urbanised than countries such as The Netherlands and the UK which have very high population densities. Furthermore, it fails to take account of the density of the population within those urban centres. Australian cities are generally much less dense than the larger cities in Europe.

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[4] Mason Communications, "Benchmarking Studies for Oftel" 1996 which states that "*Australia has high cost telecommunications infrastructure due to its need for wide geographic coverage across a very low population density.*"

[5] By way of illustration: suppose the US has 8% living in the largest 5 cities, but each of those cities was 20m people (ie. 100m), and the remaining 180m people lived in 72 cities of 2.5m people. Compare this with Australia where 55% of people (say 10m) live in 5 cities, but the remaining 7.5m live in 10,000 conurbations of 750 people each. Which of these two is likely to have the higher local loop unit costs?

Figure 2. Proportion of population in the largest 5 cities

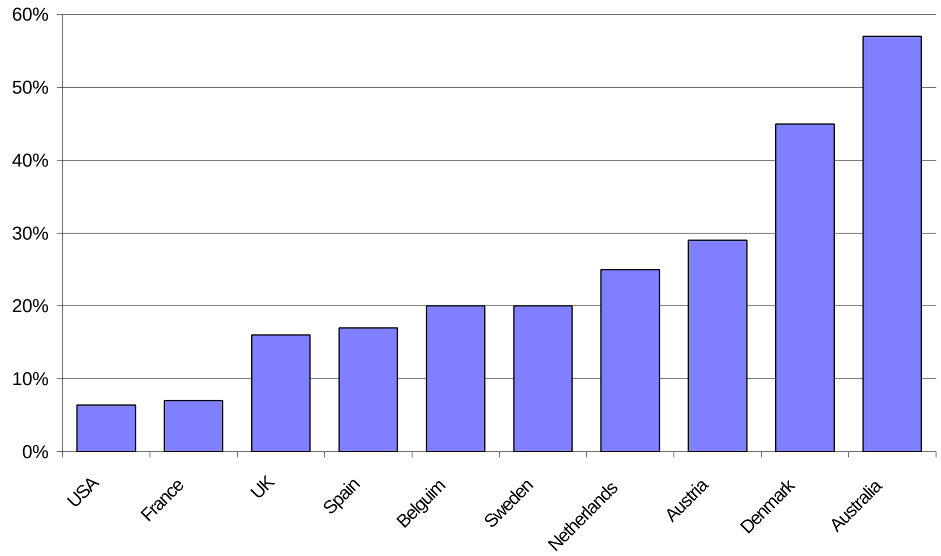
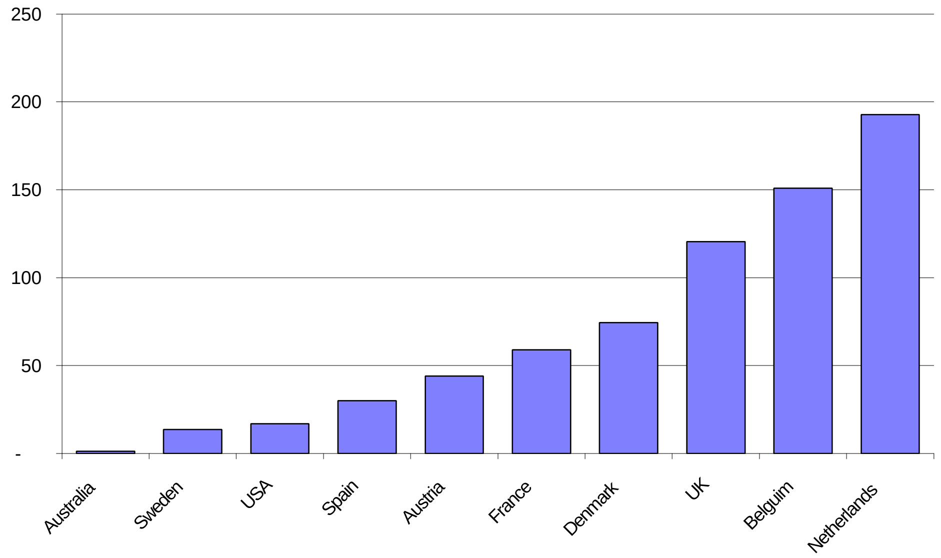


Figure 3. Access line density (lines/sq km)



The contrast between Figure 2, Figure 3 and the data presented in

Table 2, which show access line density (an indicator of Australian demography) is telling. It provides a clear indication that inappropriate measures of urbanisation are likely lead to unreasonable results.

Evidence that geography has significant impact on costs

There are a number of important lines of evidence that the Commission should take into account, which clearly suggest that the costs of providing service are significantly influenced by demography. These include:

- in the recent analysis undertaken for the ACCC, NERA estimated that the cost of access varies as between CBDs and Rural and Remote areas by a factor of nearly four, with annual per line costs being of A$125 in the former and $571 in the latter (with an average cost of access of A$339 per year). This compares with the standard Telstra residential line rental of A$140 per year and business line rental of A$240 per year, both of which the same throughout Australia;

US evidence from regulatory hearings supports the notion that average subscriber line density has a significant impact on costs. Table 1 shows the relationship between subscriber line density and costs derived from two widely used US forward looking cost models, both of which show a significant relationship.

- Table 2 shows the line densities in Australia, and shows that a significant proportion of subscriber lines (26%) are in low density areas in which average line costs would be expected to be well above average;

- analysis of Telstra's own data shows a clear relationship between subscriber line density and costs per line. This is illustrated in Figure 4; and

- econometric studies confirm the relationship. For example, Christiansen et. al state that "*Bellcore developed measures of output and input for the Bell Operating Companies, covering the years 1972 to 1982. The econometric models estimated from these data include measures of network size. The estimated models show* ***substantial economies of density****, but constant returns to scale.*"[6]

The foregoing clearly indicate that demographic factors, particularly population density, have a profound impact on costs.

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6 Laurits R. Christiansen, Philip E. Schoech, and Mark E. Meitzen, "Productivity of the Local Operating Telephone Companies Subject to Price Cap Regulation", Christiansen Associates, May 3, 1994. Page 20. The Bellcore study referred to is "Econometric Estimation of the Marginal Cost of Interstate Access" Special Report SR-FAD-000552, May 1987.

Table 1. Typical line costs based on models used in US regulatory hearings[7]

Line density	Average line cost		Average line cost	
Lines/sq mile	US$/month	US$/month	A$/year	A$/year
	HAI v5.0a	BCPM 3.1	HAI v5.0a	BCPM 3.1
0 to 5	131	162	2,529	3,142
5 to 100	41	63	786	1,227
100 to 200	22	39	433	761
200 to 650	17	33	338	643
650 to 850	14	32	279	610
850 to 2550	12	29	232	553
2550 to 5000	10	27	194	521
5000 to 10,000	9	24	177	461
>10,000	6	21	123	400

Table 1 shows the relationship between subscriber line density and average line cost derived from two US models, the Hatfield Model (HAI) and the Benchmark Cost Proxy Model (BCPM) developed by BellSouth, Indetec International, Sprint and US West. The data in the table is derived solely from the US. The figures given in A$ are simply the monthly US figures converted to annual A$ using an US$0.62 exchange rate. The figures are presented to show that there is a significant relationship between costs and line density which has been heavily scrutinised in US regulation. However, there are shortcomings in the models which mean that the results cannot be directly applied in Australia. For example, the Hatfield model has been criticised for under-estimating the dispersion of customers in rural areas, and in consequence, it under-estimates costs.

Table 2. Australian line densities[8]

Region	Area Sq km	Area Sq miles	Services Est.%	Services No.	Line density Lines/sq mile
CBD	52	20	5%	464,334	23,127.4
Metro	56,121	21,668	68%	6,551,196	302.3
Provincia	163,596	63,164	16%	1,501,073	23.8
Rural	7,366,564	2,844,230	11%	1,063,397	0.4
Total	7,586,333	2,929,083	100%	9,580,000	3.3

Table 2 shows the distribution of line densities within Australia. A significant proportion of the population live in low density provincial and rural districts which, costs of serving which, on the basis of the data in Table 1 and Figure 4 would be substantially above the average costs of all lines.

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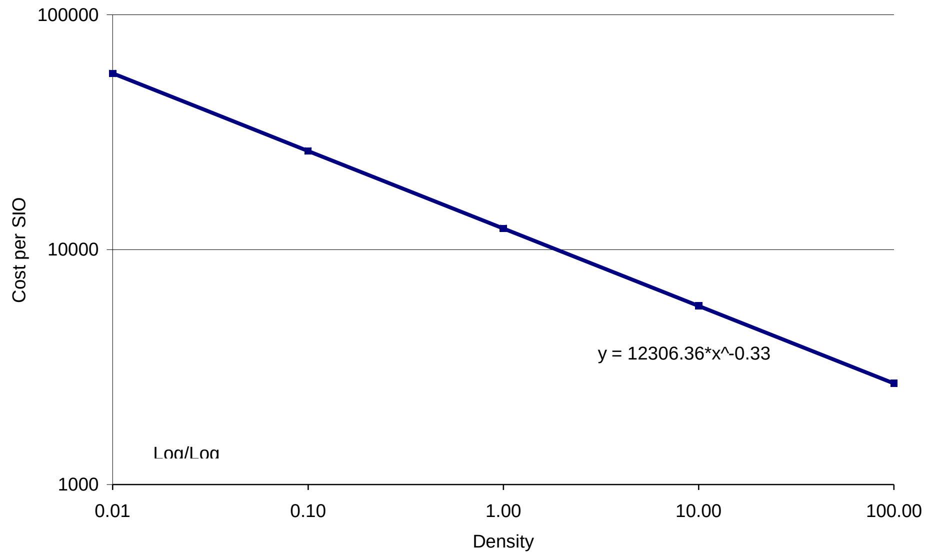
7 Estimates by Charles River Associates using standard model inputs for U.S. states of Florida, Georgia, Maryland, Missouri and Montana using a A$0.62/$US exchange rate.

8 Source: Telstra

Figure 4. Relationship between cost per SIO and SIO density (R^2=0.8)[9]



9 Source: Arthur D Little analysis of Telstra data for 40 sample regions nominated by the ACA.

Customer line density in the sample

In the time available to comment on the Commission's report, we have not been able exhaustively examine the impact of customer density on the access charge ranking and, following that, the total service ranking. However, we would urge the Commission to review their analysis for the following reasons:

- in the report, the US Telcos appear to rank highly on total service for residential customers, driven it appears by the second lowest access charges. We have three concerns:
  - first, it is the practice of US utilities to have a series of different local access packages, which differ in the size of the zone in which there are no local usage charges. As a result, it is important to select a local call zone charging package which is consistent with local call zones across the other Telcos;
  - US Telcos have additional charges for value added services such as tone dialling, call waiting etc.;[10] and
  - the US regions that were selected were for very high density regions of New York and Los Angeles. An analysis by CRA reveals that the line density in these areas is 4,981 and 3,053 and lines/sq mile respectively. This compares with 302 lines/sq mile for metropolitan Australia; and
- we would ask the Commission to check the access charges for Finland and Sweden to ensure that they cover both low and high density areas, and do not solely relate to the large population centres.

4. USO requirements in the international sample

The Commission states that the UK, Finland and Sweden do not have a USO mechanisms. While we agree that this is the case, we would ask the Commission to note that there are costly universal service obligations.

4.1. The UK

BT's current licence (which is being rewritten to conform to EU directives) has two primary conditions, and several subordinate ones covering the USO and various other social obligations. Condition 1 states that BT has to provide telephone services throughout the UK, while condition 2 obliges BT to provide these services also to the rural community. These

10 One highly plausible explanation for this practice is that these services tend to increase the proportion of calls that are successful. In a flat rate pricing regime, there is an argument for extra charges for value added services which have this effect. In timed local call regimes such as Finland and Sweden, the reverse is the case.

provisions are supported by a determination by the DG of Oftel, that this service should include the ability to make voice grade calls, low speed data and fax calls, and to obtain 'access to digital services' such as CLI. Conditions 24, 31 and 32 specify light user and in contact schemes, and services for PWDs respectively. The price of these two latter low cost services is determined by Oftel and by regulation. The light user discount is currently up to 60% off the standard residential line rental. BT's In Contact scheme (which just allows outgoing calls) costs £9.99 per month, even if it requires a new connection to supply, regardless of the cost of provision.

Where the UK differs from Australia is that there is no explicit mechanism for sharing the USO costs across carriers other than BT. It is important to note that BT accepted this largely as an explicit trade-off for obtaining the freedom to re-balance its charges.

4.2. Finland

In Finland, Sonera and other dominant operators are carriers of last resort in as much as they are required by the Telecommunications Act, as dominant operators, to serve all customers in their territory. There is no cost sharing mechanism to cover loss making customers. However, the impact on the Finnish Telcos is substantially less severe than would be the case in Australia, for three reasons:

- re-balancing and geographical de-averaging in Finland have reduced the proportion of connections that would be loss making under uniform tariffs;
- access prices are generally bundled with a number of local calls, preserving revenue from low volume users. Furthermore, the growth of Internet traffic in combination with timed local calls has significantly increased local service revenues; and
- a low income user safety net is provided by the state rather than the Telco.

4.3. Sweden

Licences in Sweden oblige Telcos to provide services. Telia is considered to all intents and purposes to be a supplier of last resort.[11] Again, there is no cost sharing mechanism, but 'be low cost' customers are less of a problem in Sweden given the significant re-balancing and de-averaging that has taken place in that market. Furthermore, it is not unusual for Telcos to seek a one-off connection charge for *new* services in high cost areas.

Pressure to formalise the USO

We gather from our discussions with Telia that the changes in regulations under the EU which necessitate cost based tariffs may well result in changes in both Finland and Sweden.

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11 This has resulted in some 'odd' outcomes. For example, if one customer in a building seeks service from Telia, but the remainder of the building is supplied by a different carrier, then Telia is still obliged to provide the service.

Neither Finland nor Sweden are fully re-balanced in respect of usage and access, so not all customers 'pay their way'.[12] Whilst this has not been a problem in a regime of commercially negotiated charges with very little regulatory intervention, it may well become a problem under rigidly enforced cost-based pricing. In effect, there may be a requirement for an explicit USO recovery mechanism in the future.

12 They are more re-balanced than in most other markets, particularly in Sweden. However, the scope for further re-balancing there has been somewhat curtailed by the imposition of a price cap on access.

Rebalancing

Summary

We are concerned that the Commission does not place sufficient weight on the impact of regulatory constraints on price levels. In particular, it is notable that two of the lowest priced countries, Finland and Sweden, have moved further than any of the other markets to re-balance and de-average tariffs. The report would add additional value to the regulatory debate if the Commission were to investigate the degree to which low prices can be attributed to this re-balancing. It might also address the other efficiency benefits that result from re-balancing.

Sweden and Finland

Telcos in the lowest priced markets in the sample have re-balanced tariffs (in the sense that prices for individual services are close to the forward looking costs of provision) to a greater degree than the other Telcos in the sample. They have done so both in terms of access versus usage charges, and through geographical de-averaging. JP Morgan in a review of the Nordic telecommunications market[13] provided some indication of the extent of re-balancing across different markets. Their comparisons are summarised in Table 3.

Table 3. Extent of re-balancing in different markets (all in US$)[14]

	Rentals ($/month)	Local calls ($/minute)	Regional ($/minute)	STD ($/minute)	IDD ($/minute)
Target (cost reflective) tariffs	$15.00	$0.05	$0.08	$0.10	$0.15
BT	$12.63	$0.04	$0.06	$0.09	$0.63
France Telecom	$8.62	$0.04		$0.14	$0.72
Finland	$10.77	$0.03		$0.06	$0.37
Telia	$14.50	$0.03	$0.07	$0.09	$0.63
Telstra	$8.75	$0.03		$0.17	$0.75

13 Nordic Telecommunications, Tomorrows World Today, JP Morgan, November 1996.

14 JP Morgan's estimates for all except Telstra and Finland. Data for Finland (1996) is taken from the Ministry of Transport and Communications publication. The Telstra data is current, and is for residential customers. The local call charge is based on an average local call duration of 7 minutes.

There are four factors that have allowed this re-balancing to take place:

- neither Finland and Sweden have had price controls which limit the extent of re-balancing;[15]

- regulators and government have accepted the value of re-balancing, even though it has significant distributional impacts. The distributional effects have been offset by the approach to social security in these economies, and by the high penetration of mobiles which has reduced reliance on fixed line services;

- in Finland particularly, but to a limited degree also in Sweden, the fragmented nature of local service provision has forced local service providers to cover all their costs through local (access and usage) charges. Local providers are unable to offset access charges through STD or IDD; and

- the high coverage and penetration of mobiles reduces the reliance on fixed line services.

This important difference is not immediately clear from the analysis or discussion presented by the Commission. For example, it is not possible to make any inference from the ratio of fixed to usage based charges on the PSTN. While access charges for residential customers in Australia are 91% of local usage charges,[16] the equivalent ratios in Finland and Sweden are 74% and 59%[17] (in a dispersion ranging from 26% to 159% in the sample). There is no way of assessing the degree to which prices reflect costs in the study. Nor is there any clear statement to the effect that the cost-reflective nature of prices is a distinguishing feature of some of the lower priced Telcos. Thus, some readers would be uninformed about one of the key factors driving telecoms usage, competitive behaviour and pricing.

This is unfortunate, because the Commission's report would add considerably to debate with a more complete discussion of re-balancing than that presented in Box 3.2. Such a discussion would note, as can be readily gathered from discussions with the Telcos in question, that the Scandinavian countries have accepted the need for and then implemented re-balancing and de-averaging to a greater degree than any other markets. This re-balancing has a large impact on prices.

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15 Finland has no price controls. Sweden imposed a price cap on a basket of services, but did not impose sub-caps, leaving Telia free to re-balance, which freedom it used. Recently, Sweden removed the cap on the basket, but imposed an access price cap. However, re-balancing had moved a considerable distance before the access cap was imposed.

16 Ie excluding calls to mobile, IDD but including Internet.

17 We are also concerned that factual errors in the Commission's report contribute to the disparity. For example, Telia levies additional one-off connection charge for fixed lines that are very costly to install.

Telstra cannot re-balance its tariffs to the same degree because of the structure of price regulation:

- sub-caps within the overall price cap limit the degree to which Telstra can increase access charges. Telstra is limited in its ability to lower prices on other services, given that it has to cover the totality of its costs; and

- Telstra is obliged to offer untimed local calls, which is particularly problematic given the increase in local call duration driven by growth in Internet traffic.[18] This is a regulatory constraint which has a direct impact on costs with no commensurate impact on revenues. The costs must be recovered elsewhere.

The Industry Commission, in its paper on policy issues[19] undertook a simple analysis on the economic impacts of rebalancing, and came to the conclusion that efficiency gains[20] would be between $350m and $400m from complete rebalancing.[21] This was based on the assumption that the long-run marginal cost of access was $235/line/year. If one takes the NERA estimate of $339/line/year, then the efficiency gains would rise by a further $30m to $50m. Access Economics in its recent Review of Price Controls, 1998, indicated that the efficiency gains from full rebalancing of between $800m and $2,000m.[22]

Re-balancing of the type described by the IC also affects the relative price of the each service within a basket. The price changes for each scenario prepared by the IC are presented in Table 4, which can be interpreted as follows. The first two rows give the average prices of local, STD, IDD and access in 1995/1996, and the IC's assessment of the long-run marginal cost of providing those services. The remaining rows show the price changes across each service type that would result from the re-balancing reported by the IC. The second section of the table shows the changes in volumes of service sold as a result of the price changes, given the elasticity measures in the IC report. In each table, we have added an additional case, 'Access at cost', in which the maximum price for access is equal to its LRMC.

It is clear from these volume changes that re-balancing would have a significant impact on the constitution of the basket of services that each customer would consume. Hence, in

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18 Telstra's local call duration has risen from 6.3 mins in March 1998 to 6.95mins in November 1998 (source: Telstra). It is interesting to note the contrast between Telstra and its Scandinavian counterparts. In Australia, the growth in Internet traffic raises Telstra's costs without raising its revenues and is a source of financial concern. In Scandinavia, the growth in Internet traffic has been a boon to local Telcos because calls are timed. It is not surprising that the pricing structure in Scandinavia has facilitated entry of competing local loop infrastructure, notably with local government developing cable networks in Sweden.

19 Telecommunications Economics and Policy Issues, Industry Commission, 1997

20 Reductions in dead-weight losses.

21 The Industry Commission presented 5 scenarios with different constraints on re-balancing.

22 The two figures were based on a liner demand assumption and a constant elasticity assumption respectively.

comparing prices it is appropriate to use the price basket that would arise after the re-balancing has occurred.

Table 5 shows the change in basket price one could expect as a result of re-balancing, taking into account these volume shifts. It compares the price of the basket both before and after re-balancing using the volumes one would expect under the re-balanced prices.[23] Scenario 1 results in substantial increases in small business basket prices because the IC assumes that the price elasticity of demand for access for this group is zero,[24] an assumption it questions in the other scenarios.

One conclusion that could be drawn from this simple analysis is that re-balancing such that access charges reflected the LRMC of provision could result in reductions in the overall price of a basket of services for small business of about 16%, compared with the same basket priced at current prices.

Table 4. Impact of re-balancing on residential prices and volumes

	Local calls	STD	Calls to ISPs	IDD	Customer Access
1995/1996 prices	$0.23	$0.31	$0.23	$1.13	$138.80
LRMC (from IC study)	$0.10	$0.12	$0.10	$0.76	$235.00
Scenario 1	43%	40%	43%	67%	169%
Scenario 2	103%	48%	103%	71%	253%
Scenario 3	126%	51%	126%	73%	169%
Scenario 4	101%	68%	101%	81%	169%
Scenario 5	101%	88%	101%	92%	101%
Access at cost	137%	52%	137%	73%	169%

	Local calls	Long-distance calls	ISP calls	International calls	Access
Quantity	11,200,000,000	9,510,000,000	-	638,000,000	6,450,000
Scenario 1	103%	136%	103%	139%	97%
Scenario 2	100%	131%	100%	135%	94%
Scenario 3	98%	130%	98%	133%	97%
Scenario 4	100%	120%	100%	122%	97%
Scenario 5	100%	107%	100%	110%	100%
Access at cost	98%	129%	98%	132%	97%

23 Note that the re-balancing assumes that Telstra's *net* revenue does not change.

24 As a result, the welfare maximising solution is to recover all joint and common costs from business access, and to charge all other services at marginal cost.

Table 5. Impact on the price of a basket of services for residential and small businesses[25]

	Residential	S1	S2
Scenario 1	63%	103%	147%
Scenario 2	98%	78%	86%
Scenario 3	95%	86%	93%
Scenario 4	96%	89%	96%
Scenario 5	95%	100%	105%
Access at cost	99%	84%	86%

These changes occur because re-balancing tends to increase prices for which demand is inelastic while allowing substantial price falls for the more elastic services. This suggests that rebalancing brings significant gains in consumer welfare.

The above examples are not designed to indicate the precise impacts of re-balancing. Rather, they are intended to indicate some of the forms of analysis that the Commission could undertake prior to forming any conclusions in respect of the causes of the price differentials.

Other issues in re-balancing

Re-balancing in Sweden and Finland, particularly the former, has no doubt been aided by the acceptance of its benefits by government, and by their approach for dealing with social benefits for low income groups. The same circumstances simply do not hold in Australia at present. This is, in itself, an important contributing factor which the Commission might address in its report.

Having said that, it is worth noting that the distributional consequences of the current price distortions are far from being simple. It is true that many low income households generate little traffic per line, and hence benefit from the implicit subsidy to access (which is funded through a tax on usage). However, it is also true that high income households are far more likely to have second lines (which also benefit from the access subsidy) and to make extensive use of the Internet (and hence obtain a subsidy under current arrangements for local call charging). Moreover, to the extent to which the geographical cross-subsidies are capitalised into land prices (as they are likely to be), they benefit land-owners, who are on average more wealthy than the population as a whole. This underscores the point that the transfers built into the current charging arrangements are very poorly focussed, and hence are not likely to be a good means of meeting social policy objectives.

To the extent to which such objectives are now being pursued by means of price controls, they could also be achieved through targeted and transparent policy instruments.

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25 The results for S1 and S2 depend assumptions concerning number of lines. This table assumes 1 line and 3 lines respectively for each business class.

Such a change has scope to bring significant gains in allocative efficiency. Additionally, price re-balancing could bring other gains which are also of great importance, such as:

- re-balanced tariffs considerably reduce the problems associated with access and interconnection, not least because there could be no need for an access deficit charge (ADC);

- it could increase the incentives for investment in infrastructure that competes with the local loop, as would appear to be taking place in Sweden;

- efficient substitution from fixed lines to mobile would be encouraged, particularly in low use areas such as holiday homes. Mobile penetration in Finland and Sweden is highest in the world. By extension, this could also improve the incentives for suppliers to improve mobile coverage; and

- rebalancing could foster efficient competition in the sense that entry – be it in local or long distance service – could no longer be based on exploiting a tariff distortion, but would have to be based on innovation or a real efficiency advantage.

Finally, looking to the longer term, it is worth noting that rebalancing is of central importance to promoting technological change in telecommunications. The cost structure of telecommunications is shifting to one in which the fixed (or non-traffic sensitive) costs predominate, while the marginal costs of usage have become very low. This creates scope for new, usage-intensive, applications, such as those that rely on highly distributed data bases. However, the current pricing structures for usage (needed to fund the shortfall on access) could distort the deployment of these usage-intensive applications. As a result, countries which delay in accepting price rebalancing will potentially draw less benefit than they could from the technological developments now underway.

Commentary on the Finnish telecommunications market

This commentary on the Finnish telecommunications market has been prepared from discussions with and materials provided by Mr Arno Wirzenius, a Finnish consultant.

1. Introduction

The Commission's draft benchmarking report on Australian telecommunications seeks to compare the prices of baskets of telecoms services across nine countries. The report identifies that Finland has the lowest prices in the sample across both residential and business baskets. For example, the residential basket price for Australia is reported as 496 compared with a basket price of 384 in Finland, a 29% difference.

The Commission expresses the view that the price differences indicate that there is a 30% productivity gap between Australia and the lowest priced in the sample. For reasons we have presented to the Commission, we do not think it is possible to reach such a conclusion on the basis of prices alone. However, we do think that the Commission's report would be much more useful if it were to address factors in the market that would drive the differences. We do not dispute the generally accepted view that telecommunications costs in Finland are amongst the lowest in the world.

This paper addresses some of the characteristics of the Finnish market which would help the reader to understand whether the factors that contribute to low prices in Finland are applicable in Australia.

In the interests of balance the Commission should consider how it addresses these issues in its report, so that the price comparisons can be placed in a framework useful for informing policy.

Summary of conclusions

The factors that appear to contribute to the low prices in Finland are:

- Finland has allowed considerable pricing freedom, which has resulted in de-averaging and some re-balancing of prices in respect of access and usage to a greater degree than Australia, New Zealand and other European markets;

- pricing flexibility and re-balancing have been facilitated by a number of factors including the historical separation of local services from mobile, STD and IDD, the high penetration of mobile, the acceptance of direct social security payments to deal with low income subscribers, and the light-handed system of regulation;

- the regulatory approach is best characterised as light-handed in comparison to regimes in the UK and Australia, and consistent with Finnish general competition regulation. The regulator has shown a preference to encourage industry participants to resolve issues through commercial negotiation. The regulator has rarely intervened in pricing practices, and then only on grounds that would be consistent with general competition law. There is no specific price regulation, nor are there any licensing requirements outside mobile.

- while the history of diverse ownership has given rise to re-balanced and geographically de-averaged prices, there is now a considerable degree of vertical integration between local, mobile, STD and IDD. Structural separation *per se* is not the driver of low prices in Finland. Indeed, one of the key changes at liberalisation was to remove franchises and constraints on vertical integration;

- the CAN is not unbundled in Finland, nor are prices of leased lines regulated in any way. Neither of these appear to have resulted in excessive prices or a lack of price competition; and

- the nature of ownership of the local Telcos has directly contributed to low prices. Specifically, many local Telcos are community owned, paying dividends in the form of lower prices to customers. This is set to change under the EU.

2. The extent of re-balancing

Summary

In this section we observe that Finland's prices are both re-balanced and de-averaged to a greater degree than Australia and most other European markets. This is reflected in local access charges, local usage charges, STD charges *and* leased line charges. This is, to some degree, a historical legacy resulting from the diverse ownership of local provision. It is worth noting that the two markets that are generally accepted to have re-balanced and de-averaged the most, Finland and Sweden, are also those with the lowest prices in the sample. Facilitation of re-balancing, whether fostered by a structural legacy or light-handed regulation which guages outcomes by general competition rules, appears to be a factor in lower prices.

Re-balancing

It is difficult to obtain definitive measures of tariff balance without some information on the underlying costs of provision. Such information is not readily available in either Sweden or Finland. Table 6 shows the ratio of local call usage expenditure to access charges across the Telcos in the Commission's sample that do not have a significant block of zero priced calls.[26] When one considers that Finnish local Telcos *must* recover all their costs from local charges (in contrast to Australia) and that Sweden is fully re-balanced then, to the extent that one can draw any inference on costs from price one could conclude that Finnish re-balancing lies somewhere between Sweden and Australia.

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26 Eg Canada, New Zealand and the US.

Table 6. Ratio of local calls to access based on Commission data

France	159%
Australia	91%
Finland	74%
Sweden	59%
Japan	50%
UK	50%

There are two other pieces of evidence which suggest that re-balancing in Finland has moved further than Australia. Table 3 shows Finland and Telstra tariffs against an 'idealised' pricing structure suggested by JP Morgan.[27] Finland would appear to be as close to the 'ideal' as any of the sample. Indeed, given that Finnish Telcos cannot subsidise from STD and IDD, it suggests that Finland may be close to fully re-balanced but of a lower cost base. One probable reason for the apparently lower cost is likely to be the unusual ownership structure of local services in Finland.

Table 7. Extent of re-balancing in different markets (all in US$)[28]

	Rentals ($/month)	Local calls ($/minute)	Regional ($/minute)	STD ($/minute)	IDD ($/minute)
Target (cost reflective) tariffs	$15.00	$0.05	$0.08	$0.10	$0.15
BT	$12.63	$0.04	$0.06	$0.09	$0.63
France Telecom	$8.62	$0.04		$0.14	$0.72
Finland	$10.77	$0.03		$0.06	$0.37
Telia	$14.50	$0.03	$0.07	$0.09	$0.63
Telstra	$8.75	$0.03		$0.17	$0.75

Finally, we note that ongoing rebalancing over the last 5 years has been modest, despite there being no price regulation and considerable competition within the market.[29] Access charges have risen by, typically, 22% per annum, whilst usage charges have fallen by about 25% per annum. This is shown in Figure 5.

While this evidence is indirect and lacks cost data, it tends to support the prevalent opinion on Finland, that prices in that market are more cost reflective than most, although there is still some room for further change. But in contrast to Australia, there is no rebalancing necessary in respect of STD or IDD.

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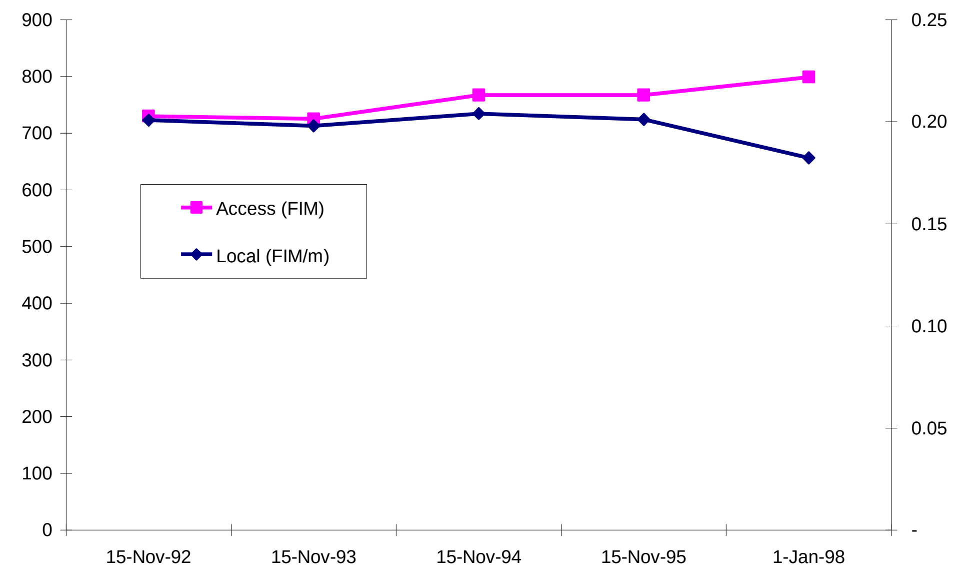
27 Nordic Telecommunications, Tomorrows World Today, JP Morgan, November 1996.

28 JP Morgan's estimates for all except Telstra and Finland. Data for Finland (1996) is taken from the Ministry of Transport and Communications publication. The data for Australia (current) is from Telstra.

29 The key players in the market are the members of the Finnet Group, Sonera, and Telia. But there have been a number of recent entrants such as RSL Com which are still new and small but which have been particularly aggressive in their entry strategies.

Figure 5. Comparison of local access and usage charges (1997 FIM) in Finland



De-averaging

The other notable feature of Finland is the significant geographical de-averaging. Figure 6 shows the distribution of access charges across Finnish Telcos.[30] The mean price is FIM730/year.[31] The maximum value is 25% above this level at FIM916; the minimum charge is FIM441, 40% below the average. The same distribution is apparent in the total household expenditure on local services (see Figure 7). Hence, the explanation for the spread of access charges is not related to the structure of individual tariffs in respect of fixed and usage services. It is also clear that subscriber line density does not explain much more than 20% of the observed variation. Figure 8 shows the relationship between local expenditure and subscriber line density across the Finnish Telcos, which yields an R^2 of 0 21.

[30] Price Level of Telecommunications Charges in 1997. Ministry of Transport and Communications Finland, 16 April 1998.

[31] The 730 figure differs from the 799 figure used earlier in the report. The former is unweighted by number of lines, while latter is weighted.

Figure 6. Distribution of access charges across Finnish Telcos (1997 FIM)

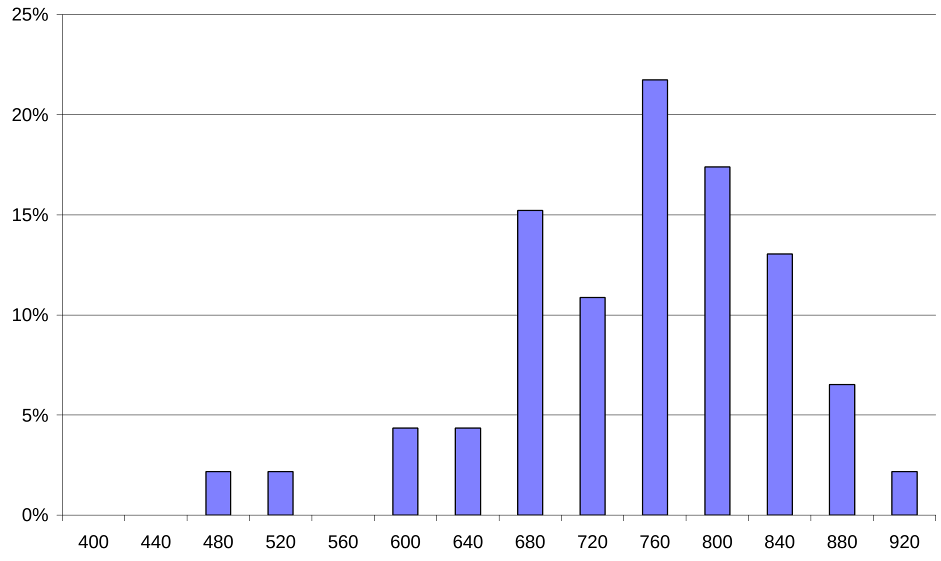


Figure 7. Distribution of household local telecom expenditure across Telcos (1997 FIM)

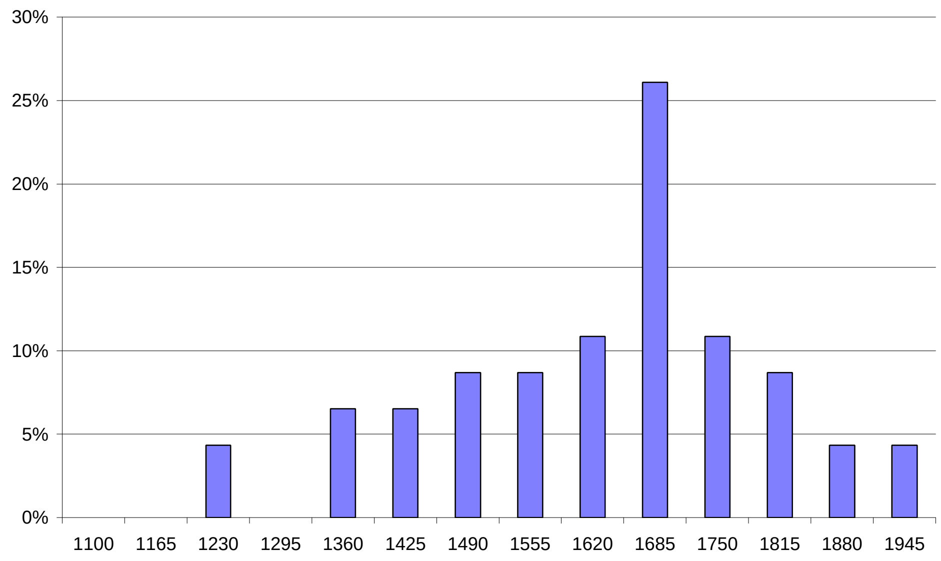
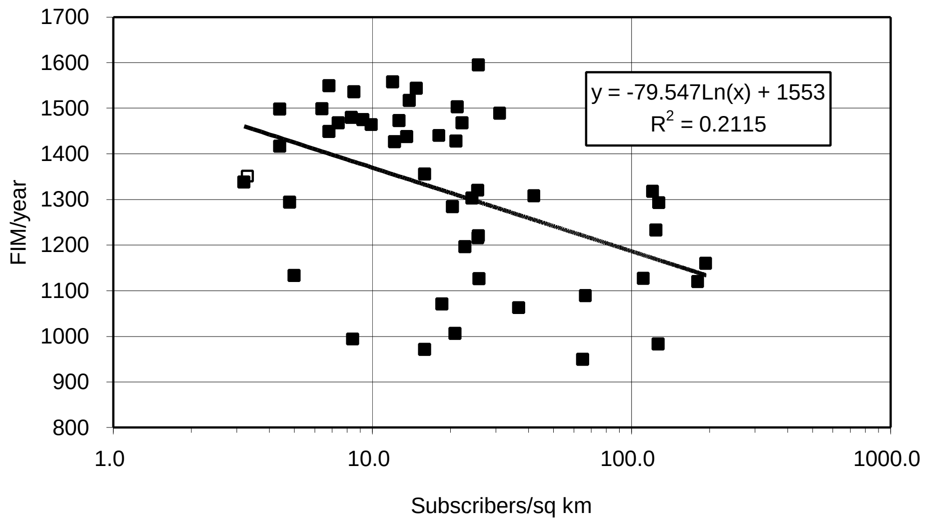


Figure 8. Relationship between subscriber line density and local charges (1995 FIM)[32]



Prices of leased lines

Pricing of leased lines has to be cost related, based on accounting data (regulation 1300), and charges to operators must not be higher than end-user prices. No other price control exists. Leased line charges went up considerably when the obligation to lease to other operators was introduced.

Sonera leased lines for copper are the same as for connections. Finnet leased line charges are generally higher than access charges (see Table 8 and Table 9).

Table 8. Typical Finnet access and copper leased line tariffs (Kymi Telco)

	Access1	Access2	Access3	Leased line, copper
Connection	3600	1200	350	1220
Monthly fee	45	80	125	114.70
Local calls included	15	15	125	n/a

32 Source: Arno Wirzenius, 1995 based on Finnish Telecoms Statistics. The average subscriber line density in this chart can be compared with the average line density in Australia of less than 1.5/sq km.

Table 9. Typical Finnet leased line tariffs (Kymi Telco)

Subscriber connection, normal quality	Connection 1220, rental 114.70 / month
Subscriber connection, better quality	Connection 1403, rental 131.80 / month
Subscriber connection, 4-wire	Connection 1403, rental 219.60 / month
Subscriber connection 2 Mbit/s	Connection 10,004, rental 1464 / month up to 3 km, additional km 146.40 / month
Leased line 2-wire inter-exchange	Rental 305 / month per km
Leased line 2 Mbit/s	Connection 12,200, rental up to 1 km 1220 / month, rental beyond 1 km 305 / month per km to 10 km, thereafter 134.20 / month per km

3. Factors contributing to pricing flexibility

Summary

In this section, we identify some of the factors which provide significant pricing freedom for the market participants. The key factors are the light-handed regulatory regime based primarily on general competition law, the legacy of diverse ownership, the high penetration of mobile and the social security system. The most important of these is the nature of regulation. Finland shows that regulators need not intervene in pricing or other decisions in order for the market to deliver low prices, except by reference to normal competition law. We believe it would be useful for the Commission to consider it in its study.

3.1. Light-handed regulation.

There are three main agencies that have some responsibility for regulating the Finnish telecommunications sector:

- Ministry of Transport and Communication (MoTC) responsible for telecom policy;
- Telecommunication Administration Centre (TAC), a section within the Ministry, responsible for many supervisory tasks such as type approvals, standardisation, numbering and allocation of radio frequencies; and,
- Finnish Competition Authority, responsible for anti-trust issues of which the TAC and Competition Authority are the most important. In addition, Telecoms is governed by The Telecommunication Act.

The Act appears to support significant powers to regulate telecoms. It places specific provisions in dominant players, such as supply of last resort. It precludes certain types of bundling activity, specifies requirements for cost based tariffs in respect of dominant Telcos, requires price disclosure and specifies certain accounting procedures. But the wording of the Act does not give a flavour of the way in which it translates into regulation.

Licensing

Finland abandoned the requirement for licensing mid 1997. Licensing is needed only for some services needing radio frequencies, such as GSM and other similar mobile services. There is a requirement to 'notify' the MoTC, on one page, but there are no conditions attached to the notice.

Pricing

The lack of regulation is most apparent in pricing.[33] The rules appear stringent:

- Prices have to be divided into installation charges, rentals, and other charges (mainly usage);
- rates set by dominant operators in the market segment within which they are dominant must be cost-based, *but there are no rules or guidelines on what this means, and in practice prices vary significantly* (see Figure 6 through Figure 8) *and dominant suppliers can discount*;[34]
- Finland has a consumer tariff publication requirement.[35] Tariffs may include bulk discounts; and
- the Act precludes bundling of equipment and other services, *but there is a great deal of anecdotal evidence that just such bundling occurs in the large business market* as a means of modifying published tariffs.

There are also tariffs in place which appear to constructively bundle services. Local usage and access are commonly bundled, but in addition, the Finnet Diana tariff relates discounts on services to total bill size, duration of contract and range of services, as illustrated in Figure 9.[36]

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33 The official regulation on charging in public telecoms networks is set out in the following document: http://www.thk.fi/englanti/document/thk31a97.pdf.

34 For instance Helsinki Telephone offers a 9% discount on subscriber lines for invoices exceeding 4 million FIM and 6% for more than 4,000 lines.

35 MoTC regulation 1300 section 6

36 The Competition Administration is presently working on the Finnet Diana bundling system. They have yet to establish the principles to be followed on such matters.

Figure 9. The Finnet Diana tariff

Diana is a business discounting package based on bill size and the duration of the contract, as shown in Table B1 and Table B2.

Table B1. International discounts										
Invoiced amount every 2 months (FIM)	Discount % without STD agreement' Agreement duration years					Discount % with STD agreement Agreement duration years				
	1	2	3	4	5	1	2	3	4	5
200 – 499	4	5	6	7	8	7	8	9	10	11
500 – 999	5	6	7	8	9	8	9	10	11	12
1000 – 1999	6	7	8	9	10	9	10	11	12	13

Table B2. STD discounts				
Invoiced amount every 2 months (FIM)	Agreement duration years			
	1	2	3	5
200 – 500	9	11	13	15
501 – 1000	11	13	15	17
1001 – 2000	13	15	17	19
2001 – 5000	18	19	20	21
5001 - 10,000	20	21	22	23
10,000 - 20,000	22	23	24	25
20,000 - 50,000	24	25	26	27
50,000 – 100,000	25	27	28	30
100,000 – 200,000	31	32	33	34
Over 200,000	32	33	34	35

An additional discount of 2% is available for frequently used numbers (subscribed, abbreviated dialling to a maximum of 9 numbers). There are also discounts for mobile, leased lines, etc, and for calls between a PABX and a company mobile when there is a leased line from PABX to mobile switch.

Disclosure

There is a requirement to publish tariffs,[37]. There is no public disclosure of costs. Nor is there any provision for disclosure of such data to competitors through the TAC. However, the MoTC and the TAC have the right to get any needed information for enforcement of the Act (Act section 40). To date, no accounting results are regularly reported to MoTC or TAC,

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[37] MoTC regulation 1300 section 6

except annual profit/loss statements for separation of services. Even in respect of service separation, there are no hard and fast rules as to how this should be done, except it should be consistent across time. This P&L data is not made public.

The MoTC has mandated a relatively simple accounting description[38] that is issued to all operators as a means of meeting the EU requirement.

Telcos with significant market power are required to set interconnect charges on the basis of cost. Hence, the MoTC has released a similar accounting description for calculating the cost base for interconnection tariffs. Telcos that have significant market power are required to publish Reference Interconnect Offers, which must be available to all, but which may include bulk discounts.

3.2. The legacy of separation

As previously noted, the historic separation of local service providers from STD, IDD and mobile has necessitated cost recovery from local charges. As a result, Finland managed to avoid the large subsidies seen between STD, IDD and access prevalent in vertically integrated Telcos. However, as noted in section 5, recent events in Finland suggest that vertical integration to exploit economies of scope is the natural evolution from the initially separated structure.

3.3. High penetration of mobiles

Finland has a very high penetration of mobile phones, in excess of 55% along with near universal geographical coverage.[39] This has significantly reduced reliance on fixed lines for basic services, with the result that:

- demand for fixed lines at holiday homes (which are common yet often in sparsely populated areas) is low; and

- demand for second lines is low.

These both contribute to a wider acceptance of high access and low usage charges, because the adverse consequences of electing not to take a fixed line service are lowered.

3.4. Social security

In Finland and Scandinavia generally, direct social security payments for services for low income or disadvantaged members of the community are preferred to subsidy delivered by service providers. Hence, pricing flexibility is not constrained by the need to provide below cost services. This is in marked contrast to the UK and Australia, where low volume users are generally subsidised by other customers. As a result, the universal service obligation[40]

38 See MoTC regulation 1300, section 5.

39 On reason for this high penetration may be the national championing of Nokia.

40 The USO is an obligation on dominant Telcos to provide services on request.

placed on the Finnish Telcos is easy to manage, and does not require a specific recovery mechanism.

4. Factors that have not been important in respect of price

Summary

The foregoing section outlines the regulatory factors that have facilitated low prices in Finland. It is also worth reviewing factors that do not seem to have been important. These include:

- prohibition on integration, which is discussed in section 5;
- bundling, which is addressed in section 3.1;
- unbundling of the CAN and regulation of leased line price; and
- user pays tariffs for local number portability.

Unbundling of the CAN

There is no compulsory unbundling of the CAN as such, but any operator or user has the right to lease lines, including copper loops at leased line charges. Any Telco, not just those with significant market power, has the obligation to lease such capacity if it is available.[41] There is no obligation to install additional capacity.

Since this obligation was imposed, there has been a significant increase in leased line prices, which are generally equal to or higher than access prices (see section 2). There has been no regulation of these prices.

Number portability

Number portability[42] has been mandatory within a Telco since 1997, and between Telcos within a local call area since 1 Oct 1998. There is also a separate nationwide portable range of numbers, but the subscriber must first change to that number range. Operators have to condition their networks *but charge portability users for the service*. Generally the Telco whose number will be used in another operator's network in the same local call area charges the customer a connection fee FIM 600 – 1,200. In addition the operator charges a monthly service fee FIM 30 - 150. Prices for national number portability are shown in Table 10.

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41 See Act section 15 (1) (2) and regulation 468.

42 See TAC regulations 32A and 33A

Table 10. Charges for national portability (FIM, inclusive of VAT)				
	HPY	Sonera	Turku	Kymi
Connection fee Connection fee, ISDN	450 Not offered	390 780	610 610	0 [being verified]
Monthly fee Monthly fee, ISDN	60 Not offered	36 73	29 29	49 49
Calls to 071 number from local wired connection	0.48 / call + 0.24 / min + local call charge	0.37 / min + local call charge	0.48 / call + 0.58 / min + local call charge	0.71 / call + 0.49 / min
Calls from 071 connection	0.15 / min + normal call charges	normal call charges	0.08 / min + normal call charges	0.71 / call + 0.49 / min call charges ?
Calls from 071 connection to 071 connection within local operator network	0.48 / call + 0.39 / min + local call charge	0.37 / min + local call charge	0.48 / call + 0.66 / min + local call charge	0.48 / call + 0.66 / min + local call charge

HPY means Helsinki Telephone Company, capital region
Turku means Turku Telephone Company, in the south-west
Kymi means Kymi Telephone Company, south-east, some 33,000 subscribers

5. Trends in industry structure

Deregulation in Finland allowed vertical and horizontal integration to take place. Both have occurred. From the Commission's perspective, it is most important to note that vertical integration into mobile, STD and IDD has been a feature of the deregulated market. Hence, regulatory solutions that suggest structural separation run counter to the trends of the sector, and would cause substantial efficiency losses.

The Finnet group has a number of common companies, on a federative basis (owned by group members). The four most important are Radiolinja (GSM), STD operator Kaukoverkko Ysi, Datatie (long distance network, data networks etc.) and Finnet International (international services). The largest Finnet Telco HPY (capital region) has already converted to a listed, profit making company. It has started to buy some stakes in other smaller listed Telcos, and is just now buying out others from Radiolinja. *Even though there is some structural separation between local and other services in Finland, the trend is none the less to integrate local with STD, IDD and mobile.*

The Finnet group is likely to see a number of mergers. The smallest operators will likely be merged into the larger operators. In the long run a Telco with a few thousand subscribers and a staff of 2 to 20 is unlikely to be viable. At present they survive because of the group support within Finnet.

6. The nature of ownership contributes to low prices

Many local Telcos in the Finnet group are unusual, in that they are cooperatively owned by their subscribers. These cooperatives do not earn profits and pay dividends as would a privately owned company, but rather pay an effective dividend through lower prices to their customers. Table 11 illustrates the case using published access tariffs fro Kymi Telco). The connection charge identified in the Access1 package is a share in the Telco, which can be transferred to a new customer for a charge of FIM 100-350 (depending on the location of the recipient). The fee appears on the Telco's balance sheet, rather than as revenue.

Table 11. Typical Finnet access and copper based line tariffs (Kymi Telco)			
	Access1	Access2	Access3
Connection	3600	1200	350
Monthly fee	45	80	125
Local calls included / month	15	15	125

The 'share' effects a 35FIM/month reduction in the monthly fee, which translated into a US$6/month reduction in the monthly fee. We understand that in some other Telcos, the adjustment would be as large as US$10/month per line. Thus, price comparisons are likely to be misleading if they fail to take account of both the price of the 'share' as well as the monthly line rental. In respect of the residential price baskets in Commission's report, a $6/month/line increase in Finnish charges would reduce the price gap from $112 to $40 (from 29% to 9%).

The cooperative arrangement was in place in February 1998, when the Commission study examined prices, but is being unwound under EU regulations.

Commentary on the Swedish telecommunications market

1. Introduction

The Commission's draft benchmarking report on Australian telecommunications attempts to compare the prices of baskets of telecoms services across nine countries. The report identifies that Sweden is the third lowest priced market for residential services (behind USA[43] and Finland), and the second lowest priced across most classes of business, once again behind Finland. For example, the residential basket price for Australia is reported as 496 compared with a basket price of 404 in Sweden, a 23% difference.

The Commission expresses the view that the price differences between Australia and the lower price markets was indicative of a 30% productivity gap. For reasons we have presented to the Commission, we do not think it is possible to reach such a conclusion on the basis of prices alone. However, we do think that the Commission's report would be more useful if it were to address factors in the market that would drive the differences. We do not dispute the generally accepted view that telecommunications costs in Sweden are amongst the lowest in the world.

This paper addresses some of the characteristics of the Swedish market which would help the reader to understand whether the factors that contribute to low prices in Sweden are applicable in Australia.

We suggest that the Commission addresses these issues in its report, so that the price comparisons can be placed in a framework useful for informing policy.

43 We have some concerns in respect of the US which have been dealt with elsewhere.

Summary of conclusions

The factors that appear to contribute to the low prices in Sweden are:

- Sweden has allowed considerable pricing freedom, which has resulted in re-balancing of prices in respect of access and usage to a greater degree than in all comparable markets;

- pricing flexibility and re-balancing have been facilitated by a number of factors including the high penetration of mobile, the acceptance of direct social security payments to deal with low income subscribers, and the light-handed system of regulation;

- the regulatory approach is best characterised as light-handed, particularly in comparison to the regimes in the UK and Australia. Telecomminucations regulation may be characterised as consistent with regulation of other Swedish markets, in line with general competition law. The main regulator in respect of prices and behaviour in Sweden is the competition authority (KKV). The KKV has intervened in the market, but shown a preference to encourage industry participants to resolve issues. There is virtually no industry specific conduct regulation;

- there is some limited price regulation and very basic licensing requirements. The price regulation has not prevented significant price re-balancing to take place;

- Telia is vertically integrated, and is the largest provided in Sweden. Hence, it could not be said in Sweden that structural separation has been required to foster low prices; and

- the CAN is not unbundled in Sweden, nor are prices of leased lines regulated. Neither of these appear to have resulted in excessive prices or a lack of price competition.

2. The extent of re-balancing

Summary

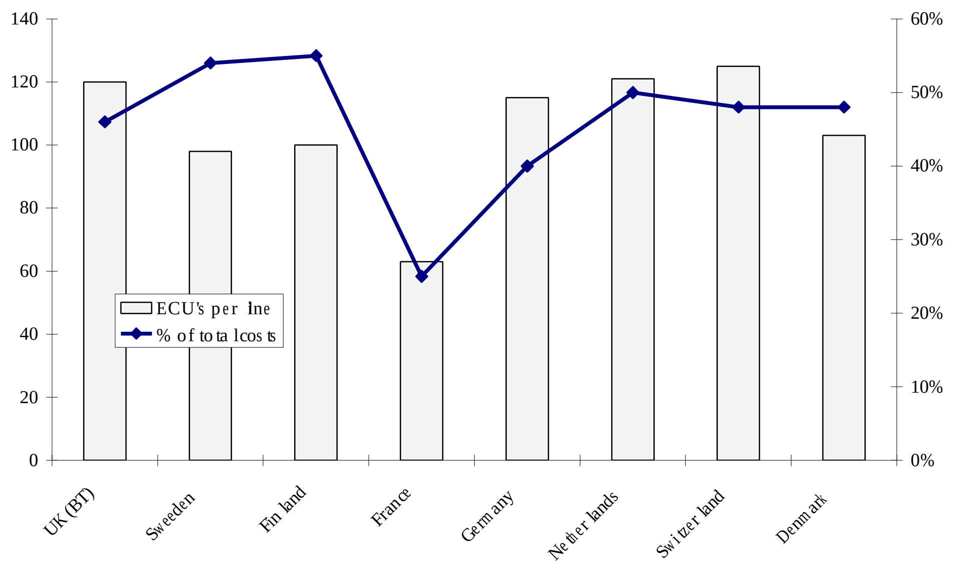
In this section we observe that Sweden's prices are re-balanced to a greater degree than all other markets we have examined. This is reflected in local access charges, local usage charges, STD charges *and* leased line charges. The re-balancing has been the direct result of significant increases in access charges and significant decreases in usage charges that Telia could implement under its price cap which contained no sub-caps of the type seen in Australia. Furthermore, the KKV has not prevented these price changes. Re-balancing has been a major contributor to lower prices.

Re-balancing

Re-balancing in Sweden has been discussed at length in our paper on Finland, and also in our paper on re-balancing, so there is no need to reproduce the material in detail once again. It can be summarised in Figure 10, which shows:

- that fixed charges in Sweden and Finland are low in comparison with most other European charges; and, just as importantly, that
- fixed charges make up a greater proportion of telephony charges in Sweden and Finland than elsewhere.

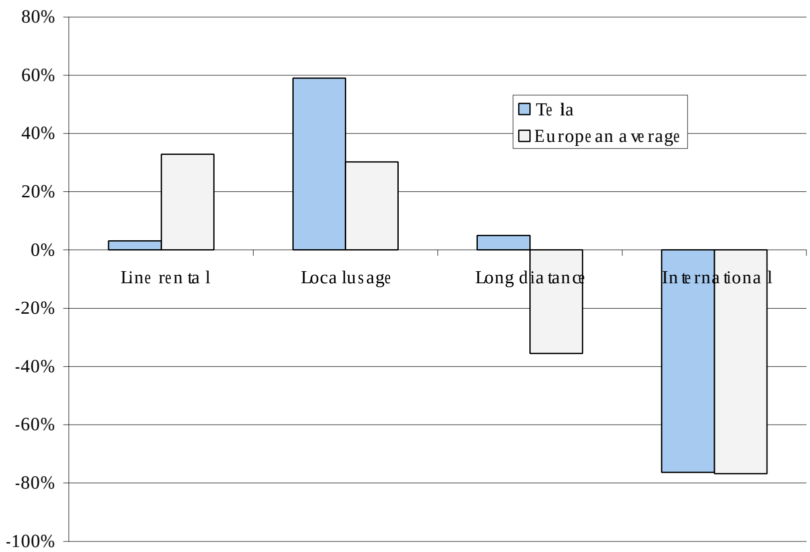
Figure 10. Comparison of fixed charges in Europe



Source: Carnegie report on Telia, January 1997, based on Analysis material

There has been considerable re-balancing with access charges rising 3 fold since the 1993 Telecommunications Act.[44] There has been a commensurate reduction in the prices of other services, to ensure that price remained under the overall price cap imposed in 1993. The initial price cap was a CPI-X (X=1%) cap imposed on a basket of services including access. However, there were no sub-caps that constrained re-balancing within that basket. In 1997 the initial price cap was abolished to be replaced by a cap on access alone. However, as can be seen from Figure 11, the cap is unlikely to result in distorted access prices, since access prices in Sweden are now generally considered to fully reflect costs.

Figure 11. Deviation of prices from 'fully competitive tariffs'



Source: Nordic Telecommunications, Tomorrows World Today, JP Morgan 1996

Rebalancing did not initially have a large impact on demand for access. But with the higher penetration of mobile, this has changed. There has been some decline in fixed line access, particularly in the high cost areas such as the archipelago (where second homes are common). However, the decline is offset to a degree by the dramatic increase in demand for Internet services, which is increasing demand for fixed lines in some areas.

One facet of this re-balancing has been the growth in provision of local services, particularly by local authorities that own fibre networks, and local energy companies. Whilst this has been limited in the past, we understand that these services are now developing rapidly.[45] In the time available to respond to the Commission, we have not been able to gather more information on this. *However, we would ask the Commission to investigate this issue, because it may shed some light on one of the main benefits of re-balanced prices, namely incentives to invest and innovate in the access service.*

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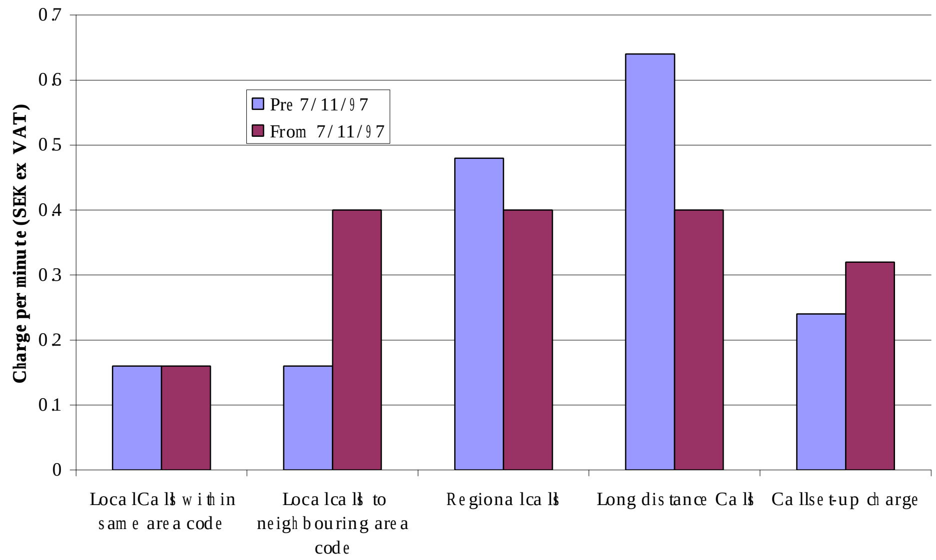
44 Amended in 1997 to bring it into line with EU requirements.

45 Personal communication with Bertil Thorngren, Stockholm School of Economics

Price re-balancing is continuing. Recently Telia significantly modified its tariff structure, as shown in Figure 12, which had the effect of removing a substantial component of the distance related charges for national calls, and at the same time increasing call set-up charges. This would appear to be a reaction to the increasing competition on long-distance calls in Sweden.

The call set-up charge was introduced only recently by both Telia and its competitors. Some of the competitors charge more than Telia. It is understood that there have been surprisingly few negative reactions from customers.

Figure 12. Telia tariff change from November 1997



Geographical de-averaging

There is no geographical de-averaging in respect of different national routes. Indeed, as discussed above, Telia has recently amended its tariffs to remove the distance related component. However, leased lines are fully re-balancing with full geographical de-averaging.

3. Factors contributing to pricing flexibility

Summary

In this section we identify some of the factors which provide significant pricing freedom for the market participants. The key factors are the light-handed regulatory regime based primarily on competition law, the high penetration of mobile and the social security system. The most important of these is the nature of regulation. Sweden, along with Finland, show that regulators need not, indeed should not, intervene in pricing or other decisions in order for the market to deliver low prices, except by reference to normal competition law. This is a conclusion we believe is worth investigating in the Commission's study.

3.1. Light-handed regulation.

The market is governed by the 1993 Telecommunications Act amended in 1997 (which includes alignment with EU telecommunication requirements), but was introduced to a market which hitherto had little or no proscriptive regulation. There are three agencies involved in regulation:

- the National Post and Telecommunications Agency (PTS), which is a sector specific technical regulator dealing with issues such as numbering, licensing, radio frequency allocation, compliance with standards etc; and
- the Swedish Competition Authority (Koncurrensverket or KKV) which can intervene in the telecommunications market in respect of anti-competitive behaviour, similar to the powers of intervention by the Commerce Commission in New Zealand; and
- The Ministry of Communications, which has only 4 employees involved in telecommunications.

The PTS has about 180 employees all in all, of which some 20 are engaged in telecom policy matters, including representing Sweden in international fora etc. The remaining 160 or so are engaged in administrative functions such as frequency allocation, administration of number plans or arbitrating on interconnect charging issues. In its arbitration role it has full mandatory access to all accounting information from Telia.[46] This information is kept confidential.

The Government has the power under Section 19 of the Act to impose price caps on particular services, although other than the instance shown above, it does not appear to have used the power:

> "*Notwithstanding the provisions of Section 18, the Government may prescribe that tariffs for telephony services between fixed termination points within a public telecommunications network must not exceed a certain level*"

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46 In accordance with EU regulations, Telia as a dominant supplier must supply this accounting data to the PTS.

This is consistent with our observation that price intervention, to the extent that it occurs, is confined to pricing arrangements that can be shown to be anti-competitive under general competition law.

The Competition Authority (KKV)

There are no specific regulations concerning telecommunications prices, but Competition Law applies. The Swedish law is identical to EU Competition Law. Thus, dominance is not a problem *per se*, but only if it is demonstrated that there is an abuse of market power (on a case by case basis). The KKV is a general competition authority, and is not specific to the telecommunications sector. We understand the KKV takes no action in respect of prices unless there is a credible case that there are anti-competitive concerns.

The KKV has been active in the telecommunications sector as a result of a considerable volume of complaints by competitors. Many of the cases have gone to court, although there appears to be a gradual decline in the number of such cases, which may suggest that the initial actions were important in establishing precedent. For example, Telia offered mobile and fixed lines as a bundle early in the development of mobile. This was popular with customers but was not acceptable to the KKV. It is notable that other Telcos are increasingly offering bundled products, so it would no be surprising to see Telia being given more latitude to bundle in the future.

Licensing

The Licensing regime is light-handed. A license is a matter of one page, with almost no conditions attached even for 'basic' telephony. Telcos require Licences issued by the PTS for fixed and mobile telecommunications. The licences are granted provided the applicant is competent, as follows:

> *A licence according to Section 5 to pursue telecommunications activities may be subject to conditions concerning obligations for the licence-holder*
>
> 1. *to provide on certain conditions telephony services to a fixed termination point to anyone requesting such service,*
> 2. *to provide, having regard to available capacity and on certain conditions, network capacity to anyone so requesting,*
> 3. *to provide information about the owner of the activity,*
> 4. *to conduct the activity permanently and with good capacity and quality,*
> 5. *to fulfil in a certain way that prescribed in Sections 17a and 20b,*
> 6. *to publish on reasonable conditions in its own telephone directory information about individual telecommunications subscriptions at entities subject to mandatory notification, to the extent that such information is not subject to obligation of confidentiality according to law, and*
> 7. *to, without special compensation, maintain automatic telephones, to the extent which as regards number and geographical coverage satisfies public needs.*

Disclosure

Telia is required to provide relatively detailed accounting information to the PTS, but the PTS does not then disclose this information. Indeed, when the PTS commissions its annual review of the state of the market, it does not allow the consultants access to this material.

Section 18 of the Act requires that

> *"The tariffs of a licence-holder for the use of telephony services between fixed termination points within a public telecommunications network and for the provision of network capacity within such a network shall be based on the costs of the licence-holder. Licence-holders shall keep the tariffs publicly available."*

However, it appears that large customers are able to negotiate their own rates from service providers,[47] the terms of which are not published.

Interconnection is mandated by the Act, which requires that tariffs are published. The EU Commission has provided 'benchmarks' for interconnect pricing.

> *"In addition to that provided by Section 20, a party supplying telecommunications services subject to the obligation to notify under Section 4 a and which is notified in accordance with Section 4 b, is liable*
>
> 1. *to meet every reasonable demand for access to the telecommunications network for the purpose of interconnection,*
> 2. *to publish tariffs for interconnection,*
> 3. *to offer equivalent terms to everybody who requests interconnection,*
> 4. *to provide, on request, all information necessary for agreements on interconnection,*
> 5. *to supply the supervisory authority with agreements concerning interconnection, and*
> 6. *to, in their accounts of the business keep revenue and expenditure related to interconnection separate from other activities."*

3.2. Mobiles

Sweden has a very high penetration of mobile phones (in excess of 50% of households, 36% of the population)[48] along with near universal geographical coverage (see Figure 13). As is the case in Finland, these both contribute to a wider acceptance of high access and low usage charges, because the adverse consequences of electing not to take a fixed line service are lowered. As a result:

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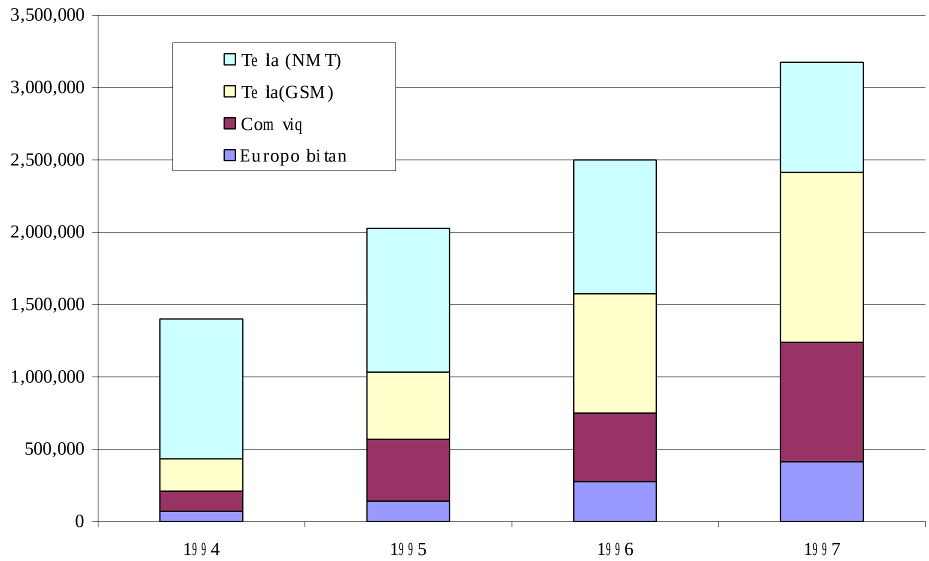
[47] The Telecommunications Market in Sweden. Stelacon 1997 defines the large used group as companies with more than 100 employees, and notes that this group is able to negotiate individual rates.

[48] Source: The Telecommunications Market in Sweden. Stelacon 1997

- demand for fixed lines at holiday homes (which are common on the archipelago) is low. Indeed, there has been a fall in the number of fixed lines in use to these types of households; and

- demand for second lines is low.

Figure 13. Number of mobile connections in Sweden



3.3. Social security

In Sweden, as in Finland and most of Scandinavia, direct social security payments for services for low income or disadvantaged members of the community are preferred to subsidy delivered by service providers. Hence, pricing flexibility is not constrained by the need to provide below cost services.

However, Telia is obliged to deliver services anywhere in Sweden, but there is no requirement for price uniformity. There is no compensation mechanism for any losses this USO imposes.

4. Factors that have not been important in respect of price

Summary

The foregoing section outlines the factors that have been instrumental in delivering low prices in Sweden. However, we would also note that the following factors do not seem to have been important in delivering low prices:

- industry specific conduct regulation, discussed in section 3.1; and

- unbundling of the CAN. There is no specific law requiring unbundling of the local loop. Telia does not sell unbundled copper, although it does provide a wholesale service that can be used for local call resale.