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New Technologies
and their Impact
on the Accounting Rate
System

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NEW TECHNOLOGIES AND THEIR IMPACT ON THE ACCOUNTING RATE SYSTEM

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Paris 1997

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FOREWORD

This report, prepared at the request of the Committee for Information, Computer and Communications Policy (ICCP), was submitted to the Ad hoc Group of Experts on International Telecommunication Charging Practices and Procedures in February 1996. The ICCP Committee examined the report in September 1996 and recommended its derestriction.

The report, which is published under the responsibility of the Secretary-General, was prepared by Yuji Kato and Dimitri Ypsilanti from the Directorate for Science, Technology and Industry.

MAIN POINTS

The purpose of this paper is to examine and highlight policy implications of developments taking place in new technologies which are impacting on international telecommunication prices and the accounting rate and settlements system, used by telecommunication operators to compensate each other for terminating international telecommunications traffic. Although downward adjustments have taken place in the price of international calls and in accounting rates, these changes have been insufficient given the significant extent to which these prices diverge from costs, and the important reduction which has been taken place in costs themselves. The pace in introducing competition in international telecommunication markets and the reform of these markets is slow, and there is an apparent reluctance in many cases by governments to accelerate reform in this area. It therefore cannot be expected that significant changes in prices (collection charges) and accounting rates will take place given present attitudes and policy frameworks.

The main reasons for distortions in international telecommunications prices are the differences between different countries in the degree of competition and the level of accounting rates which exceed the costs of terminating traffic. Lack of significant progress in pricing structures and levels has negative implications for the development and diffusion of new network-based applications, and trade in these services. In a competitive environment governments are well advised to leave pricing matters to market participants. In the international telecommunication market the lack of competition, except on a few routes, requires vigorous government involvement in these issues. This has for the most part been lacking, even in international fora where many governments still allow operators to represent national interests.

The emergence of new technologies which provide alternate calling procedures using public switched networks or by-passing these networks provide one means of accelerating change and increasing competition in international communication markets. Governments, however, should be aware that a number of new service developments may cause abrupt changes through unregulated transition to new service structures. National operators would be in a better competitive position if they were subject on the basis of **rapid** regulatory transition to cost-related accounting rates and collection charges. Refusal to do this will only accelerate new entry by alternate calling procedures and will provide an incentive for countries and operators trying to improve international telecommunication competition to do so outside the formal international frameworks.

Changes which have taken place to date have to a large extent reflected adjustments of the existing system of payments rather than the fundamental restructuring it requires. OECD governments may need co-ordinated action to reform the system of international telecommunication payments based on the principles of non-discrimination. Perhaps the best way to stimulate such action is for a group of interested countries to agree on a cost-related accounting system, based on transparency and non-discrimination, for relations between this group of countries. Similar to the acceptance of international simple resale policies this would serve to accelerate reform of the present accounting and charging system

and accelerate participation by other countries, taking into account the specific situation in a country. Some countries argue that, to facilitate the transition to cost-based accounting rates, their national regulatory measures against alternate calling procedures need to be respected by other governments, in particular because loss of outgoing traffic and collection charge revenue may induce some operators to maintain high accounting rates.

The new technologies which are impacting on collection charges and accounting rates should be supported by governments in that they provide users with lower prices, help improve competitive conditions in international telecommunication markets and by so doing increase the efficiency of established public telecommunication operators.

The paper argues in favour of :

- allowing, if not encouraging, alternate calling procedures to develop (except for call-back methods which clearly damage network quality);
- stimulating wider diffusion of international simple resale;
- providing positive regulatory signals to encourage new services which do not rely on the existing international PSTN to develop, except call-back methods which clearly damage network quality;
- action by a group of interested countries to adopt a cost-related system of settlement for correspondence within this group of countries and other countries which wish to participate;
- renewed emphasis on obtaining transparency of accounting rates and non-discrimination.

The above requirements are necessary to prevent carriers with a dominant position from taking advantage of their market power. International collection charges and accounting rate policies have spillover effects on other markets and carriers so that they cannot be viewed as being solely a national matter; international co-ordination among governments is necessary in this area to set down the general framework. The ultimate goal of governments should be to introduce fully competitive international markets so as to ensure the maximum benefit to end-users and the economy as a whole. At present we are in a transition period where it is important to have transparent accounting rates and non-discrimination. It is, however, necessary to examine appropriate regulatory measures for an internationally competitive market along with the appropriate transitional measures.

It is important in order to obtain global consensus on structural reform of accounting rate practices and procedures to examine how to reduce the impact of changes on the developing economies. Accounting rates are a price for the termination of traffic; they should not be viewed as either a source of foreign exchange or as a transfer of capital to invest in infrastructure. In viewing accounting rates in this light, developing countries will distort prices, undermine their long run efficiency and penalise their industry and residential users. Nevertheless, it is important to reduce any rupture which abrupt structural reform may have on this revenue source and to implement new assistance schemes outside of the payments system, given the reliance some countries have placed on the foreign exchange earned from accounting rate revenue.

The analysis shows that considerable effort is required by operators to attain the cost-related price levels that have become a government policy requirement in most OECD countries. Further it is clear that, given the low costs for termination that can be attained, users in many countries are being exploited

through the considerably high collection charges. This monopoly rent is impacting adversely on smaller business users and residential users in particular, who cannot use alternate calling facilities available through private networks or closed users groups. Long-term strategy by operators, if they wish to maintain their viability would argue for lower, more competitive prices which would serve as well to slow down the development and diffusion of alternate calling procedures. The quest for short term gains is blinding many operators to the threat of longer theorem competition.

SECTION 1: INTRODUCTION

Background

Issues relating to the international telecommunication tariff and charging system have been on the international telecommunication policy agenda for over five years. Evidence of significant above cost pricing for international telecommunication prices, and the underlying costs for terminating international telephone calls (accounting rates and settlements), and the serious concerns this has raised, has not resulted in significant reform of the underlying problem -- that is, the lack of effective international competition in the provision of international telecommunication services. Nevertheless, during this period some important changes have taken place, and both prices for international telecommunication service and accounting rates have declined significantly. Changes have also taken place in the appropriate international recommendations of the ITU for intercontinental telephony (D. 150) and regional frameworks (the TEUREM Recommendations). Yet, despite these changes, there is still concern that the level of prices diverge significantly from cost, and that the existing structure of the payments system between international operators causes distortions and economic inefficiencies.

There remains a conflict of interest within the ITU in that for many countries, especially non-OECD countries, operators are involved in representing national interests and are involved in international regulation setting. The commercial interests of operators are sometimes contrary to reform initiatives.

The market structure for the provision of international telecommunication services, and in particular telephony, using the public switched telecommunication networks, has remained fairly static. Because of this and based on technological developments important peripheral markets have been created which are placing pressure on these main market structures. Technological developments are also changing conventional concepts on the provision of telephony services. Linked to this is the increasing liberalisation of national market structures which are slowly opening international markets. The cracks in the international telecommunication market structure are providing some openings which can be used by new technologies, and are thus also stimulating the diffusion of new ways to provide international telephony.

It can be expected that, as the process of transition from closed to competitive markets takes place, new entrants will take advantage of opportunities offered by price differences in different markets, and will use new available technologies to exploit arbitrage opportunities. However, developments taking place in international telecommunication markets must not be viewed as purely transitory services exploiting arbitrage opportunities. Many of the new services are meeting longer term market demand, and many of the new technologies may play a role in the drastic restructuring of the way international telephony has been traditionally offered.

In terms of international telecommunication policy the most important need is to open international markets to competition. This requires, in effect, that national markets are opened, that is, that the structure whereby there is a single national provider of telecommunication service including international service, is abolished. Most OECD countries are moving toward that objective. Linked with

this, there is a necessity to obtain broad international consensus on how the existing charging system between telecommunication operators should evolve in order to meet the requirements of economic efficiency and non-discrimination.

In this context new technologies which are emerging or are being applied to international telecommunication services are having an important role in determining both the structure of new markets as well as new pricing structures. For these reasons it is important to review their role and impact.

It is not the purpose of this paper to make recommendations *per se* for a reduction in accounting rates or collection charges, or in the structure of the international accounting rate system. This case has already been made a number of times in work by the OECD (see in particular, ICCP 36, International Telecommunication Pricing Practices and Principles, A Progress Review). However, it is worth repeating the main recommendations which have been made since they are clearly relevant to the issue of new technologies and the international accounting rate system.

The recommendations made are based on the principles of transparency, non-discrimination and national treatment. It has been recommended by the OECD that countries adopt a system based on the concept of an international traffic terminating fee (an interconnection charge). This fee would reflect the cost of handling international traffic from an international gateway and terminating this traffic within the national network. The fee charged would be the same for all foreign international operators, irrespective of the origin of the traffic. This international access or interconnection charge would be transparent, that is, published; this charge would also be non-discriminatory, that is, the same charge would apply to any operator terminating a call within a country, as long as the termination of that call did not incur additional charges than the termination of other calls.

These recommendations are also compatible with recommendations made in the context of work on interconnection which stressed the requirement that national and international interconnection frameworks should be based on the same principles. Although the recommendation for an international traffic termination fee stressed the need for this fee to be cost-based, it was recognised that an adjustment period would be necessary, and that competition would be the best structure to bring prices in line with costs.

Recommendations made at the OECD with respect to changing the international charging and accounting rate system have not been explicitly accepted. Areas which have been emphasised in discussion were in increasing transparency, and in examining concepts of non-discrimination. Nevertheless, the recommendations have been echoed elsewhere: in the context of TEUREM discussions operators are examining the concept of an access charge, and in the context of the WTO's Negotiations on Basic Telecommunication Services the Australian delegation has put forward a proposal for consideration on termination services modelled on the OECD proposals. On the basis of a recent press statement made by Telia (Sweden), they have also supported the notion of a terminating fee. The US government has also mentioned the concept of a termination fee for international traffic using the same concept as domestic interconnection in the absence of market power or any distortion.

All OECD countries have accepted the principle of cost-oriented tariffs, and at the OECD and elsewhere, governments have also accepted this principle of accounting rates and collection charges. What they have not done is to impose this requirement on their telecommunication operators. It is important for Member countries to recognise that there are wider macroeconomic implications of high international prices, especially in that many national service industries are becoming network-based and their global competitiveness will depend on pricing structures. The issue of telecommunication pricing must be looked at in this broader context rather than as a narrow telecommunication issue.

Accounting rates, or interconnection charges, do not need to be determined by government intervention in a fully competitive market. However, in the present stage of transition, it is proving difficult for countries wishing to introduce competition in the provision of international telecommunication services to co-exist with carriers operating in monopoly markets. Thus, it is important at this stage for governments to be actively involved in the reform of accounting rate structures and procedures including pricing issues.

Structure of the Paper

The historical and current situation with respect to collection charges and accounting rates is described in Section 2 of this paper as a background in understanding new developments in services and technologies. There are essentially two types of technologies, and services based on these technologies, which are being used to offer international telecommunication services: the first group of alternate calling procedures¹ are those which are working within the existing accounting rate system. Section 3 examines these and their impact. The second group of alternate calling procedures are developing independent of the existing international charging and payments system. These are examined in Section 4. An Annex provides detailed data on the trend of average collection charges and accounting rates, leased line prices, a matrix of cross-country collection charge data for a number of years, and other data which have been used in the paper.

SECTION 2: THE CURRENT SITUATION

Trends in Collection Charges

The overall trend in international telephone tariffs for OECD countries is shown in Figure 1. The simple average charge for an average one minute call from an OECD country to all other OECD countries has decreased since 1991 from US\$ 1.34 to US\$ 1.01 during peak periods and from \$ 1.07 to \$ 0.75 during off-peak periods. These reductions of 16 per cent and 19 per cent (average reduction in local currency, excluding Turkey) respectively are not significant, given that prices were in 1990 well above costs, and that switching and transmission costs have also declined significantly during this period with increased digitalisation. As well, many operators only began to offer off-peak prices in the early 1990s so the reduction in average off-peak prices reflects to a large extent the introduction of off-peak pricing.

Price reductions have taken place at the same time as the total outgoing traffic of OECD countries has been growing. Although the few studies available of elasticity of demand for international calling with respect to price indicate a demand elasticity greater than one, the growth in outgoing traffic is linked especially to the expansion of the market resulting from new services, increased world trade and other factors related to increasing globalisation of economies. Figure 2 shows that OECD outgoing traffic on the public switched telephone networks (PSTN) increased by about 44 per cent between 1990 to 1993. The North American OECD countries showed the highest growth in traffic during the period, 57 per cent, while European OECD countries had a 37 per cent increase in traffic and OECD Asia-Pacific countries 41 per cent. International traffic flows were significantly higher than this, since with liberalisation of access to and use of leased circuits many companies have developed private networks carrying data, and increasingly voice traffic. In addition growth in data networks expanded significantly.

Collection charges decreased for all OECD countries during 1991-95 (Table 1) in terms of national currencies, except for the United States, Japan and Turkey. For the United States the earlier introduction of competition in the mid- to late 1980s had an impact on prices, but by the 1990s competition was more evident in the introduction of discounting rather than in the reduction of standard international tariffs, which, in fact, began increasing in 1994. However, when the trends in collection charges are viewed in terms of US dollars, the average reductions are in a number of cases significantly greater during the period.

In examining the relative levels of collection charges it is important to recall that the level of this charge has historically been influenced by the geographic location of countries, even though it should be expected that in the future the relative weight of distances in telecommunication charges are likely to diminish to a large extent. However, because of the distance component collection charges from countries such as Australia, Canada, Iceland and Japan to OECD countries appear on an average basis as relatively more expensive than countries which have a number of close OECD neighbouring countries (such as in Europe).

Figure 1. Average OECD trend in one minute collection charge
Figure 2. Outgoing traffic from OECD countries

Fig. 1 Average one minute collection charge trend of OECD countries

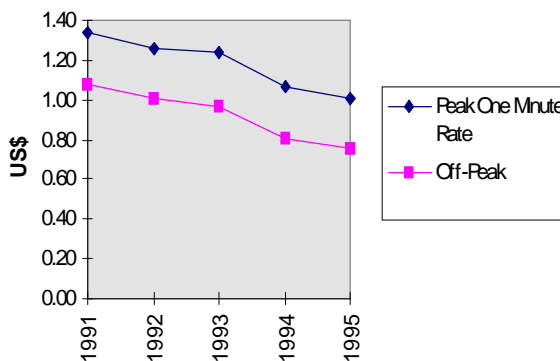
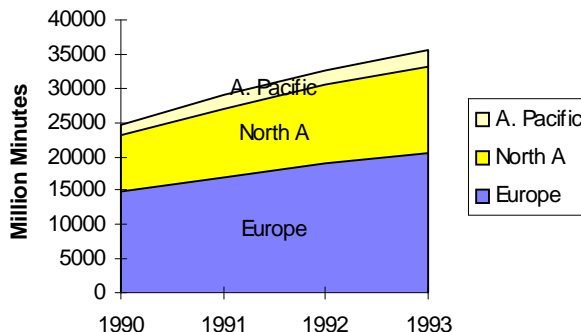


Fig. 2 Outgoing traffic from OECD countries



1. The average of a one minute tariff based on (1 initial minute + 3 additional minutes)/4
2. The traffic is outgoing traffic from OECD countries to all ITU members.

Source: OECD, ITU

It is too early to judge whether countries with competitive markets performed better than those with monopoly markets in regard to collection charges over the last five years. 14 countries reduced their collection charges less than the average rate of reduction in local currency terms (16 per cent) and among these 6 countries have competition for international telephone service. This means that of the 7 OECD countries with competitive markets only the UK reduced collection charges more than the OECD average. However, competitive countries have usually introduced discounted tariffs.

Table 1. OECD Trends in Collection Charges
(Average of peak one minute to OECD countries, expressed in US\$.)

	1991	1992	1993	1994	1995	'91-'95 Ex. Rates	'91-'95 Local Cur.
Australia (Telstra)	1.38	1.37	1.30	1.12	1.25	-9.67%	-7.24%
Austria	1.23	1.20	1.28	1.18	0.94	-23.88%	-23.58%
Belgium	1.13	1.10	1.12	0.76	0.77	-31.54%	-26.33%
Canada	1.37	1.29	1.22	1.00	0.94	-31.41%	-21.63%
Denmark (Tele Den.)	0.80	0.74	0.82	0.77	0.69	-13.92%	-5.60%
Finland (Telecom Fin.)	0.99	0.93	0.69	0.63	0.63	-36.66%	18.05%
France	1.14	1.13	1.02	0.88	0.81	-29.12%	-33.52%
Germany	1.00	0.97	0.97	0.91	0.93	-7.00%	-14.07%
Greece	1.36	1.18	0.97	0.81	0.78	-42.78%	-10.14%
Iceland	1.54	1.52	1.35	1.09	1.25	-18.76%	-10.35%
Ireland	1.43	1.30	1.37	0.79	0.81	-43.63%	-39.39%
Italy	1.44	1.36	1.37	0.87	0.77	-46.73%	-27.69%
Japan (KDD)	2.19	2.36	2.51	2.85	2.77	26.37%	-14.73%
Luxembourg	1.26	1.04	0.97	0.96	0.81	-35.80%	-23.88%
Mexico	N/A	N/A	N/A	2.96	2.78	-5.86%*	-4.00%*
Netherlands	1.01	0.99	0.97	0.92	0.89	-12.30%	-8.76%
New Zealand (TCNZ)	1.66	1.54	1.36	1.38	1.48	-10.50%	-9.79%
Norway	0.93	0.72	0.71	0.58	0.55	-41.11%	-24.85%
Portugal	1.39	1.37	1.56	1.25	1.14	-17.94%	-10.37%
Spain	1.77	1.73	1.57	1.25	1.03	-41.53%	-29.29%
Sweden (Telia)	1.06	1.04	1.08	0.80	0.70	-34.42%	-11.57%
Switzerland	1.17	1.14	1.00	0.90	0.94	-19.90%	-14.40%
Turkey	2.74	2.11	2.35	1.78	1.28	-53.28%	498.39%
United Kingdom (BT)	0.89	0.79	0.78	0.66	0.59	-33.78%	-20.17%
United States (AT&T)	1.34	1.33	1.33	1.40	1.42	5.70%	0.49%
OECD Simple Average	1.34	1.26	1.24	1.06	1.01	-25.15%	-16.04%
Competitive Markets	1.48	1.48	1.46	1.26	1.26	-13.28%	-6.42%
Non-Competitive Markets	1.32	1.20	1.18	0.98	0.90	-30.04%	-20.24%

1. The average of a one minute tariff based on (1 initial minute + 3 additional minutes)/4
2. All calculations are in exchange rates 1990 - 1994, except for the last column.
3. Mexico is excluded from the OECD average to maintain consistency.
4. Mexico is not calculated as a destination country for OECD countries.
5. Rate change of Mexico is for 1994-1995.
6. Average in last column is average of the reduction rate of each country.
7. All averages in local currency exclude Turkey.
8. The competitive countries: From 1991 - Japan, UK, US. From 1992 - NZ, Australia. From 1994 - Finland, Sweden.

Source: OECD

Much of the focus in international discussion of accounting rates has been on the intercontinental accounting rate system as opposed to regional accounting rate systems. In the case of the OECD region the intra-European accounting rate system, the TEUREM group (Tariff Group for Europe and the Mediterranean Basin) plays a significant role. Cross-border traffic within Europe accounts for about 35 per cent of world international telecommunications traffic². TEUREM tariffs are not only important to the extent that they impact on European OECD countries and their traffic flows, but they indirectly impact other traffic flows in that they influence refile of traffic and other alternate calling procedures, as well as the overall structure of European collection charges. The future of TEUREM is uncertain because of the shift from monopoly to multi-carrier market structures which should occur through liberalisation of European Union telecommunications markets in 1998. As a result, the geographic proximity of European countries, and the differences in the degree of liberalisation means that more open markets can be used as a base for traffic refile and other alternate call procedures. Second the growth of trans-European roaming for mobile communications also is bringing pressure on TEUREM.

Asymmetric Collection Charges

The development of alternate calling procedures is stimulated more by asymmetry in collection charges than in the level of collection charges. Asymmetry provides an opportunity to arbitrage prices. Digitalisation of networks and new technologies have enabled new service providers, as discussed in Section 3, to take advantage of asymmetric collection charges. In the past with national monopoly market structures for the provision of telecommunication services in all OECD countries, and analogue technology, it was relatively easy for countries to maintain high international charges relative to corresponding countries even though the Regulations of the International Telecommunication Union discourage asymmetry.

It is now recognised that the level and structure of collection charges is not only a national matter since differences in the prices of calls influence both the volume of calls originating in a country and the direction of traffic. High international telecommunication charges in one country also have a direct impact on the revenue flow of recipient countries either through discouraging demand, or through the impact on the direction of traffic flow.

Since 1991 there has been a movement toward more symmetry in bilateral collection charges between OECD countries (Table 2). Within national borders the price of calls in the two directions is identical so an index of asymmetry would be zero. For bilateral international calls between OECD countries the overall **index of asymmetry declined** from 34 to 22 over the 1991-95 period. On a country by country basis perfect symmetry with charges of corresponding countries would produce an index of 100, but as Table 2 shows, there is still relatively wide divergence between countries. In the annex; matrices for peak and off-peak bilateral collection charges show for 1995 that important differences exist even for regional relations within Europe. For example, to call France from Germany is 44 per cent more expensive than calling from Norway, and to call Switzerland from its neighbour, Austria, is 50 per cent more expensive than from the UK.

However, even though standard collection charges may be converging, the fact that many telecommunication operators, especially in competitive markets, have begun offering discount schemes to their customers, has in many instances maintained the gap between bilateral calling prices. For example, although US collection charges have become relatively more expensive than collection charges with other OECD bilateral correspondents, a large percentage of the customers of the international telecommunication operators subscribe to customer discount schemes.

Perfect symmetry is, of course, not a goal and is unlikely to be attained. There are a number of factors which will result in differences in prices between two countries even in a highly competitive environment. These differences could include exchange rate fluctuations, differences in relative costs, etc. Time zone differences can also play a role in creating differences in bilateral calling charges during a particular time period when one country charges peak rates and another off-peak rates. The imposition of value-added taxes on the price of telephone calls is also providing an opportunity for foreign-based call-back service providers to arbitrage price difference, especially given that these taxes are in the region of 15-20 per cent.

Table 2. Relative Collection Charges in OECD
Outbound collection charge compared to the charge applicable
in the opposite direction of the same relation as a percentage

	1991	1992	1993	1994	1995
Australia (Telstra)	63.8	69.6	70.3	73.7	87.7
Austria	113.1	117.9	129.6	140.4	110.5
Belgium	109.2	110.4	116.9	94.5	93.6
Canada	84.6	84.0	89.7	85.4	85.2
Denmark (Tele Denmark)	78.5	77.7	88.4	95.4	88.3
Finland (Telecom Finland)	92.1	91.8	68.1	72.2	72.1
France	109.3	113.8	110.0	111.0	99.6
Germany	99.8	102.5	107.2	118.5	118.0
Greece	124.3	109.5	90.7	85.1	78.6
Iceland	123.1	128.5	116.8	103.2	118.8
Ireland	139.9	130.3	140.9	94.7	94.7
Italy	133.6	129.8	134.8	99.5	86.8
Japan (KDD)	88.6	102.6	114.9	161.1	164.0
Luxembourg	109.5	97.1	93.2	106.6	92.1
Mexico	N/A	N/A	N/A	N/A	N/A
Netherlands	100.9	102.8	107.1	116.4	112.7
New Zealand (TCNZ)	68.7	72.7	65.2	78.6	87.4
Norway	83.1	70.4	71.1	70.0	68.0
Portugal	125.5	127.6	157.3	142.9	125.6
Spain	159.7	161.3	150.5	134.0	106.4
Sweden (Telia)	94.7	98.7	105.3	91.5	83.7
Switzerland	118.2	119.9	108.2	113.3	116.9
Turkey	232.2	186.3	202.7	180.4	124.8
United Kingdom (BT)	87.8	81.9	83.4	87.0	79.6
United States (AT&T)	87.6	91.3	100.8	126.9	135.9
Asymmetry Index	34.1	27.5	31.5	27.9	22.2

1. If the index exceeds 100, this means that the country has a relatively high collection charge compared to charges in the opposite direction.
2. The asymmetry Index is the Standard Deviation of all the indices for OECD countries. If all collection charges applicable in each direction of the same relation are exactly the same for all bilateral relations between all OECD countries, the Index equals 0.
3. Mexico is excluded from the OECD average to maintain consistency.
4. Mexico is not calculated as a destination from other countries.

Source: OECD

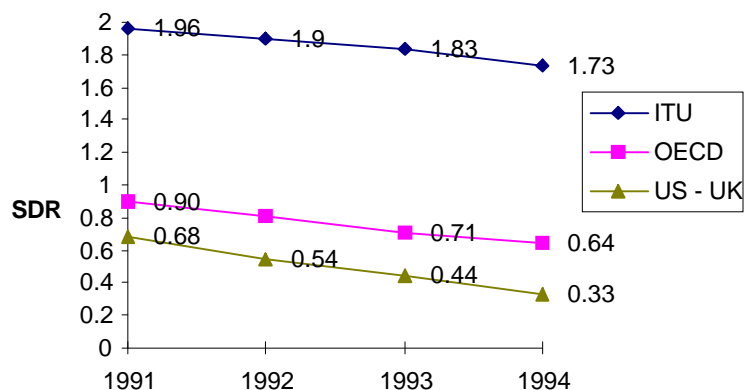
Trends in Accounting Rates

Earlier OECD work stressed the importance of transparency in accounting rates. The main reasons for requiring transparency is to ensure non-discrimination and to place pressure on above cost accounting rates. Negotiation of bilateral accounting rates has traditionally not been linked with cost factors or cost developments. On the other hand new alternate calling procedures are closely linked with price and cost factors and in fact closely depend on these for their business. Therefore, other than providing a service to users, the importance of these alternate calling services has been to force incumbent operators to pay greater attention to cost and price developments for the provision of international telecommunication service.

In that accounting rate data are generally not published it is difficult to discern trends. The earlier work at the OECD succeeded in persuading Member countries and/or operators to provide aggregate information in graphic form on accounting rates. This information, data which are published by the FCC in the US on accounting rates between US carriers and foreign relations, and the recently published accounting rate data by OFTEL in the UK are the only sources available to show trends. Given the lack of transparency in accounting rates and the lack of adequate cost data, it is extremely difficult to show to what extent accounting rates diverge from costs. There is, however, sufficient consensus from the industry to indicate that there remains significant scope for reduction in accounting rates.

Figure 3 shows the overall trend of accounting rate in 37 selected non-OECD countries and 9 OECD countries (France, Greece, Ireland, Italy, Japan, Netherlands, NZ, UK and US). Non-OECD countries reduced accounting rates by an average of 11.7 per cent while OECD countries reduced accounting rates by an average of 29 per cent, increasing the gap between OECD and non-OECD countries. In 1991, the accounting rate of the 9 OECD countries was 46 per cent of that of the 37 non-OECD countries, and in 1994 37 per cent. Even with a different degree of digitalisation and other factors, it is very difficult to justify this gap.

Figure 3. Accounting rate Trend



Source: OECD, ITU-SG

The accounting rate data published by the US and the UK indicate the important variance in accounting rates between countries. For example, BT's international direct dial accounting rate with US operators of 0.25 SDR is in sharp contrast to BT's accounting rate of 0.318 SDR with Germany (Table 3)³. Similarly, BT and Mercury have an accounting rate of 0.385 SDR with Australian operators in contrast to an accounting rate of 1.0 SDR with operators from Japan. In this context it should be noted that one would expect that relations between UK-Japan should be relatively more competitive given that there are three international operators in Japan in contrast to a duopoly in Australia (and in the UK), and the longer history of competition in Japan in contrast to Australia.

Table 3. Comparison of 1991-1995 IDD accounting rate of the UK
(in SDR)

	1991	1995	1991- 1995 Change (%)
Australia (Telstra)	0.7	0.385	-45.00%
Austria	0.406	0.34	-16.26%
Belgium	0.326	0.298	-8.59%
Canada		0.2	
Denmark	0.348	0.369	6.03%
Finland (Finland Tele.)	0.434	0.382	-11.98%
France	0.33	0.252	-23.64%
Germany	0.42	0.318	-24.29%
Greece	0.478	0.424	-11.30%
Iceland	0.72	0.415	-42.36%
Ireland		0.193	
Italy	0.408	0.39	-4.41%
Japan (KDD)	1.4	1	-28.57%
Luxembourg	0.32	0.284	-11.25%
Mexico	1.47	1.2	-18.37%
Netherlands	0.334	0.292	-12.57%
New Zealand (TNZL)		0.6	
Norway	0.392	0.28	-28.57%
Portugal	0.506	0.415	-17.98%
Spain	0.414	0.422	1.93%
Sweden	0.401	0.23	-42.64%
Switzerland	0.355	0.208	-41.41%
Turkey	0.602	0.436	-27.57%
US (BT - AT&T)		0.25	
US (Mercury -AT&T)	0.53	0.30	-43.40%
Average OECD	0.538	0.401	-21.53%

1. Data are quoted in Special Drawing Rights (SDR).

Source: OFTEL

In comparing US carrier accounting rates with the UK accounting rates for similar relations it is striking that TEUREM rates have still remained high relative to intercontinental accounting rates. In addition, the distance factor appears to play a relatively small role in relative levels of accounting rates whereas distance seems a more important factor in collection charges (for example, collection charges from the UK to Australia and from the UK to Austria show a 48 per cent difference, while their respective accounting rates show a 13 per cent difference).

In general for OECD countries the trend in average accounting rates for the different OECD regions has been declining as shown in figure 4. Countries which have provided data all show a decline in accounting rates. However, relative movements in accounting rates within Europe have been much less than for accounting rates between Europe and North America. For Europe-North American relations the average accounting rate reduction has been about 42 per cent. Accounting rates with OECD Asia-Pacific countries have also declined on average by around 36 per cent (Table 5).

Table 4. Accounting Rates for IDD Service of US carriers (in SDR)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	85-95
Australia (Telstra) (1)	1.50	1.20	1.20	1.20	1.20	0.80	0.68	0.60	0.55	0.40	0.40	-73.33%
Austria	1.30	1.30	1.30	1.30	1.20	1.10	1.00	0.80	0.60	0.60	0.50	-61.54%
Belgium	1.60	1.40	1.40	1.40	1.40	1.20	1.00	1.00	0.80	0.80	0.80	-50.00%
Canada (Stentor) (1)	0.38	0.34	0.30	0.31	0.32	0.20	0.20	0.20	0.20	0.17	0.15	-60.53%
Denmark (Tele Denmark)	1.60	1.60	1.60	1.20	1.00	1.00	1.00	1.00	1.00	0.80	0.50	-68.75%
Finland (Telecom Finland)	1.60	1.60	1.60	1.20	1.00	1.00	1.00	0.65	0.65	0.50	0.40	-75.00%
France (1)	1.60	1.40	1.40	1.40	1.20	1.20	1.00	0.70	0.70	0.42	0.36	-77.50%
Germany (Federal Republic)	1.20	1.20	1.20	1.20	1.20	1.20	1.00	0.80	0.60	0.34	0.34	-71.67%
Greece	1.63	1.64	1.64	1.63	1.64	1.63	1.53	1.43	1.12	0.95	0.95	-41.72%
Iceland	1.60	1.60	1.60	1.20	1.20	1.20	1.20	1.00	0.90	0.75	0.75	-53.13%
Ireland (1)	1.64	1.47	1.06	1.11	1.14	1.05	0.89	0.80	0.67	0.55	0.40	-75.61%
Italy	1.63	1.64	1.64	1.63	1.64	1.50	1.43	1.35	1.09	0.82	0.48	-70.55%
Japan (KDD)	2.14	1.92	1.66	1.34	1.34	1.34	1.13	0.95	0.75	0.60	0.63	-70.56%
Luxembourg	1.40	1.40	1.40	1.40	1.20	1.20	1.00	1.00	0.70	0.70	0.50	-64.29%
Mexico (3)					1.10	0.93	0.81	0.80	0.72	0.61	0.58	N/A
Netherlands	1.20	1.20	1.20	1.20	1.10	1.10	0.90	0.50	0.50	0.40	0.40	-66.67%
New Zealand (TCNZ)	1.80	1.80	1.80	1.80	1.80	1.80	1.40	1.20	0.60	0.60	0.40	-77.78%
Norway	1.60	1.60	1.60	1.20	1.00	1.00	1.00	0.80	0.70	0.50	0.30	-81.25%
Portugal (2)	1.63	1.64	1.64	1.63	1.63	1.31	1.22	1.20	1.08	0.95	0.81	-50.31%
Spain (1)	1.73	1.73	1.73	1.70	1.60	1.60	1.50	1.50	1.30	1.20	1.20	-30.64%
Sweden (Telia AB)	1.60	1.60	1.60	1.20	0.80	0.80	0.50	0.50	0.50	0.25	0.25	-84.38%
Switzerland	1.60	1.40	1.40	1.25	1.12	1.12	0.81	0.81	0.61	0.61	0.50	-68.75%
Turkey	2.05	1.84	1.41	1.49	1.52	1.41	1.40	1.40	1.20	1.20	1.10	-46.34%
United Kingdom (BT) (1)	0.97	0.87	0.75	0.79	0.81	0.75	0.68	0.54	0.44	0.33	0.25	-74.23%
OECD Average	1.52	1.45	1.40	1.29	1.22	1.14	1.01	0.90	0.75	0.63	0.54	-64.54%

1. A time of day accounting rate applied to service with these countries for some years, but all figures shown here are only the rate.
2. A growth based accounting rate applied to these countries for some year, but all figures shown here are the peak rates.
3. Accounting rate varies depending on the location of the originating and terminating call. The accounting rate is not equally shared. US:Mexico = 37:63
4. Data are quoted in Special Drawing Rights (SDR).

Source: FCC

Table 5. Accounting Rate Reductions for Selected OECD countries, 1991-94

	With Europe	With N. America	With Asia Pacific	With all OECD (Weighted Avg.)
From:				
France	21%	50%	33%	25%
Greece	20%	21%	40%	23%
Ireland	9%	43%	21%	13%
Italy	8%	48%	37%	15%
Japan (KDD)	33%	51%	44%	35%
Netherlands	29%	58%	34%	32%
NZ (TCNZ)	21%	57%	38%	26%
UK (BT)	5%	36%	25%	10%
US (AT&T)	37%	15%	50%	38%
Avg. of 9 countries	20%	42%	36%	24%
Euro. (6 countries)	15%	43%	32%	20%
North A. (US)	37%	15%	50%	38%
Asia-P.(Japan, NZ)	27%	54%	41%	31%

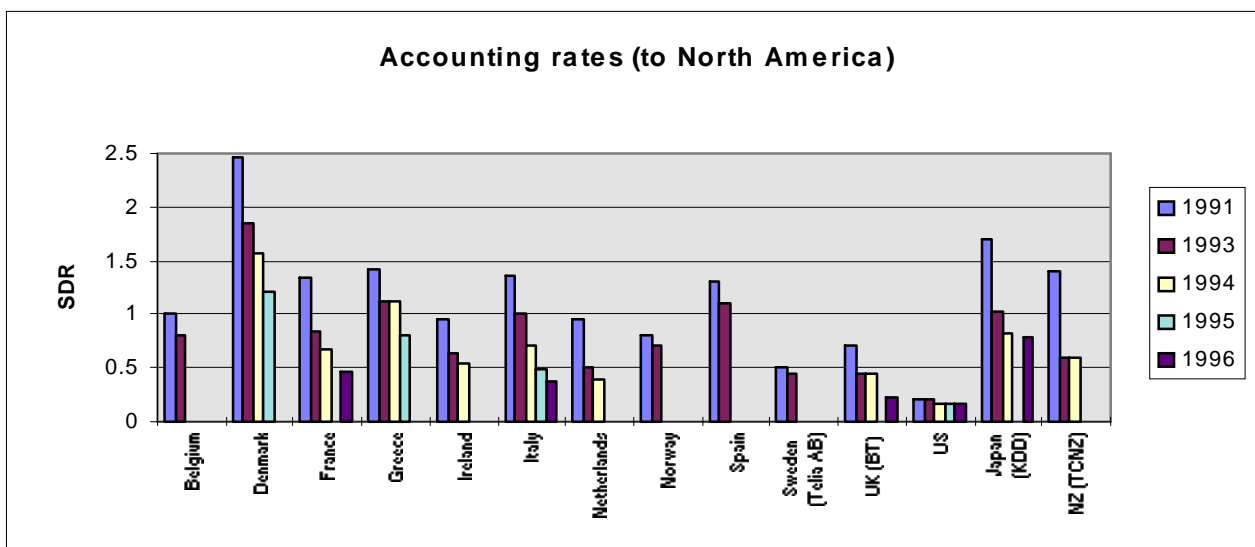
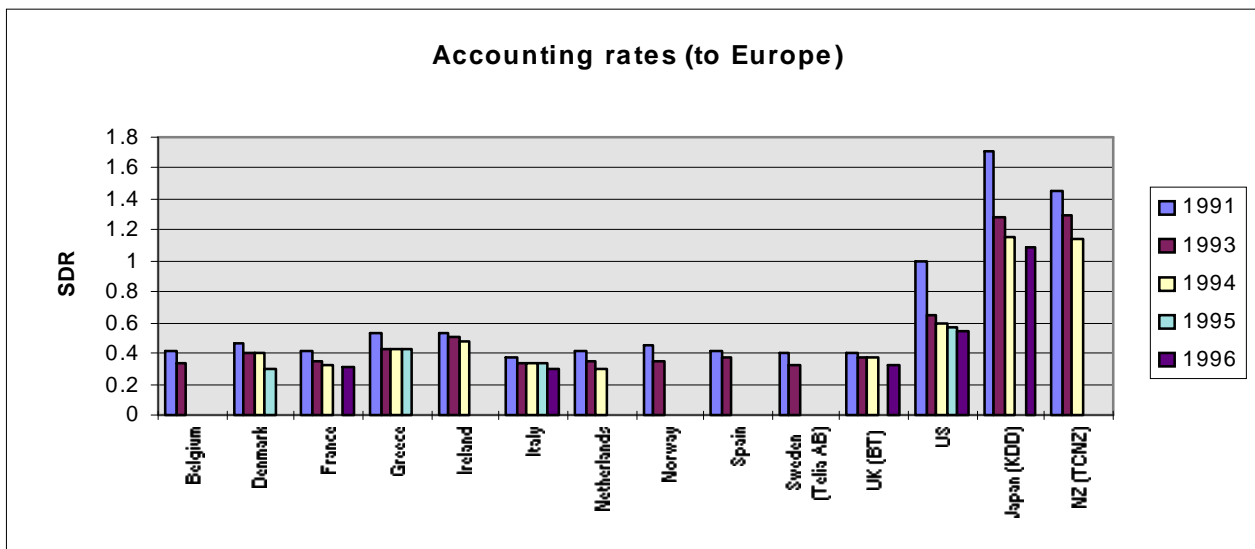
1. The data are simple averages of the rate of reduction with all OECD countries within the regions.
2. The accounting rate data are from France, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, the UK and the US.
3. The data of the Netherlands, Norway and the UK are approximated from graphics.
4. **Bold** figures are for countries with competition.
5. Mexico is not included as a destination.
6. US data is calculated from Table 4.

Source: OECD

The lack of transparency in accounting rates and lack of data on costs makes it difficult to ascertain the extent to which accounting rates do in fact diverge from costs. Table 6 attempts to provide one comparison of the extent that accounting rates may diverge from an alternate calculation of the price for the termination of calls. It should be noted that this example based on the UK situation is likely to **considerably understate** the divergencies which exist between accounting rates and a proxy for call terminating cost for many other OECD countries in that UK operators have already negotiated significant reductions in accounting rates with other operators between 1991 and 1995 as shown in Table 3.

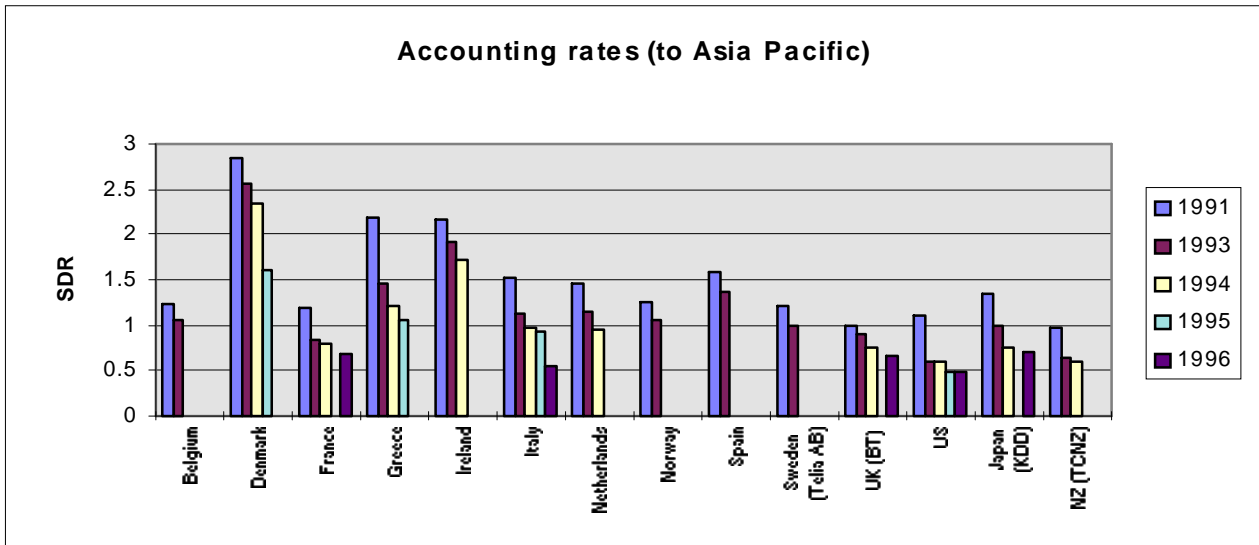
Table 6 estimates a terminating cost (column D) and compares this with half the accounting rate between the UK and other OECD countries. It should be noted that the assumptions made are perhaps extremely generous (and are dictated by data availability) in that OECD countries would typically use 1.5-2 Mbit/s leased circuits, instead of the 64 kbit/s circuits used in the table. The table assumes 4 voice channels and a circuit utilisation rate of 25 per cent of capacity. The table indicates that the settlement rate (that is half the accounting rate) with the UK is on average for OECD operators **nearly twice** the rate of terminating calls using leased circuits. Given the generous assumptions made it is clear that considerable effort is required by operators to attain the cost-related price levels that have become a government policy requirement in most OECD countries. Further it is clear that, given the low costs for termination that can be attained, users in many countries are being exploited through the considerably high collection charges. This monopoly rent is impacting adversely on smaller business users and residential users who cannot use alternate calling facilities available through private networks or closed user groups.

Figure 4. Trend in Accounting rates by regions



.../...

Figure 4. Trend in Accounting rates by regions (continued)



1. The data for each region is a simple average of accounting rate to each destination.
2. All figures are expressed in SDR.
3. Mexico is excluded as the North American destination.

Source: OECD

The fact that governments allow this situation to prevail means for the longer-term financial and economic loss and instability of incumbent operators by providing an incentive for uneconomic entry. In an environment where prices were related to costs many of the alternate calling procedures may prove to be uneconomic.

The OECD Mediterranean countries tend to have a high ratio of settlement rate to termination rates in spite of their relatively high leased line prices. Denmark and Finland, although they have low terminating rates, maintain relative high settlement rates with the UK. Japan, although it has reduced leased line prices in recent years, still has high settlement rates, and therefore has a high ratio of settlement rate to termination rates.

Telia, the incumbent carrier of Sweden, has compared accounting rates with domestic access charges. For example, the access charge of Telia is SK 0.23 (US\$ 0.04) on average while the accounting rate with France is SK 1.75 (US\$ 0.26). The accounting rate is more than 6 times the average domestic access charge. Telia has also proposed to the UK to change the accounting rate system to national interconnect rates which are much lower⁴. As is shown in Table 3, the accounting rate between Sweden and the UK is not relatively high. Even with this relatively low accounting rate, competitive pressure is leading operators to examine different settlement systems in order to compete more effectively for international traffic.

Table 6. Call Terminating Rate and Half Accounting Rate in Selected OECD Countries
(Using Private Leased Line Example, with UK)

	Half LL monthly price with UK	Per Minute Cost of LL	Local charge in each country	Terminat- ing Rate	Half AR with UK (US\$)	Ratio
	A	B=A/44640	C	D = B+C	E	E/D
Australia (Telstra)	5296	0.12	0.00	0.12	0.20	165%
Austria	5079	0.11	0.06	0.17	0.17	100%
Belgium	2197	0.05	0.04	0.09	0.15	175%
Canada	2591	0.06	0.00	0.06	0.10	175%
Denmark (Tele Denm.)	1467	0.03	0.04	0.07	0.19	256%
Finland (Telecom Fin.)	1660	0.04	0.01	0.05	0.19	397%
France	3134	0.07	0.04	0.11	0.13	119%
Germany	2964	0.07	0.02	0.09	0.16	179%
Greece	3663	0.08	0.00	0.08	0.22	262%
Italy	2963	0.07	0.03	0.09	0.20	210%
Japan (KDD)	5759	0.13	0.03	0.16	0.51	314%
Netherlands	2088	0.05	0.03	0.08	0.15	186%
Norway	2265	0.05	0.03	0.08	0.14	181%
Portugal	2867	0.06	0.02	0.09	0.21	241%
Spain	2709	0.06	0.01	0.07	0.21	286%
Sweden (Telia)	1957	0.04	0.02	0.06	0.12	197%
Switzerland	2864	0.06	0.11	0.17	0.11	61%
Turkey	6923	0.16	0.02	0.17	0.22	130%
United Kingdom (BT)						
United States (AT&T)	3117	0.07	0.04	0.11	0.13	116%
Average		0.07	0.03	0.10	0.18	193%

1. Leased line cost is 56 / 64 kbit/s Half international line monthly cost. It is assumed that four voice paths are available with a 25 per cent usage rate.
2. Tax is excluded both from leased line price and local call charge.
3. Leased line charges are the cheapest price available at Sep. 1994. IDD collection charges are from Jan. 1995.
4. UK accounting rate is Dec. 1995.
5. Calculations use 1994 exchange rates.
6. **Bold** figures are the countries with accounting rates which are more than twice the terminating cost.

Source: OECD, ITU, LYNX

SECTION 3: ALTERNATIVE CALLING PROCEDURES: CALL-BACK SERVICES AND REFILE

Alternate calling procedures (ACPs) are not all based on price arbitrage. In a number of cases new technologies are leading to the introduction of value-added calling services which provide customers with convenience. This is the case for some Home Direct Services, for example, which may be more expensive than using direct dial services. In other cases, new services which are emerging are taking advantage of new features or low prices offered by new technologies, for example, telephony using the Internet. These developments imply that pressure on accounting rates is emerging from three directions: first, from the opening of public switched telecommunication markets to competition; second, from the group of alternate calling service providers utilising the PSTN to provide services and in some cases depending on price arbitrage; third, from new technologies based on different infrastructures outside the PSTN, and therefore, outside the traditional accounting rate system.

This section deals mainly with those services and procedures based mainly on the existing PSTN and mainly dependent on the framework of the collection charge and accounting rate system. These services or procedures, mainly call-back and refile services, are aimed at by-passing expensive routes and put pressure on high accounting rates either directly or indirectly through collection charge, while the services such as ISR and Internet voice, which are outside the accounting rate system, impact directly on accounting rates. This section reviews policies for call-back services and refile and analyses their implications for the present pricing and charging system.

Current status of call-back services

Although call-back service operators are still relatively small in number and in revenue terms, they have a potential to impact on PTO revenue. One of the largest call-back operators in the US has attained operating revenues of US\$ 64 million in 1994 and was expected to have revenues of \$200 million in 1995, equivalent to about 2 per cent of total international telecommunication revenue in the US⁵. It has been estimated that there were about 76 facilities based call-back operators in May 1995, growing to about 100 by August 1995. The size of the call-back market **in 1995** is approaching \$ 500 million according to one estimate⁶.

Telecommunication operators providing service in competitive markets have in general tolerated, and in many cases assisted alternate calling service providers. This is because these service providers help in generating traffic some of which ends up on the networks of these telecommunication operators. They are also customers for the facilities of telecommunication operators. For some types of call-back services, however, the reaction of operators in competitive markets has been negative. For example, in the United States, a petition was filed with the FCC against call-back services using uncompleted call signalling on the basis that this amounted to wire fraud and was forbidden by the Communications Act of 1934. Similarly, the international carriers in Japan have filed a petition with the MPT alleging that call-back operators do not bear the cost of sending signals to countries where their facilities are based (mainly the US). The argument in these cases is that call polling uses the network of an operator to signal a switch

based in another country; the signal provides the switch with information to re-dial a call to the country originating a signal. Even though a large number of international calls are uncompleted (unanswered) because the called party is not there, the aim of these types of calls is to attain completion. In contrast call-back services based on re-dialling technologies do not seek call completion; on the contrary their purpose is only to provide signalling information.

The FCC determined that international operators have the right to charge for uncompleted calls. But this may raise a number of legal problems with respect to identifying which calls were undertaken for the express purpose of call signalling, what is the threshold for the number of calls made to a specific number which identifies these calls as call signalling as opposed to call completion attempts, etc. No attempt has yet been made to charge these operators for uncompleted calls. Furthermore, call-back service providers are beginning to use packet switched networks for call signalling so that technology may solve the concern of operators with respect to uncompleted call signalling.

Rather than trying to determine whether uncompleted call signalling constitutes illegal use of the network, it is more fruitful to provide solutions to the users who obviously benefit from the use of such services. Many of the new entrants providing re-dial call-back services can be viewed as arising from incentives from inefficient pricing behaviour and it is this behaviour which needs to be addressed as the root of the problem. Inefficient entry will cease when market conditions result in prices being aligned with costs.

Part of the problem which arises from new call-back service operators entering the market is that they not only impact on markets where there are high prices, but also on the competitive markets where these operations are often based. This should be viewed as an international spill-over resulting from inefficient practices in foreign markets. However, the solution is to eradicate these international spill-over effects by tackling the direct cause, which is the lack of competition in markets, and moreover the unwillingness of operators (and governments) to adjust prices to costs. Much of the present policy of governments, especially in developing economies, is misguided with regard to call-back services in that by trying to ban these service providers, they are only tackling the symptoms rather than the cause.

However, a number of countries are trying to make call-back service illegal. In a number of OECD countries the toll-free lines used by call back operators have been disconnected even though these lines were provided by other (US-based) carriers. This has been the case for Austria, Portugal, Spain and Turkey. Many non-OECD economies have regulated against call-back services considering them illegal. It is unlikely that prohibition of call-back services will be successful. This is because, despite the fact that some call-back services require extremely cumbersome procedures, demand for these services remains very strong⁷. Furthermore, it can also be technically difficult to distinguish the call-back traffic from other traffic, and the number of different variants in providing call-back have developed rapidly with new technologies. Many established international operators also view the provision of capacity and freephone numbers (international 800 numbers) to call-back service providers as legitimate business. The policy of banning call-back services goes counter to the stated aims of most countries' telecommunication policies, that is, provide efficient, ubiquitous service at the lowest cost.

In response to the Collective letter 6/3 of 24 January 1995 by Study Group 3 of the ITU's Telecommunication Standardisation Bureau many responding administrations/regulators/operators thought that call-back services were not in conformity with the International Telecommunication Regulations. However, it needs to be stressed that the ITR and the relevant Recommendations place emphasis on the fact that distortions may arise through lack of symmetric accounting rates and collection charges. Further,

they also stress that these prices should be based on costs. The burden should be placed on governments and operators in meeting the provision of these Regulations rather than on the call-back service operators who are able to provide service exactly because these Regulations are not respected.

At the ITU it has been recommended that those call-back applications which seriously degrade the quality and performance of the PSTN, such as constant calling (or bombardment or polling) and answer suppression, should be avoided. At the same time it was recognised that account rate shares should move towards cost-orientation to reduce arbitrage opportunities.

OECD countries should in any event be preparing to introduce facilities-based competition and rebalancing tariffs. Call-back service providers should be viewed as providing an added incentive to their domestic operators to enhance their competitiveness. Policy should therefore be tolerant towards these service providers.

Development of call-back markets has provided an incentive to further refine technologies for such services: for example, auto-diallers have improved significantly and can handle a large number of calls; packet switching technology has been used for re-origination of calls. As competition grows and with tariff divergencies still existing, call-back operators will begin to enter a number of markets. Thus, it can be expected that following 1998 when there will be no service monopolies in most EU countries, call-back operators will be able to easily target intra-European traffic. This is a large market given that the bulk of EU traffic is intra-European. Countries maintaining their monopolies until the year 2003 or later will have difficulty preventing this form of 'indirect' market entry. The impact on their operators will be more severe through call-back than it would be if they allowed infrastructure competition.

Increasingly telecommunication customers are placing a premium on mobility. The provision of roaming capability within national borders for mobile cellular communication services has in recent years extended to cross-border service provision, especially within Europe. Cellular providers are now also using call-back to access the international market. Often these services use X.25 switches to send the initial signalling message to a call-back switch which provides the line to the cellular customer. Given the rapidly increasing size of the mobile market this extension of service provision will also place significant pressure on traditional telecommunication services and pricing frameworks.

In addition to lower prices, call-back providers offer customers services such as itemized billing and billing inquiry service which are not in many cases available from PTOs. Thus, in many cases, call-back services may improve quality for customers.

Impact on Collection Charge

The impact of call-back services on the accounting rate system and on collection charges is positive in that it puts downward pressure on prices. A number of operators have begun to reduce international prices for telephony and have begun to introduce volume discounts for large customers in order to recapture traffic that they have lost to call-back operators. One such example is Telintar in Argentina.

A comparison of a call-back service operator's tariffs (USA Global Link) tariffs to North America, Asia-Pacific and European destinations relative to tariffs of operators from OECD countries to these different regions is provided in Table 7. It is evident that the call-back service provider has a price

advantage for most routes (the bolded figures in the table show where call-back has a price advantage), except the intra-European routes. This does not reflect so much a price disadvantage but rather the fact that the intra-European market has not been specifically targeted by the call-back provider.

Earlier in the paper the lack of symmetry in calling charges between bilateral relations was shown. Although these differences based on standard published prices play an important role, they are not the only factor in terms of creating arbitrage opportunities. The willingness of established operators to provide discounts to large customers of international direct dial services, such as call-back operators, and the fact that there are restrictions in a number of countries on providing price discounts, is a crucial factor in the viability of call-back services. Call-back services in fact provide a mutual opportunity for profits for both established operators and call-back service providers. This is because call-back companies, in some cases, divert direct traffic between two countries to the country where the call-back company is based before completing the call to the destination country. The two outgoing calls that this generates from the home base of the call-back company also helps the established operator obtain additional traffic through proportionate return policies with the country originating the call and the country of destination (see Box 1).

One response to the ITU Circular letter noted above argued that “call-back operators are viable for long periods owing to the charge subsidy on the part of ROAs (Recognised Operating Agencies) supporting call-back operators.”⁸ The argument here is that discounts constitute a “subsidy”. However, this confuses pricing capacity at competitive rates with pricing below cost. In a competitive market it would be expected to price capacity close to cost and to try and maximise the rate of utilisation of capacity. Aggressive marketing in a competitive environment would lead incumbent operators to use “resellers” or call-back companies as retailers to collect customers in foreign countries, and channel their business indirectly to the wholesaler (the established PTO).

Table 8 tries to show the relative margins available to PTOs as compared to call-back operators. Using New Zealand as an example, which is generally considered as having relatively competitive tariffs, the collection charge to other OECD destinations relative to the average accounting rates for different OECD regions is used to determine a call margin. This is contrasted with the margin available to the call-back service provider based on the revenue they obtain from customers for a call origination in New Zealand to other OECD destination, relative to the two settlement rates (NZ to the US and the US to another OECD country). The two settlement charges represent the floor which the call-back service provider would be required to pay the PTO in the US for transmitting a call. The difference between the margin for the direct dialled call from New Zealand of 124 per cent and the call-back operator margin of 31 per cent on average is quite significant. The call-back service provider has cheaper collection charge for all the destinations except to Australia. In this example it would appear that reducing the opportunity for arbitrage between prices would require a reduction in the average margin from 124 per cent to 28.6 per cent⁹ by a New Zealand operator.

While this example shows the potential opportunities call-back operators have to exploit the high margins which exist in the provision of international telephony services, it also indicates that if operators view call-back services as problematic they are fairly easily able to reduce their margins and reduce collection charges. It is exactly for this reason that call-back service providers are providing a useful role by placing pressure on collection charges.

There is an important policy issue for many governments here in that in many cases volume discounts for large customers are not authorised. One of the managers of an international carrier in Japan made the following statement in an interview on call-back:

“In fact, I think that the only way to cope with call-back service is to reduce the collection charges. Call-back service is viable because there is a difference in the collection charges in each direction of the same relation. In reality, there is no difference in the collection charges between our customer and those of the US. But it is the large customer discount (volume discount) in the US that makes call-back service possible. The call-back operators fully utilise the volume discount in the US and we will not be able to compete with them unless we introduce volume discounts¹⁰⁹”.

Table 7. An example of a call-back operator’s tariff compared to standard PTO tariffs

	To Europe	To N. America	To Asia/Pacific Region
From			
Australia (Telstra)	66%	36%	85%
Austria	141%	58%	64%
Belgium	151%	60%	57%
Canada	73%	44%	61%
Denmark (Tele Denm.)	174%	59%	55%
Finland (Telecom Fin.)	186%	61%	65%
France	131%	47%	42%
Germany	134%	40%	45%
Greece	181%	48%	52%
Iceland	97%	48%	42%
Ireland	156%	62%	64%
Italy	172%	53%	53%
Japan (KDD)	34%	25%	38%
Luxembourg	169%	63%	56%
Mexico	32%	148%	23%
Netherlands	143%	53%	45%
New Zealand (TCNZ)	63%	43%	83%
Norway	182%	77%	80%
Portugal	110%	43%	46%
Spain	153%	55%	37%
Sweden (Telia)	153%	46%	45%
Switzerland	119%	55%	47%
Turkey	118%	54%	72%
United Kingdom (BT)	146%	45%	61%
United States (AT&T)	37%	33%	26%
Simple Average	125%	55%	55%

1. Comparison using (1 initial minute + 3 additional minutes)/4 and peak time where applicable.
2. Tax is included in the PTO tariff.
3. Exchange rate is average 1994.
4. Between Mexico and US, the cheapest rate was used.
5. Between Canada and US, the 340-630 miles tariff was used.
6. Mexico is excluded as a destination for OECD countries.
7. Figures in **bold** show where call back is less expensive.
8. Collection charges are for Jan. 1995.
9. Call-back operator’s collection charge is from July 1995. A customer pays a minimum monthly usage charge of US\$ 25 for each line.

Source: OECD

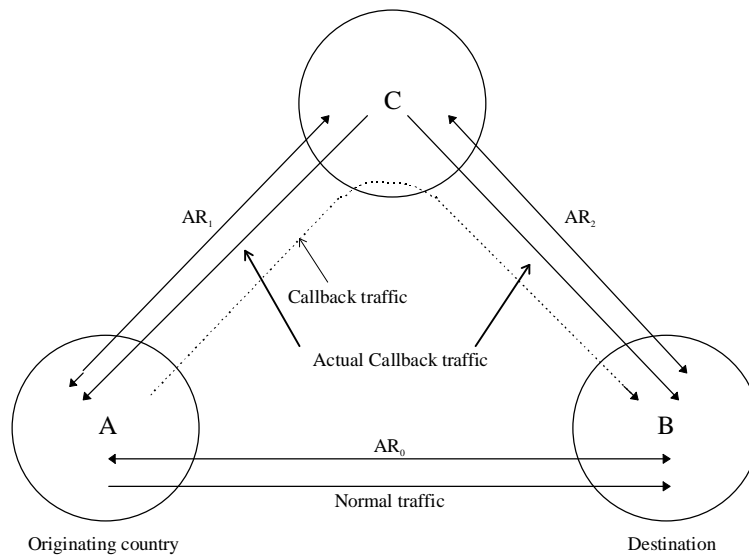
Table 8. Relation between collection charge and accounting rate
(PTO and USA Global Link, NZ example) (Methodology based on **Box 1**)

	Public Telecommunication Operator			Call-back Operator (in US)		
	A	B	(A-B)/B	C	D	(C-D)/D
From New Zealand	Collection Charge	Average Half AR by Regions	Margin	Collection Charge	Half AR (NZ-US) + Half AR to Destination	Margin
To						
Australia	0.71	0.45	58%	0.82	0.81	1%
Austria	1.51	0.85	78%	1.13	0.76	48%
Belgium	1.82	0.85	114%	1.11	1.04	6%
Canada	1.47	0.45	230%	0.71	0.53	34%
Denmark	1.89	0.85	122%	1.07	0.80	33%
Finland	1.98	0.85	133%	1.08	0.72	50%
France	1.79	0.85	111%	0.92	0.69	33%
Germany	1.51	0.85	78%	0.91	0.68	34%
Greece	1.97	0.85	132%	1.21	1.15	5%
Iceland	2.08	0.85	145%	1.43	1.00	44%
Ireland	1.83	0.85	115%	1.19	0.82	45%
Italy	1.80	0.85	111%	1.22	0.79	55%
Japan	1.44	0.45	223%	1.00	0.90	11%
Luxembourg	1.92	0.85	126%	1.18	0.80	48%
Mexico	N/A	0.45	N/A	0.92	0.86	7%
Netherlands	1.51	0.85	78%	0.92	0.72	27%
NZ	-	-	-	-	-	-
Norway	1.86	0.85	119%	1.06	0.65	65%
Portugal	1.96	0.85	130%	1.15	0.80	44%
Spain	1.92	0.85	126%	1.21	0.96	26%
Sweden	1.89	0.85	122%	0.88	0.61	46%
Switzerland	1.61	0.85	89%	0.95	0.80	18%
Turkey	1.92	0.85	126%	1.50	1.27	18%
UK	1.50	0.85	77%	0.77	0.61	27%
US	1.39	0.45	211%	0.52	0.41	26%
Average	1.48	0.77	124%	0.99	0.70	31%

1. Comparison using (1 initial minute + 3 additional minutes)/4 during peak periods where applicable.
2. Exchange rate used is the average for 1994.
3. Between Mexico and US, the cheapest rate was used.
4. Between Canada and US, the 340-630 miles tariff was used.
5. **Bolded** figures show where call-back is less expensive.
6. Accounting rate data is for 1994.
7. Collection charge is for Jan. 1995 and includes tax.
8. Call-back operator's collection charge is for July 1995. Call-back customers pay a US \$25 minimum monthly usage charge for each line.
9. According to Fig. 5 in Box 1, $B = AR_1/2$, $D = AR_1/2 + AR_2/2$.

Source: OECD

Box 1
Figure 5. Traffic flow of call-back services



Terms:

Call-back Operator

Reseller of volume discounted facilities to countries outside country C.

PTO (call-back facility provider)

The telecommunication operator in C providing facilities through discounted charges to Call-back operators.

A Originating country

B Terminating country

C Country where the call-back facility provider is located.

Call-back traffic

The traffic flow that users of call-back service recognise. In the example, it is from A to B.

Actual call-back traffic

The traffic which actually flows in the PSTN. In the example, there would be two traffics: from C to A, and from C to B.

Normal traffic

The international traffic which does not use call-back technology. In the example, the traffic flows directly from A to B.

.../...

Stage 1 Contacting Call-back operator in C

If a call-back subscriber in **A** wants to make an international call to **B** using a call-back service, he would contact the call-back operator's facility by:

- uncompleted call;
- completed call;
 - via PSTN,
 - via leased line by call-back operator,
 - via packet switched network,
- using constant polling from the call-back operator's facility.

Stage 2 Setting up calls

After receiving a signal, the call-back operator would make two telephone calls using the PSTN, one to the originating terminal and the second to the destination country. These calls normally use discounted tariffs offered by the PTO to call-back operators.

Financial implication

The margin of the call-back service would be much smaller as compared to normal traffic. This is because:

- the collection charge of the call-back service is lower than to normal traffic,
- the PTO in **C** will pay settlements both to the PTO in **A** and the PTO in **B**,
- the margin of the call-back traffic should be shared by both call-back operator and the PTO in **C**.

It should be noted that the incentive for the facility providers in **C** is not only the income obtained directly from call-back services but also from the profitable proportional return traffic which results from outbound traffic generated by call-back operators.

Implications for Accounting Rates

As seen in Table 8 the call-back service margin is relatively slim. Facility providers in competitive countries are also probably earning small margins on the facilities they make available to call back service providers. However, these international facility-based carriers have an added incentive in selling capacity to call-back companies in that call-back traffic stimulates profitable inbound traffic. This is because call-back, by increasing outbound traffic through proportionate return policies is increasing the percentage of traffic that the facility-provider obtains from foreign destinations. In effect, the revenue from inbound accounting rates compensates for any reduction in profit margins on outbound calls or on capacity being used for outbound calls. The incentives provided here result from the fact that through the bilateral accounting rate system, and through policies such as proportionate return, there is a close link between outbound and inbound traffic. Breaking this link would occur in a competitive environment and would be an important factor in reducing incentives to make available capacity to call-back providers at low margins.

The proportionate return system, which is a regulatory tool, **links the outbound calling price to the profit earned from terminating incoming calls**. By artificially creating a joint service the respective cost of providing each service is ignored. The fact that operators from competitive countries cannot compete in price terms to obtain incoming traffic (because of uniform accounting rates and proportionate return requirements), results in this distorted system of trying to obtain incoming calls. This linkage therefore causes price distortions. Setting the settlement rate to cost, that is a termination charge, would reduce the profitability of incoming calls and the incentive to “export dial tone”, that is by stimulating outgoing calls for the sole purpose of obtaining incoming calls would lose its relative attractiveness. This does not imply that there would be no competition to obtain incoming traffic. On the contrary, there would be competition but based on the most advantageous price for termination of calls.

Proportionate return policies have been implemented as a safeguard when operators in competitive markets need to deal with a monopoly operator in the provision of international service (see Box 2). Some monopoly operators whose market has been targeted by call-back service providers would prefer that call-back minutes not be counted in proportionate return calculations. However, it may be difficult to determine which calls are generated by call-back services.

In the countries where call-back customers are located there may be downward pressure on accounting rates if demand for these services is sufficiently strong. This assumes that the PTO reduces collection charges, and wishes to maintain existing rates of return which may provide an incentive to reduce accounting rates. However, such a direct relationship may not occur depending on how call-back impacts on the direction of traffic flow. For example, countries which are important users of call-back services may find that incoming calls are growing faster than outgoing. Instead of trying to reverse the flow through price reductions, this may give PTOs an incentive to increase accounting rates from the country where call-back facility providers (PTOs) are located.

However, such policies by operators would tend to create a polarisation between a group of countries with relatively competitive prices and low accounting rates, and a second group of countries with prices significantly above cost. The latter group would be under considerable pressure as competition increases throughout global markets. Furthermore, they would find it extremely difficult in such a situation to rebalance their prices in a smooth way and without adverse effects. This danger is real, especially between OECD countries and a number of non-OECD countries who have difficulty in envisaging the benefits which they can attain from competitive telecommunication markets.

Refile

Earlier OECD work on refile¹¹ stressed the role that refile can play in placing pressure on accounting rates. In comparison to call-back services, refile is usually undertaken on a larger scale and tends to be a carrier service rather than targeted to individual customers as would be the case for call-back services. Because it deals with a higher volume of traffic, the impact of refile tends to be much higher and because refile is based on arbitrage of differences in accounting rates its impact on these prices is direct (see Box 3) whereas its impact on collection charges is much more indirect.

Refile is often carried out by the PTOs themselves and therefore helps to enhance competition in the market for international telecommunication services. Refile, linked with international simple resale, can in fact result in significant pressure on accounting rates since in this form certain high cost routes can be completely by-passed. The impact of refile is therefore likely to be on routes where accounting rates exceed costs by a large margin (for example between A and B in Box 3), rather than the whole accounting rate system.

However, many PTOs may be reluctant to change traffic routes completely since they still need to maintain correspondent relations with other operators and may feel constrained because of earlier commitments on traffic forecasts not to disrupt traffic flows unduly. If this is the case refile may deal mainly with new traffic growth at present, although as competition increases it should be expected that refile will play a much wider role in traffic diversion. A difference between call-back services and refile is that the former is much more visible in terms of its public profile and in terms of access to estimates on traffic being handled by call-back, whereas it is difficult to estimate the extent of traffic refile that is taking place. The compatibility of refile with existing International Telecommunication Regulations (ITR) has been questioned by some countries.

Box 2 Policy Asymmetry

The attempt by international telecommunication operators in competitive markets to expand both the size of the market and their share of the market, also tends to increase outgoing traffic. As such, this competitive process benefits a monopoly carrier in a call terminating market. The competitive process tends to reduce the margin between collection charges and accounting rates for operators in competitive markets, and increases revenue for operators in monopoly markets by increasing their incoming traffic. The fact that operators in monopoly markets benefit from the competitive process in other markets is due to high accounting rates which make incoming calls profitable.

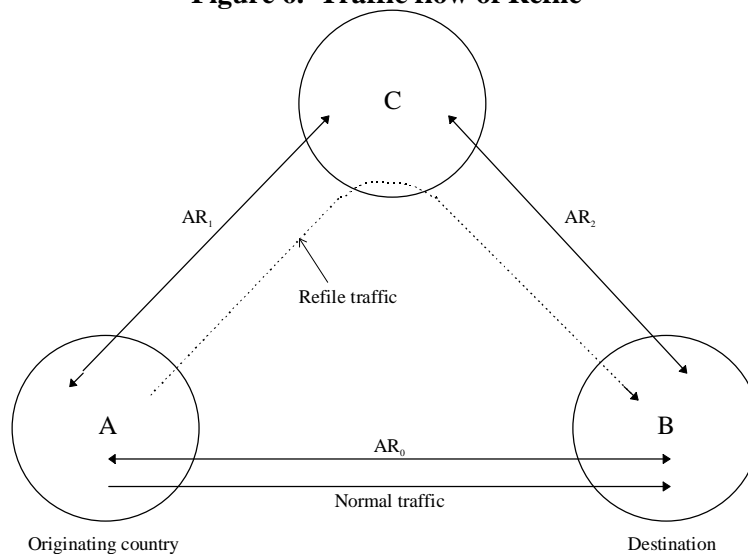
Competition at one end of a bilateral telecommunication relation where the competitors are traditional PTOs using the PSTN does not place sufficient pressure on international monopoly carriers in other markets. On the contrary, the power wielded by a monopoly carrier has required regulators in competitive markets to place limits on the competitive process in their own markets. This has been undertaken to prevent the monopolists from using dominant position to obtain special treatment from competitive carriers in other countries by playing one against the other, that is, “whipsawing”. Regulators have therefore required:

- **Uniform accounting rates**, that is, competing carriers must negotiate the same accounting rate and settlement rate with a corresponding carrier in another market. Only when it is considered that a foreign market is competitive will regulators normally dispense with the requirement for uniform accounting rates. For example, as shown in Table 3, UK international carriers only have different accounting rates for the US market.
- **Proportionate return requirements**, that is, operators in competitive markets must receive traffic from monopoly carriers in the same proportion in which they send traffic to the monopoly carrier.

Uniform accounting rates limit the ability of a competitor in a country to gain an advantage over its rival/rivals. On the other hand proportionate return provides an incentive for an operator in a competitive market to reduce collection charges in order to increase traffic growth and obtain return traffic from monopoly operators in foreign markets (it is even possible to envisage an operator in a competitive market making a loss on outgoing traffic, if the margin on the increased incoming traffic exceeds this loss). If accounting rates were cost-based there would be no incentive to make a loss since the accounting rate would cover the costs of termination and a normal profit margin.

As long as there is a monopoly in corresponding countries, it would be very difficult to eliminate these two rules. Call-back service operators serve an important function in that they allow competing operators to indirectly compete in monopoly markets, overcoming to some extent the restrictions which the necessary regulatory requirements impose on them. Parallel accounting policies can also result in new entrants following pricing policies of the market leader, thus reducing competition. Countries such as Australia and New Zealand do not have parallel accounting rate and proportionate return policies since it has been considered that the threat of monopolists unfairly playing-off carriers is overstated and is also far less than the benefits of increased competition.

Box 3
Figure 6. Traffic flow of Refile



Terms:

- A** Originating country
- B** Terminating country
- C** Country refiling traffic (“Hub”.)

Refiled traffic

Traffic originating in **A** that is routed through **C** for termination in **B**.

Normal traffic

International traffic which is not re-routed. In the example, the traffic flows directly from **A** to **B**.

The net increase of the income related to the accounting rates when traffic is refiled through C;

For the PTO in A - $AR_0/2 - AR_1/2$ (>0 = income increase)

For the PTO in B - $AR_1/2 - AR_2/2$ (>0 = income increase)

For the PTO in C - $AR_2/2 - AR_0/2$ (<0 = income loss)

This also means that for refile to be viable:

$$AR_0 > AR_1 > AR_2$$

It should be noted that the incentive for the PTO in **C** is not only the income obtained directly from accounting rate arbitrage ($AR_1/2 - AR_2/2$) but also from the profitable proportional return traffic which results from outbound traffic to **B** generated by refile traffic.

SECTION 4: ALTERNATIVE CALLING PROCEDURES: INTERNATIONAL SIMPLE RESALE AND NEW SERVICES

In the previous section, the call-back services which were examined provided service within the framework of the accounting rate and collection charge system. In this section, services which by-pass the international telecommunications charging system are examined. These services include international simple resale, which is already being offered in some countries. Other services, such as telephony using packet switched networks, including the Internet, would also be included in this group of services.

New services and cost structures

An overview of the different charging and settlement for a number of technologies is shown in Table 9. The services where there is no settlement are to a large extent used mostly by large business customers, but they are becoming increasingly available to the smaller customers given developments in technology, and regulation.

In general, the pricing structure for telecommunication services other than telephony does not depend on time and distance, and does not normally incur a settlement between the operators¹². Telephone collection charges have also shown a trend toward being less time and distance related reflecting the digitalisation of networks. There is, therefore, precedence for using systems other than accounting rates. Despite different charging frameworks many of these other services based on technologies other than the PSTN are profitable.

Table 9. Collection Charges and Settlement for Different Services

Service	Technology	Collection Charge type		Settlement
		Subscriber Line	Trunk Line	
Telephone	Switched Line	Time/Flat	Time/Distance	Accounting rate system
Packet	Packet	Time/Volume	Volume	Settlement by traffic volume
X. 400	Store-and-Fwd	-	Volume	No settlement
Leased line	Leased Line	Flat		Half split (No settlement)
Frame Relay	FR, ATM	Flat		Half split (No settlement)
Internet	Packet / Others	PSTN, ISDN, L. lines, etc.	Flat	No settlement

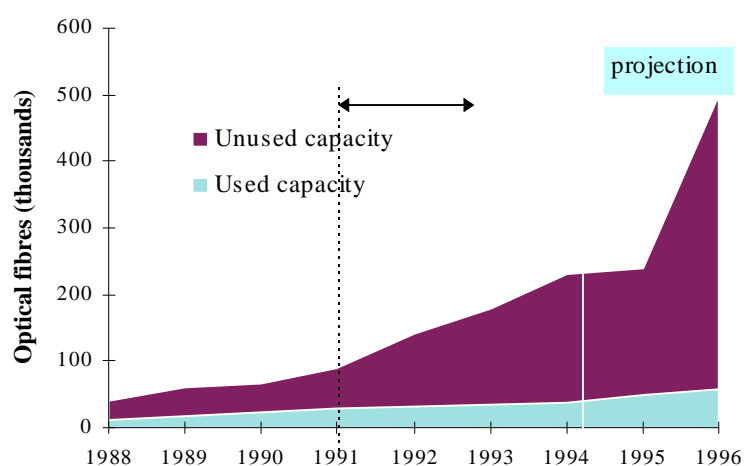
1. FR stands for Frame Relay Service.

Source: OECD

Resale

The current inflexible pricing system and service provision for international telephone service is not appropriate to bridge the gap between supply and demand for facilities. Facility supply has increased significantly in recent years. Capacity utilisation of submarine fibre-optic cables was less than 20 per cent in 1994 (Figure 7). Furthermore, it is projected that this ratio could decrease in the near future with technological innovations¹³. Given the nature of telecommunications there is always spare capacity on hand as a backup and to meet peak time-of-day demand requirements. However, much of this capacity has been put into place either because of projected future demand growth, or as some operators try to attain some independence from relying on access to PTO infrastructure. Nevertheless, under normal circumstances one would expect that usage charges (collection and accounting rates) would decline in order to stimulate demand and increase capacity utilisation.

Figure 7. Utilisation of Submarine Fibre-optic cables



Source: ITU

International simple resale provides one means to stimulate usage and reduce the gap between the supply of facilities and their usage. As well, this would benefit users and the PTOs. With its experience for resale regulation from 1976 the US government has indicated, that “Carriers have discovered that, far from threatening their existence, resellers represent large volume, important customers who contribute significant revenue to the carriers¹⁴.” In the US, 180 pure resellers (non-facility based service providers) of international traffic reported to the FCC in 1994. The total revenue of pure resale in the US added up to approximately US\$ 1 120 million representing 13.6 per cent of the 1994 net revenue of international message telephone services by facility based carriers. Also it is reported that British Telecom (BT) welcomes ISR¹⁵. In the UK, there are around 40 service providers licensed to provide international simple resale services.

Facility providers today find that it is more profitable to provide excess capacity to resellers and allow them to find customers and market this capacity rather than marketing this capacity themselves. Resale allows more segmented and flexible marketing including more market oriented prices. It also provides the flexibility that many large customers wish to attain. From the regulatory perspective, resale is a useful tool to increase efficiency, particularly in the transition to a fully competitive market.

Table 10. Arbitrage opportunities provided through International Simple Resale
(the example of Norway)

Comparison of the collection charge and leased line cost in \$US

From Norway	Monthly half LL. price on both sides	Leased line price per minute	Local call charge on both ends	Total ISR	IDD	Ratio of
				price per minute	collection charge	ISR tariff to IDD tariff
	A	B=A/ 44640	C	D = B+C	E	D/E
TO						
Australia (Telstra)	8920	0.20	0.03	0.23	0.71	32.00%
Austria	7344	0.16	0.09	0.25	0.49	51.23%
Belgium	5164	0.12	0.07	0.18	0.49	36.90%
Canada	6215	0.14	0.03	0.17	0.57	29.08%
Denmark (Tele D.)	1989	0.04	0.07	0.11	0.28	40.17%
Finland (Tele. F.)	1945	0.04	0.04	0.08	0.28	29.61%
France	5399	0.12	0.06	0.19	0.49	37.89%
Germany	5228	0.12	0.05	0.17	0.49	34.39%
Greece	5928	0.13	0.03	0.16	0.57	27.97%
Italy	5228	0.12	0.06	0.17	0.49	35.24%
Japan (KDD, NTT)	14289	0.32	0.06	0.38	1.05	36.16%
Netherlands	4369	0.10	0.06	0.16	0.49	32.37%
Norway	-	-	-	-	-	-
Portugal	6114	0.14	0.05	0.19	0.57	32.72%
Spain	5922	0.13	0.04	0.17	0.57	30.41%
Sweden (Telia)	1849	0.04	0.04	0.08	0.28	30.23%
Switzerland	5129	0.11	0.14	0.25	0.49	51.56%
Turkey	9187	0.21	0.04	0.25	0.71	35.03%
UK (BT)	4498	0.10	0.08	0.18	0.49	36.08%
US (ATT, Nynex)	7157	0.16	0.07	0.23	0.57	39.74%
Simple Average	5888	0.13	0.06	0.19	0.50	35.73%

1. The leased line charge per minute is calculated assuming that a 64 kbit/s leased line has four voice paths with a 25 per cent usage ratio.
2. Leased line charges are calculated by adding half leased line prices of both terminating countries.
3. Leased line charges used are the cheapest price available as of September 1994. IDD collection charges are from January 1995.
4. Calculations use 1994 exchange rates.

Source: OECD, ITU, LYNX

Arbitrage and International Simple Resale

The potential arbitrage opportunities which are available from ISR are shown in Table 10. The assumptions underlying this table were used in earlier tables: it is assumed that a 64 kbit/s digital leased line has only four voice paths with a 25 per cent usage ratio. This assumption is generous taking into account the bulk discounts for capacity that ISR providers normally obtain from facility providers. As well, normally a 2 Mbit/s leased circuit would be used and with multiplexing and a higher usage ratio the ratio of ISR prices relative to collection charges would be even less. The table tries to show the price per call minute using leased circuits at both ends of an international relation, compared to the international direct dial price of a call. Even on the basis of assumptions which favour IDD calling, there is a significant difference in prices per minute for relations between Norway and other countries. Norway has not been

singled out for this example, in fact Norway tends to have relatively cheap IDD prices. The price differences shown in the Table would be similar for a large number of OECD countries. The example indicates that under competitive conditions where IDD prices would move closer to costs (using as a proxy leased lines price which are well above cost) customers could call for one-third or less of present prices. The significant margins earned by PTOs exemplify their abuse of a dominant position in their respective markets.

ISR impact on accounting rates

The use of international simple resale has only been given approval in a few countries: Australia, Canada, Sweden, the UK and the US. Further, definitions of what constitutes “equivalence” has meant that ISR in the case of the United States can only be applied for Canada, Sweden and the UK; the UK has approved ISR with Canada, Sweden, Australia and the US.

It is difficult to judge the impact of ISR on accounting rates. Table 11 shows the trend in UK accounting rates from 1991-95 with those countries with which it has ISR agreements. Accounting rates of UK operators with Australia, Sweden and the US have decreased on average 44.4 per cent from 1991 to 1995 while other OECD countries have reduced their accounting rates with the UK by 18.9 per cent. This might reflect partially the pressure from the threat of simple resale as well as the actual introduction of simple resale at the international level. However, these changes also reflect the fact that these countries have competition between established international telecommunication operators. Canada, with no competition for intercontinental telecommunication services, nevertheless is subject to competitive pressure both through ISR and the fact that traffic for Canada, or from Canada, can be refiled via the US.

In the case of the United States, FCC data on accounting rates (see Table 4) indicate that accounting rates with Canada and the US have declined from 0.32 SDR (US \$ 0.42) to 0.20 SDR (US \$ 0.28) for peak rates representing a 37.5 per cent decrease. These decreases were closely correlated with the Canadian Radio-television and Telecommunications Commission’s decision on ISR which was taken in March 1990¹⁶. In comparison other OECD countries reduced accounting rates on average by 5 per cent during 1989-90. In October 1994 the UK government designated the US as an ISR service destination. In 1995, the accounting rate between BT and AT&T declined by 24.2 per cent while those with the other OECD countries declined by 13.7 per cent.

ISR service provision by-passes the international charging and settlements system, and therefore places significant pressure on accounting rates. Although reciprocity for liberalisation of ISR between two countries may not be necessary, it is necessary to have some form of safeguards in place to prevent carriers with monopolies in their markets from using ISR to avoid paying accounting rates for their outgoing traffic while earning accounting rates for incoming traffic. The impact of ISR is not limited to those countries where it is allowed. The ability to refile traffic means that ISR can be used to bypass expensive transit countries, or to re-route traffic to avoid paying high accounting rates for particular relations. Given the competitive nature of the UK or Swedish markets, for example, transatlantic traffic can be routed through these countries for termination in Europe. This may explain partly the significant recent decline in accounting rates between Germany and the US. As an example of price arbitrage opportunities, the US-Spain accounting rate of SDR 1.2 compared to SDR 0.42 between the UK-Spain suggests that ISR would allow considerable savings in terminating traffic in Spain if US traffic were routed via the UK.

ISR can also impact on collection charges. KDD (Kokusai Densin Denwa Co.) in Japan announced a 6.7 per cent rate reduction in November 1995. The peak rate to the US was reduced from US\$ 1.96 to US\$ 1.76 for one minute. However, within 2 months, KDD announced a further reduction

from US\$ 1.76 to US\$ 0.98 by 1998, that is half the price from that of November 1995. This move coincided with the US government's decision to introduce ISR with the US in 1997 (as well as to regain market share from call-back operators)¹⁷.

Table 11. Changes in UK IDD Accounting Rate for Relations Allowing ISR
(in SDR)

	1991	1995	1991- 1995 Change %
Australia (Telstra)	0.7	0.385	-45.00%
Canada		0.2	
Sweden	0.401	0.23	-42.64%
United States	0.53	0.30	-43.40%
Countries with ISR	0.54	0.31	-43.68%
Other OECD countries	0.54	0.41	-17.84%

1. The accounting rate with the US is that of Mercury.
2. Canada is excluded from averages.

Source: OFTEL

Internet Telephony

The ability to provide voice services based on packet switched network technology is increasingly providing a competitive threat to traditional public switched telecommunication networks. Although the use of this technology for voice is only emerging, there is considerable interest in its potential. This interest is being fuelled by the fact that time-based usage charges are not traditionally used for packet switched networks. The Internet is providing the underlying infrastructure to begin experiments with providing international voice communications over networks based on packet switched network technology. Although initially voice communications tended to be computer to computer communications, developments are now emphasising computer to telephone communications. The advantage of packet switched networks also includes, as well, the ability to handle integrated voice, data, and video services which many customers are increasingly requiring for day-to-day business. The fact that there are no international usage charges and only the price of local calls is paid is evidently providing an impetus to Internet telephony. Although arguments have been made that existing Internet capacity will not be able to handle an explosion of voice communication on these networks, it is not evident that the required capacity will not be forthcoming if the demand for services is there.

The development of Internet telephony (see Information Infrastructure and Pricing: The Internet, OECD/GD(96)73 for a comprehensive overview of pricing on the Internet) threatens the viability of the existing accounting rate system. The fact that telecommunication operators, and many governments, seem to continue to support high collection charges (and accounting rates) is in fact accelerating the development of new technologies which help by-pass the existing payments system. Long-term strategy by operators, if they wish to maintain their viability, would argue for lower, more competitive prices which would serve as well to slow down the development and diffusion of alternate calling procedures.

Governments, given the increasing liberalisation of data networks and in PSTN markets, will have difficulty in regulating the entry of many new services which use packet switched network technology, including voice communications. First, there is the problem in differentiating one type of digital message from another. Second, there is the difficulty in disrupting communications with any one

relation in that re-routing of traffic is a simple procedure. Third, there is the policy emphasis that many governments have placed on the diffusion of broadband infrastructures to create the information infrastructures of the future. To have an economic impact, usage prices on these infrastructures need to be low otherwise new services and on-line applications will be slow to develop. Many of these new services will gravitate to packet switched networks because of price advantages.

There are other longer term pressures for change. For example, proposals to develop new global mobile satellite systems could, once implemented, completely by-pass the existing collection charge and accounting rate mechanism. Although projected start-up dates are only in a few years (see Table 12) it is unlikely that these services will have high rates of diffusion for another decade so that in the near future they will have minimal impact.

Table 12. Global Mobile Satellite Systems

	Iridium	Globalstar	Inmarsat (ICO)	Odyssey
Number of Satellites	66	48	12	12
Satellites Type	LEO	LEO	LEO	LEO
Start-up date	Sept. 1998	Dec. 1998	Dec. 1999	2nd qtr. of 2000
Tariff (Projection)	US\$3/ minute	N/A	US\$2 /minute	US\$1/ minute

1. LEO - Low Earth Orbit System, MEO - Medium Earth Orbit System.

Source: OECD, Nikkei Communications

One of the important characteristics of these new services is that they have traditionally used flat rate tariff structures. Although it is not possible to obtain concrete tariff charges at present, it is extremely likely that the use of flat rate tariffs for global communications would accelerate changes in pricing structures for international direct dialled services where distance still plays an important part.

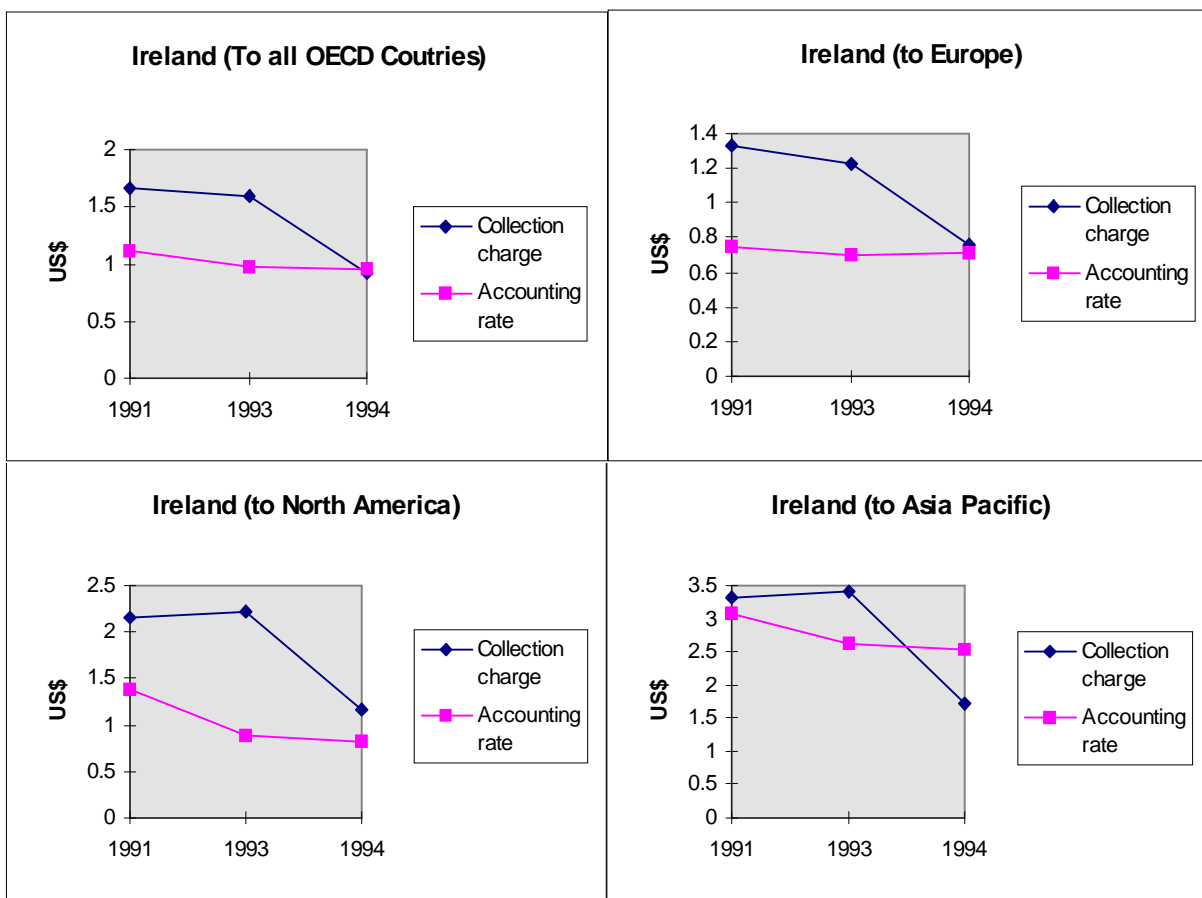
NOTES

- ¹ A fuller description of these services is discussed in OECD/GD(95)19, Refile and Alternate Calling Procedures, Their impact on accounting rates and collection charges, OECD 1995.
- ² Staple, G.C. (1995), Telegeography 1994 -- Global telecommunications Traffic Statistics and Commentary, Washington D.C.
- ³ These examples are aimed at showing the range in accounting rates and should not be interpreted as a criticism of BT. On the contrary, correspondent operators have often created difficulties for operators in competitive markets.
- ⁴ Communications Week International, 18 December 1995.
- ⁵ Journal of Commerce, 15 September 1995.
- ⁶ Communications Week International, Telecom 95 Daily On Line.
- ⁷ "There is very strong demand from the market for the telephone services of an acceptable quality at a price that users can afford in those countries where alternative calling procedures are being used. Perhaps the main message is that price is very important indeed, certainly for many it is much more important than quality." INTUG presentation at SG3 in ITU. INTUG NEWS.
- ⁸ Analysis of replies to the questionnaire on alternative calling procedure, Telecommunication Standardisation Bureau (TSB), International Telecommunication Union (ITU).
- ⁹ (0.99 US\$- 0.77 US\$) / 0.77 US\$.
- ¹⁰ Nikkei Communications 1995.5.15.
- ¹¹ See: OECD, Refile and Alternate Calling Procedures, op.cit.
- ¹² Packed switched services and telegram services use a settlement system.
- ¹³ World Telecommunication Development Report 1995, ITU.
- ¹⁴ Presentation of US delegation at Ad-hoc meeting on international telecommunications charging practice, 15 June 1993.
- ¹⁵ Financial Times, 3 October, 1995.
- ¹⁶ Comments of Cable & Wireless Communications to the FCC in the matter of regulation of International accounting rates, August 1991.
- ¹⁷ Nikkan-Kogyo Shinbun, 27 Dec. 1995.

ANNEX

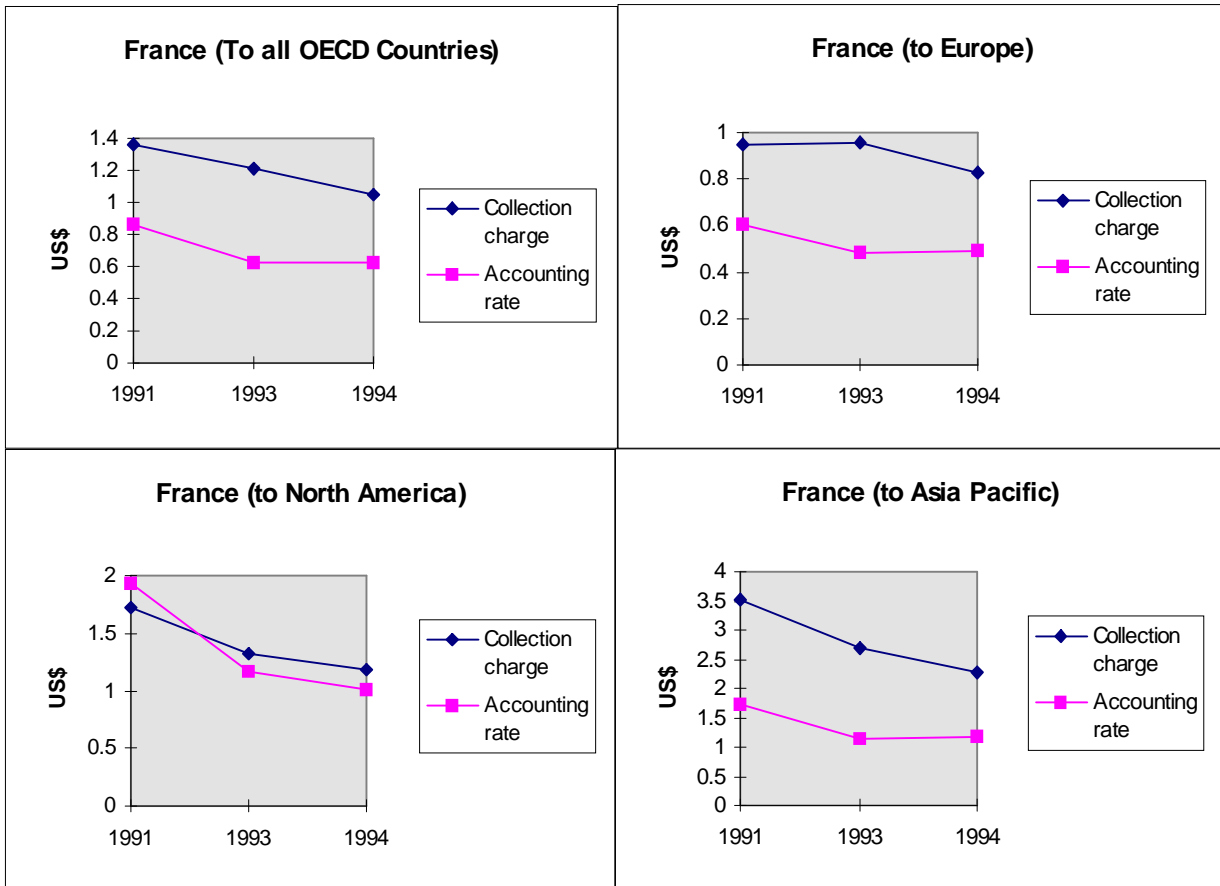
Trend of Average Collection charge and Accounting rate

Ireland

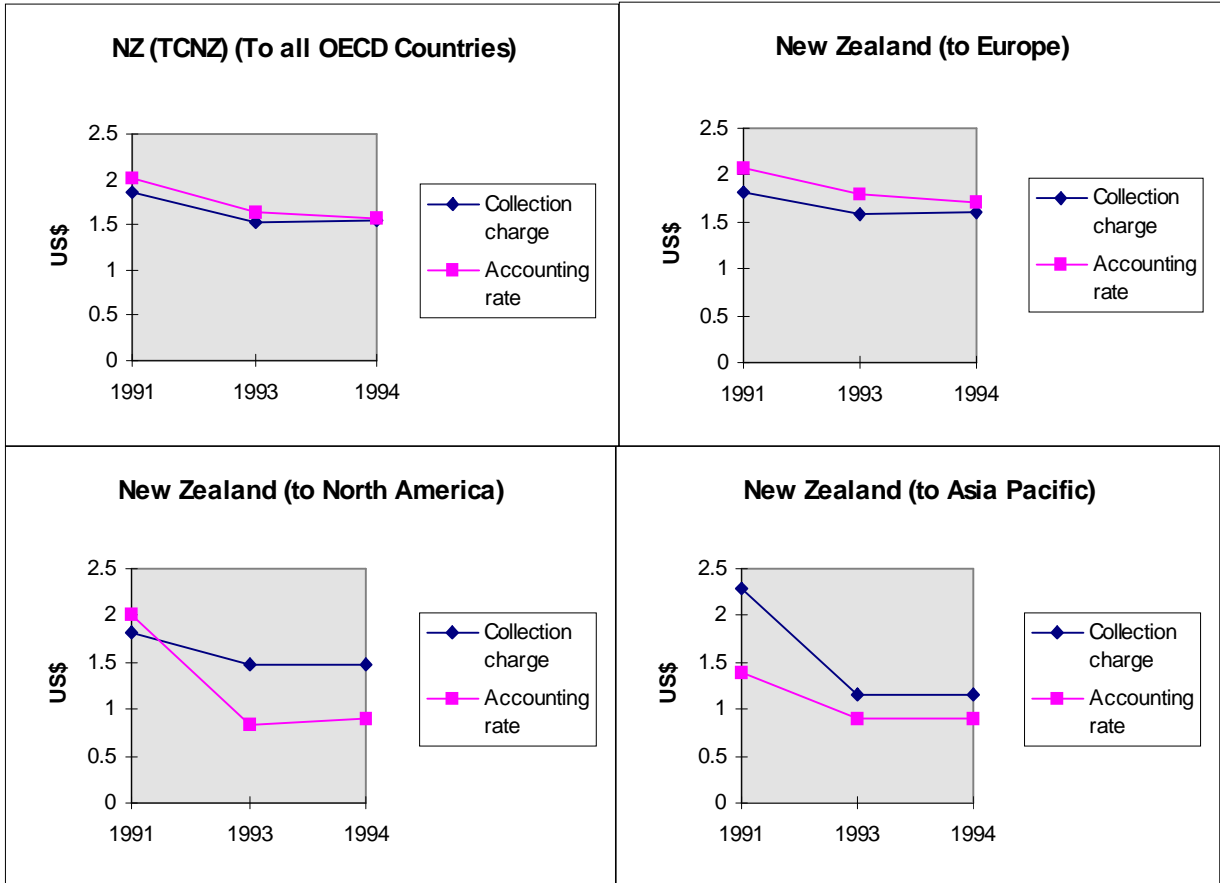


1. Tax is included in the collection charges.

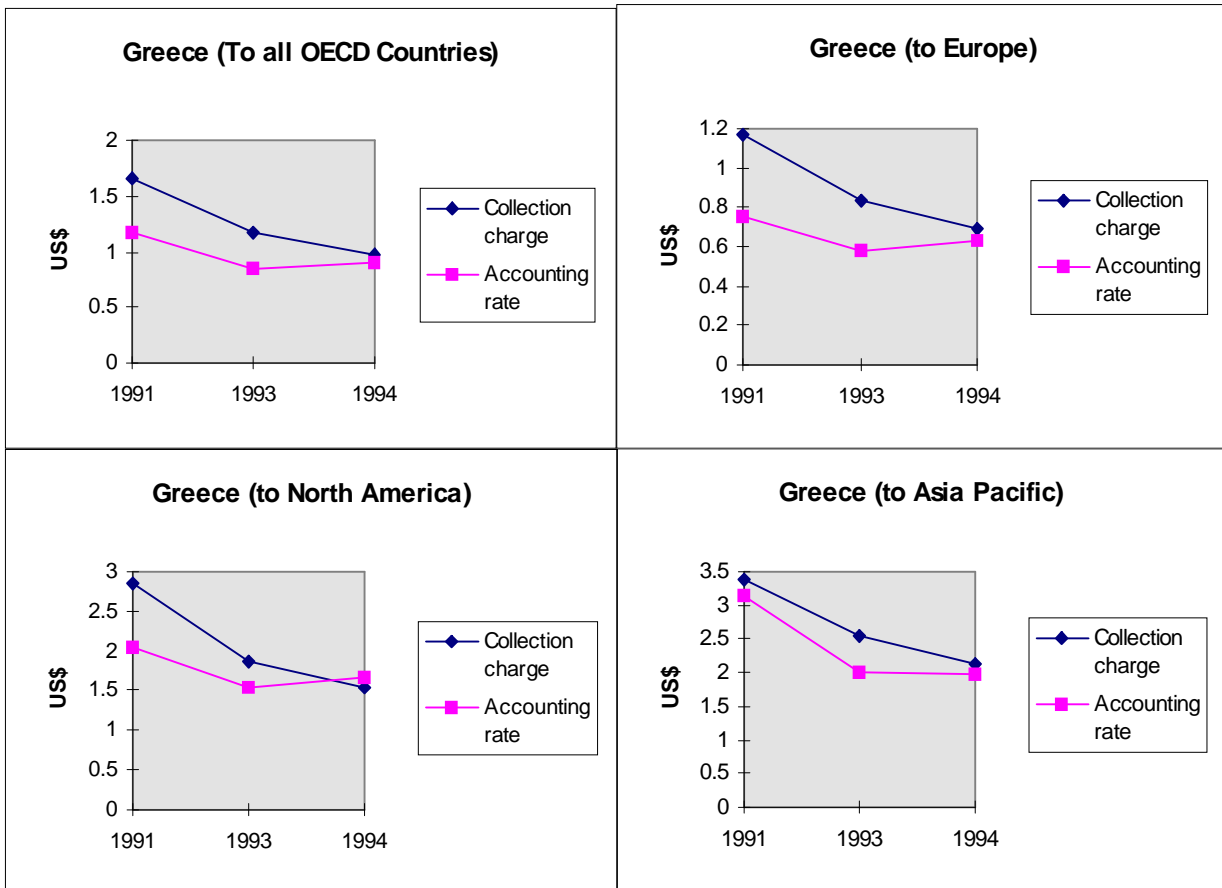
France



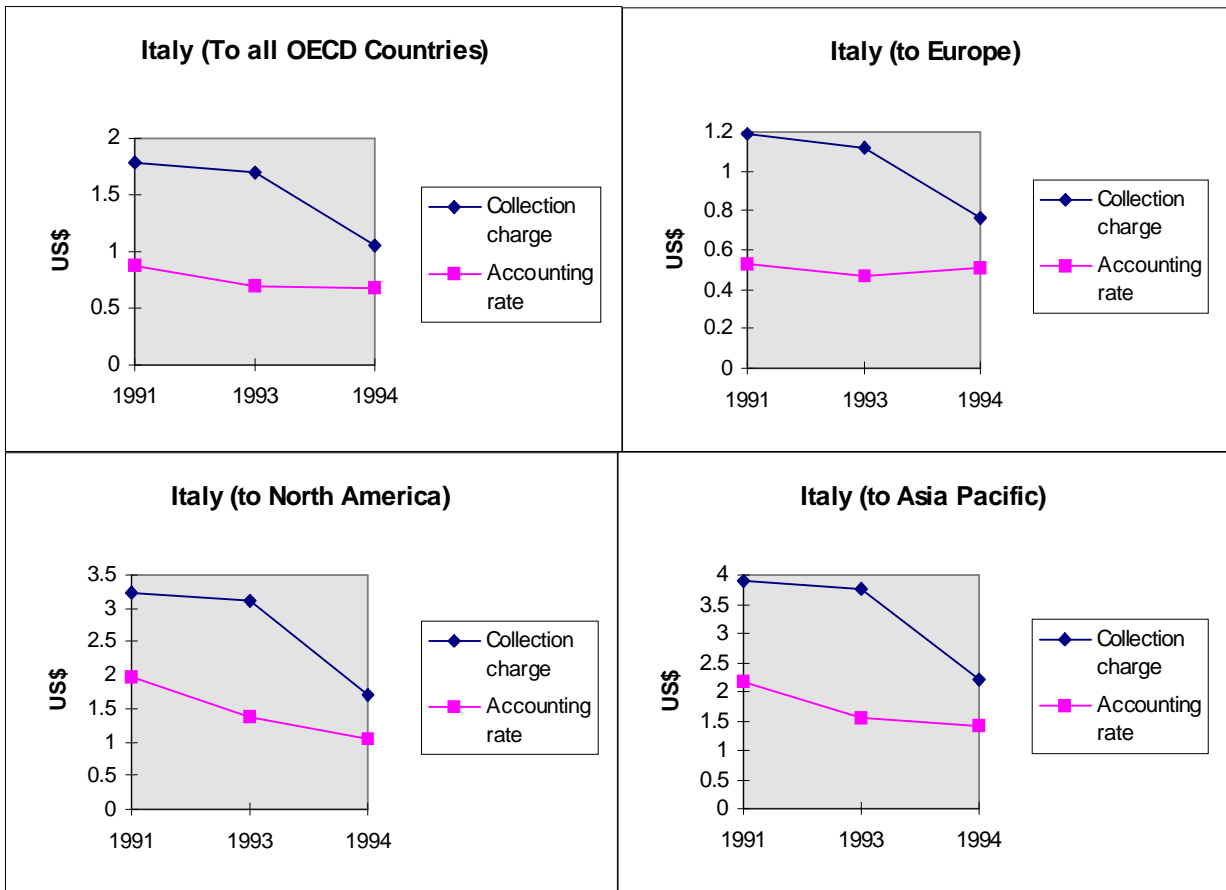
New Zealand



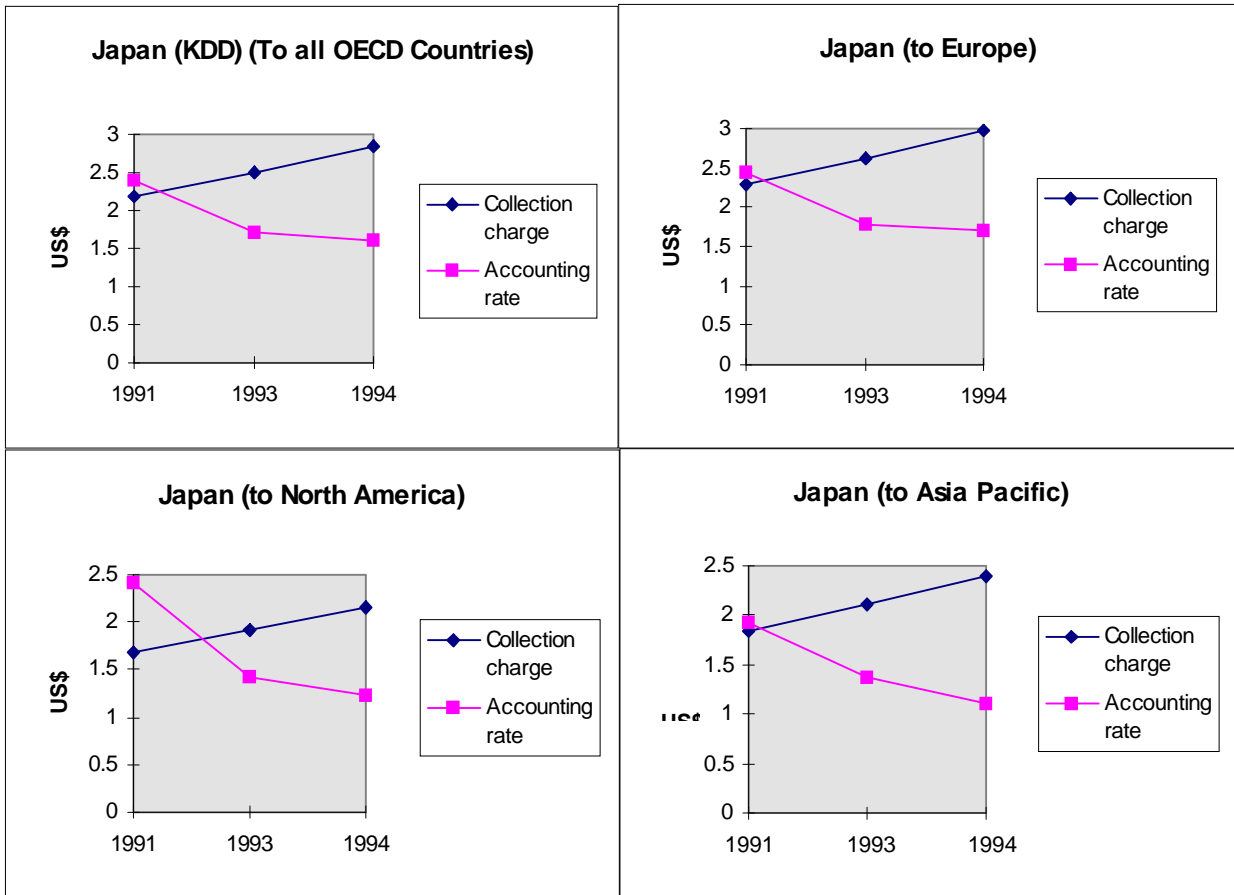
Greece



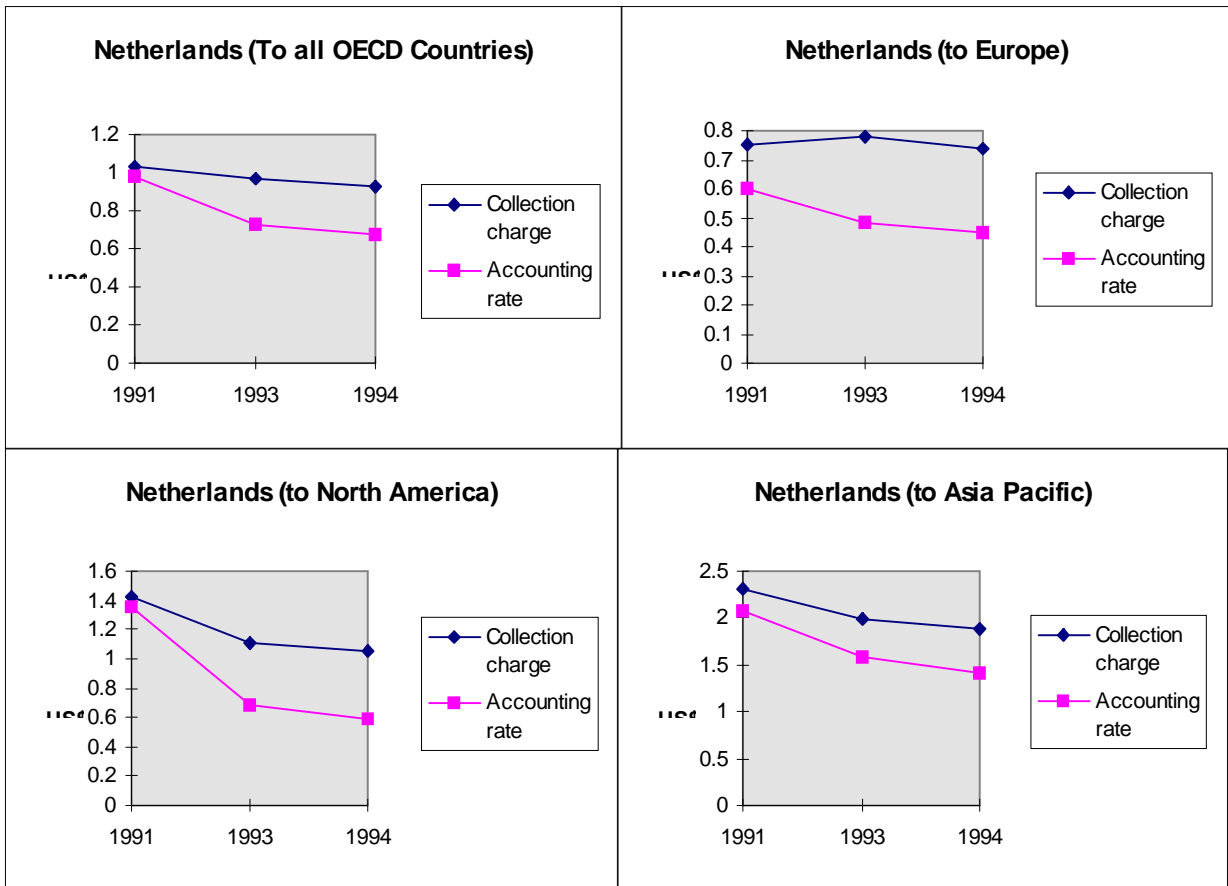
Italy



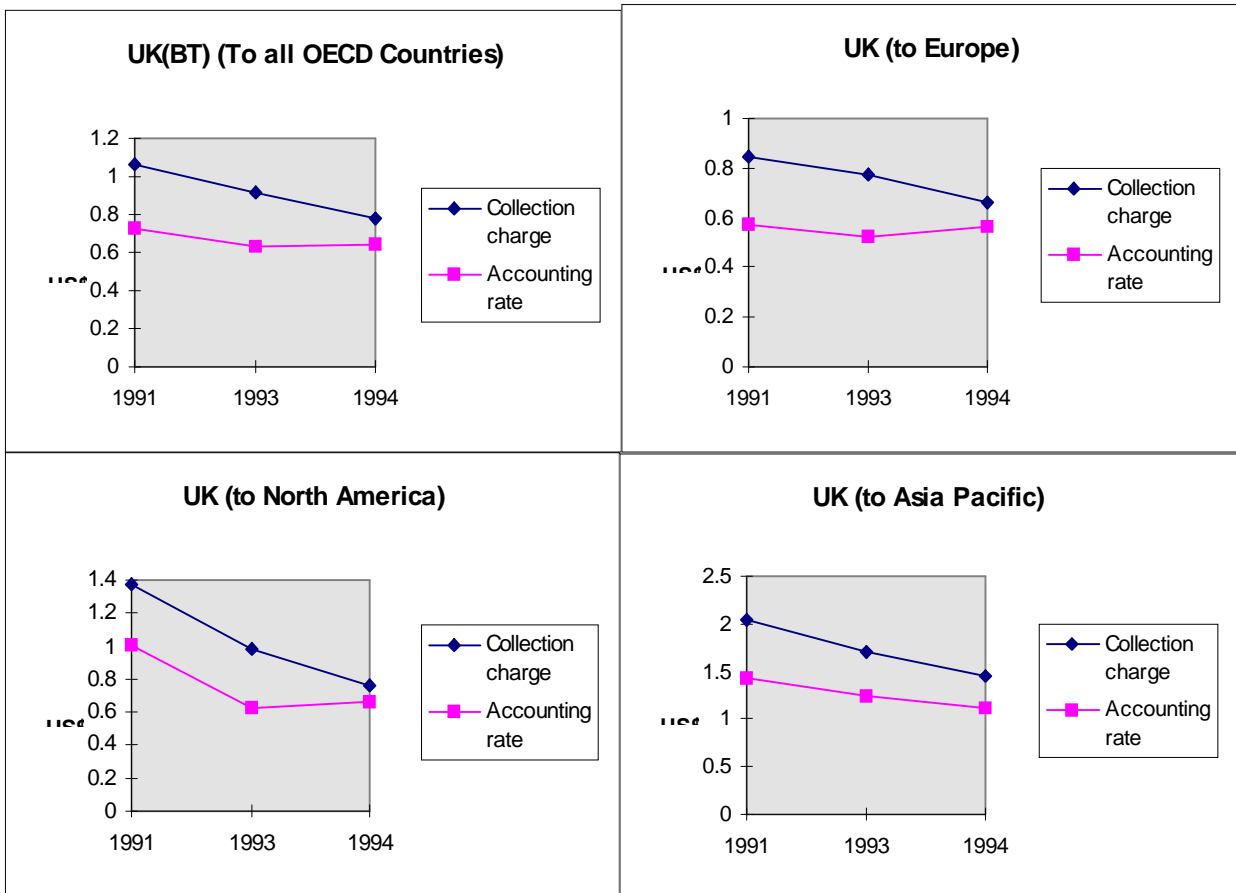
Japan



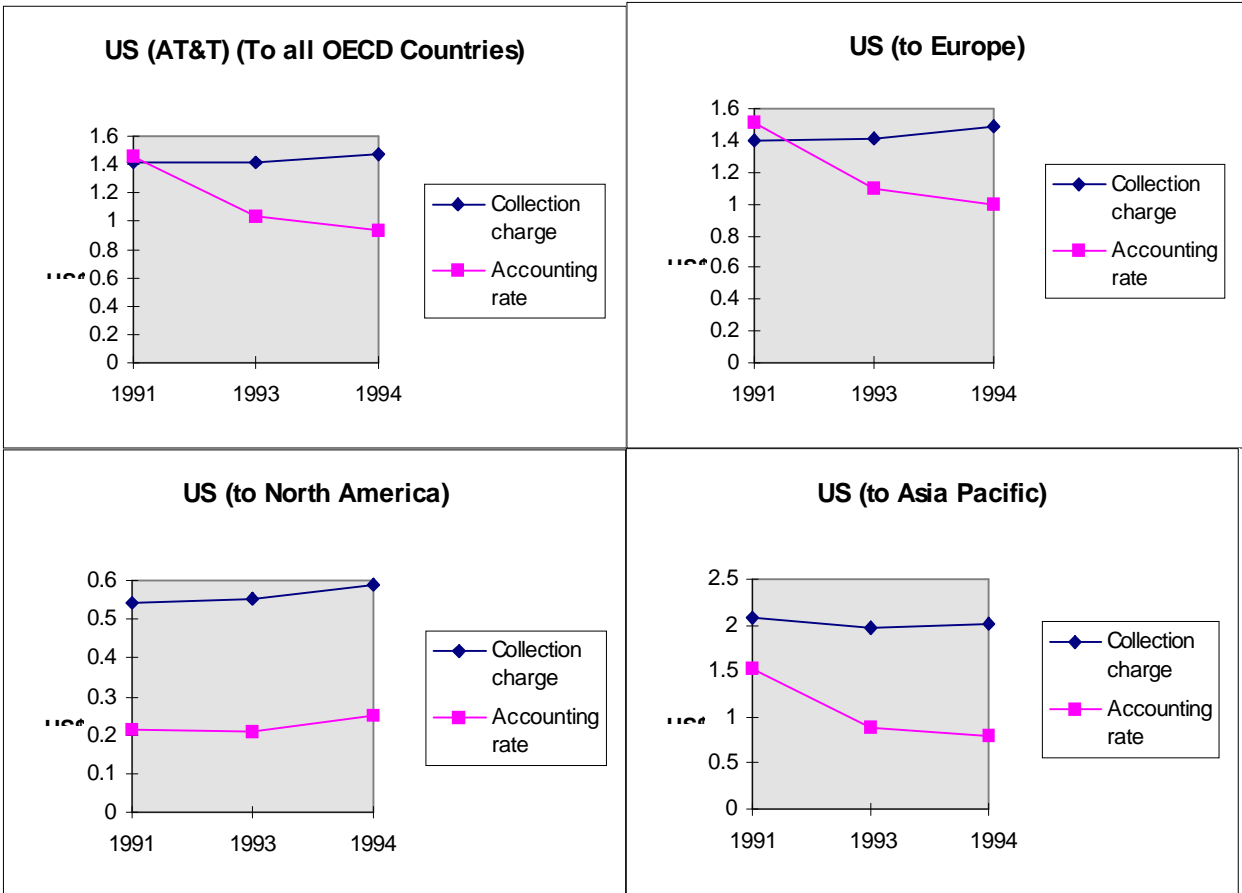
Netherlands



UK



USA



Collection Charge Per Minutes (1988-1993)

Collection Charges Per Minute (Peak Rate) - Jan. 1988

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N. Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U. K.	U. S.	Ave.	
From																											
Aul.	-	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.47	1.47	1.26	1.47	1.26	1.47	N/A	1.26	0.98	1.26	1.47	1.47	1.26	1.26	1.47	1.26	1.26	1.31	
Aus.	4.22	-	0.69	1.42	0.69	1.05	0.69	0.69	1.05	1.05	0.69	0.69	4.22	0.69	N/A	0.69	4.22	1.05	1.05	1.05	0.69	1.05	1.05	1.05	1.05	1.42	1.37
Bel.	3.35	0.89	-	1.91	0.89	0.89	0.57	0.64	0.89	0.89	0.89	0.89	3.35	0.40	N/A	0.40	3.35	0.89	0.89	0.89	0.89	0.57	0.89	0.57	0.89	1.21	
Can.	1.15	0.78	1.46	-	1.27	1.27	1.15	1.46	1.54	1.15	1.27	1.70	2.02	1.27	N/A	1.27	1.27	1.27	1.70	1.70	1.27	1.46	1.70	1.15	1.15	0.40	1.33
Den.	1.25	0.40	0.34	1.25	-	0.24	0.40	0.34	0.40	0.58	0.40	0.40	1.92	0.34	N/A	0.34	1.92	0.24	0.40	0.40	0.24	0.40	0.58	0.40	1.25	0.63	
Fin.	2.34	0.93	0.93	2.34	0.42	-	0.93	0.93	1.26	0.49	0.93	1.26	3.88	0.93	N/A	0.93	2.34	0.42	1.26	1.26	0.42	0.93	1.26	0.93	2.34	1.29	
Fra.	2.68	0.92	0.63	1.31	0.63	0.92	-	0.63	0.63	0.92	0.63	0.63	2.68	0.63	N/A	0.63	3.07	0.92	0.63	0.63	0.92	0.63	0.92	0.63	1.31	1.05	
Ger.	2.04	0.64	0.64	2.04	0.64	0.72	0.64	-	0.64	0.72	0.64	2.04	0.64	0.64	N/A	0.64	2.04	0.72	0.64	0.64	0.72	0.64	0.72	0.64	2.04	0.96	
Gre.	3.68	0.92	1.01	2.92	1.11	1.38	1.01	1.01	-	1.84	1.38	0.78	4.14	1.01	N/A	1.01	3.68	1.38	1.38	1.11	1.38	0.92	0.78	1.11	2.92	1.65	
Ice.	2.92	1.71	1.71	2.33	1.29	1.42	1.71	1.71	1.91	-	1.71	1.91	4.89	1.71	N/A	1.42	3.96	1.29	1.71	1.71	1.29	1.71	1.91	1.47	2.66	2.00	
Ire.	3.67	1.32	1.13	2.21	1.13	1.13	1.13	1.13	1.13	1.32	-	1.13	3.67	1.13	N/A	1.13	3.67	1.32	1.32	1.13	1.32	1.32	1.13	0.89	2.21	1.60	
Ita.	3.64	0.94	1.08	2.82	1.08	1.24	0.94	0.94	1.24	1.24	1.24	-	3.64	0.94	N/A	1.08	3.64	1.24	1.24	1.08	1.24	0.94	0.94	1.08	2.82	1.56	
Jap.	3.30	3.94	3.94	3.30	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	-	3.94	N/A	3.94	3.30	3.94	3.94	3.94	3.94	3.94	3.94	3.37	3.78	3.78	
Lux.	3.35	0.50	0.33	3.35	0.50	0.89	0.50	0.50	0.50	0.89	0.50	0.50	3.35	-	N/A	0.33	3.35	0.72	0.89	0.89	0.72	0.50	0.50	0.50	2.36	1.15	
Mex.	5.29	4.15	4.15	1.47	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	5.29	4.15	N/A	4.15	5.29	4.15	4.15	4.15	4.15	4.15	4.15	4.15	0.59	4.21	
Neth.	3.31	0.72	0.54	1.95	0.54	0.89	0.54	0.54	0.89	0.89	0.72	0.72	3.31	0.54	N/A	-	3.31	0.72	0.89	0.89	0.72	0.54	0.89	0.54	1.95	1.15	
N. Z.	0.91	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	N/A	1.77	-	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.73	
Nor.	1.93	0.59	0.59	1.44	0.31	0.31	0.59	0.59	0.59	0.59	0.59	0.59	2.58	0.59	N/A	0.59	2.58	-	0.59	0.59	0.31	0.59	0.59	0.59	1.44	0.86	
Por.	2.80	1.06	1.06	2.37	1.06	1.31	1.06	1.06	1.24	1.31	1.06	1.06	3.84	1.06	N/A	1.06	3.84	1.24	-	0.82	1.24	1.06	1.19	1.06	2.37	1.53	
Spa.	3.94	1.17	1.17	1.35	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	3.94	1.17	N/A	1.17	3.94	1.17	0.89	-	1.17	1.17	1.17	1.17	3.14	1.60	
Swe.	N/A	0.84	0.70	1.54	0.35	0.35	0.84	0.70	1.09	1.09	0.84	0.84	N/A	0.84	N/A	0.70	N/A	0.35	1.09	1.09	-	0.84	1.29	0.84	1.54	0.89	
Swit.	3.76	0.80	0.80	2.15	0.99	0.99	0.80	0.80	0.80	0.99	0.99	0.80	3.76	0.80	N/A	0.80	3.76	0.99	0.99	0.99	0.99	-	0.99	0.99	2.15	1.39	
Tur.	5.02	2.57	2.57	5.02	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	5.02	2.57	N/A	2.57	5.02	2.57	2.57	2.57	2.57	2.57	-	2.57	5.02	3.10	
U. K.	1.41	0.78	0.60	1.09	0.60	0.78	0.60	0.60	0.78	1.09	0.54	0.68	2.01	0.60	N/A	0.60	1.41	0.78	0.68	0.60	0.78	0.60	0.99	-	1.09	0.86	
U. S.	1.92	1.30	1.30	0.73	1.30	1.46	1.30	1.30	1.46	1.50	1.33	1.30	1.92	1.46	N/A	1.30	2.06	1.30	1.50	1.30	1.30	1.30	1.50	1.33	-	1.41	
From/To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N. Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U. K.	U. S.		

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from opposite direction.

Source: OECD

Collection Charges Per Minute (Cheapest Discount Rate) - Jan. 1988

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.	
From																											
Aul.	-	1.25	1.26	0.98	1.11	1.11	1.11	1.18	1.39	1.95	0.95	1.02	1.26	1.39	N/A	1.11	0.76	1.11	1.39	1.46	1.11	1.25	1.39	0.95	0.96	Aul.	1.19
Aus.	1.42	-	0.63	1.00	0.63	1.00	0.63	0.63	0.63	1.00	1.00	0.63	1.42	0.63	N/A	0.63	1.42	0.63	1.00	0.63	0.63	0.63	1.00	0.63	1.00	Aus	0.85
Bel.	1.34	0.54	-	0.80	0.54	0.67	0.45	0.45	0.57	0.89	0.54	0.54	1.34	0.40	N/A	0.45	1.34	0.67	0.57	0.57	0.67	0.54	0.80	0.45	0.80	Bel.	0.69
Can.	1.19	1.28	1.47	-	1.11	1.11	0.97	1.27	1.88	1.31	1.11	1.53	1.62	1.51	N/A	0.87	1.19	1.11	1.70	2.15	0.87	0.87	2.23	0.79	0.40	Can.	1.28
Den.	1.17	0.53	0.47	0.82	-	0.35	0.47	0.41	0.58	0.58	0.53	0.53	1.17	0.47	N/A	0.47	1.87	0.35	0.58	0.58	0.35	0.47	0.70	0.41	0.82	Den.	0.64
Fin.	1.34	0.87	0.83	1.29	0.42	-	0.83	0.83	0.87	0.87	0.83	0.83	2.26	0.87	N/A	0.83	2.26	0.42	0.87	0.83	0.41	0.83	0.87	0.83	1.29	Fin.	0.97
Fra.	1.62	0.61	0.51	0.82	0.61	0.61	-	0.51	0.61	0.79	0.61	0.51	1.62	0.51	N/A	0.51	1.62	0.61	0.61	0.51	0.61	0.51	0.87	0.51	0.82	Fra.	0.75
Ger.	1.74	0.64	0.64	1.10	0.64	0.72	0.64	-	0.64	0.72	0.64	0.64	1.74	0.64	N/A	0.64	1.74	0.72	0.64	0.64	0.64	0.72	0.84	0.72	0.64	Ger.	0.84
Gre.	2.18	0.83	1.00	2.18	1.00	1.00	1.00	1.00	-	1.81	1.00	0.83	3.69	1.00	N/A	1.00	3.69	1.00	1.00	1.00	1.00	0.83	0.83	1.00	2.18	Gre.	1.39
Ice.	3.10	2.22	2.22	2.53	1.50	1.58	1.76	1.50	2.53	-	2.22	2.53	5.20	2.22	N/A	1.58	4.16	1.50	2.22	1.76	1.50	2.22	2.04	1.76	2.22	Ice.	2.27
Ire.	1.35	0.71	0.53	1.03	0.71	0.71	0.53	0.53	0.71	0.71	-	0.71	1.78	0.53	N/A	0.53	1.35	0.71	0.71	0.71	0.71	0.71	1.01	0.45	1.03	Ire.	0.80
Ita.	2.35	0.96	0.96	1.64	0.96	0.96	0.96	0.96	1.28	0.96	-	0.96	2.35	0.96	N/A	0.96	2.35	0.96	0.96	0.96	0.96	0.96	1.28	0.96	1.64	Ita.	1.23
Jap.	2.49	2.83	2.83	2.42	2.83	2.83	2.70	2.70	2.83	2.83	2.83	2.83	-	2.83	N/A	2.83	2.49	2.83	2.83	2.83	2.83	2.83	2.83	2.70	2.07	Jap.	2.74
Lux.	1.49	0.54	0.45	0.99	0.54	0.73	0.54	0.54	0.61	1.34	0.61	0.54	1.49	-	N/A	0.45	2.29	0.73	0.61	0.61	0.73	0.54	1.34	0.54	0.99	Lux.	0.84
Mex.	5.29	4.15	4.15	1.47	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	5.29	4.15	-	4.15	5.29	4.15	4.15	4.15	4.15	4.15	4.15	4.15	0.59	Mex.	4.21
Neth.	1.73	0.72	0.47	0.84	0.54	0.89	0.47	0.47	0.72	0.89	0.72	0.72	1.73	0.47	N/A	-	1.73	0.72	0.72	0.72	0.44	0.44	0.89	0.54	0.84	Neth.	0.80
N.Z.	0.70	1.50	1.50	1.27	1.50	1.50	1.50	1.50	1.66	1.66	1.50	1.50	1.39	1.66	N/A	1.50	-	1.50	1.66	1.66	1.66	1.50	1.66	1.27	1.27	N.Z.	1.48
Nor.	0.76	0.53	0.53	0.62	0.30	0.30	0.53	0.53	0.62	0.53	0.53	0.53	1.13	0.53	N/A	0.53	1.13	-	0.62	0.62	0.30	0.53	0.76	0.53	0.62	Nor.	0.59
Por.	1.62	0.96	0.96	1.63	0.96	1.19	0.96	0.96	0.96	1.19	0.96	0.96	2.27	0.96	N/A	0.96	3.02	1.19	-	0.96	1.19	0.96	1.19	0.96	1.51	Por.	1.24
Spa.	3.16	0.77	0.77	1.35	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	2.64	0.77	N/A	0.77	3.16	0.77	0.77	-	0.77	0.77	1.06	0.77	1.35	Spa.	1.12
Swe.	1.67	0.78	0.65	0.98	0.32	0.32	0.78	0.65	0.78	0.65	0.65	0.78	2.18	0.78	N/A	0.65	1.67	0.32	0.78	0.78	-	0.78	1.00	0.58	0.98	Swe.	0.85
Swit.	1.29	0.71	0.71	0.86	0.71	0.71	0.64	0.71	1.00	1.00	1.00	0.64	1.72	0.71	N/A	0.57	2.29	0.71	1.00	1.00	0.71	-	1.00	0.57	0.86	Swit.	0.92
Tur.	5.02	2.57	2.57	5.02	2.57	2.57	2.57	2.57	2.57	2.57	2.57	2.57	5.02	2.57	N/A	2.57	5.02	2.57	2.57	2.57	2.57	2.57	-	2.57	5.02	Tur.	3.10
U.K.	0.95	0.64	0.49	0.70	0.49	0.62	0.49	0.49	0.49	0.94	0.41	0.49	1.42	0.49	N/A	0.49	0.95	0.64	0.49	0.49	0.64	0.49	0.49	-	0.70	U.K.	0.63
U.S.	1.75	1.53	1.72	0.55	1.52	1.57	1.35	1.27	2.08	1.75	1.46	1.58	1.80	1.53	N/A	1.33	1.88	1.38	1.67	1.66	1.31	1.56	2.08	1.15	-	U.S.	1.54
	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.	

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

Source: OECD

Collection Charges Per Minute (Peak Rate) - Jan. 1989

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N. Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U. K.	U. S.	Ave.	
From																											
Aul.	-	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.64	1.41	1.41	1.64	1.41	1.64	N/A	1.41	1.09	1.41	1.64	1.64	1.41	1.64	1.64	1.41	1.41	1.41	
Aus.	4.32	-	0.70	1.46	0.70	1.08	0.70	0.70	1.08	1.08	1.08	0.70	4.32	0.70	N/A	0.70	4.32	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.46	1.40
Bel.	4.53	0.91	-	3.26	0.91	0.91	0.58	0.63	0.91	0.91	0.91	0.91	4.53	0.41	N/A	0.41	4.53	0.91	0.91	0.91	0.91	0.58	0.91	0.58	0.58	3.26	1.49
Can.	1.24	1.66	1.57	-	1.36	1.36	1.24	1.57	1.66	1.24	1.36	1.83	2.18	1.36	N/A	1.36	1.36	1.36	1.83	1.83	1.36	1.57	1.83	1.24	0.46	1.47	
Den.	1.43	0.44	0.37	1.43	-	0.27	0.44	0.37	0.44	0.27	0.44	0.44	2.38	0.37	N/A	0.37	1.43	0.27	0.44	0.44	0.27	0.44	0.44	0.44	1.43	0.65	
Fin.	2.39	1.13	1.13	2.39	0.52	-	1.13	1.13	1.54	0.52	1.13	1.54	4.23	1.13	N/A	1.13	2.39	0.52	1.54	1.54	0.52	1.13	1.54	1.13	2.39	1.46	
Fra.	2.60	0.89	0.61	1.27	0.61	0.89	-	0.89	0.89	0.89	0.89	0.89	2.60	0.89	N/A	0.89	2.60	0.89	0.61	0.61	0.89	0.61	0.89	0.61	1.27	1.08	
Ger.	2.09	0.65	0.65	2.09	0.65	0.73	0.65	-	0.65	0.73	0.65	0.65	2.09	0.65	N/A	0.65	2.09	0.73	0.65	0.65	0.73	0.65	0.65	0.65	2.09	0.98	
Gre.	3.40	0.76	0.83	2.39	0.91	1.13	0.83	0.83	-	1.13	1.13	0.64	3.40	0.83	N/A	0.83	3.40	1.13	1.13	0.91	1.13	0.76	0.91	0.91	2.39	1.38	
Ice.	2.63	1.53	1.53	2.09	1.16	1.28	1.53	1.53	1.72	-	1.53	1.72	4.39	1.53	N/A	1.28	3.56	1.16	1.53	1.53	1.16	1.53	1.72	1.32	2.39	1.80	
Ire.	3.76	1.35	1.16	2.27	1.16	1.35	1.16	1.16	1.16	1.35	-	1.16	3.76	1.16	N/A	1.16	3.76	1.35	1.16	1.16	1.35	1.35	1.16	0.91	2.27	1.63	
Ita.	3.63	0.94	1.07	2.81	1.07	1.23	0.94	0.94	1.23	1.23	1.23	-	3.63	0.94	N/A	1.07	3.63	1.23	1.23	1.07	1.23	0.94	0.94	1.07	2.81	1.56	
Jap.	2.81	3.77	3.51	3.38	3.77	3.77	3.51	3.51	3.77	3.77	3.77	3.51	-	3.77	N/A	3.51	3.38	3.77	3.77	3.77	3.77	3.51	3.77	3.51	2.31	3.55	
Lux.	3.40	0.51	0.34	3.40	0.51	0.91	0.51	0.51	0.51	0.91	0.51	0.51	3.40	-	N/A	0.34	3.40	0.74	0.91	0.91	0.74	0.51	0.51	0.51	2.40	1.17	
Mex.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neth.	3.39	0.73	0.56	2.00	0.56	0.91	0.56	0.56	0.91	0.91	0.73	0.73	3.39	0.56	N/A	-	3.39	0.73	0.91	0.91	0.73	0.56	0.91	0.56	2.00	1.18	
N. Z.	1.01	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	N/A	1.96	-	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.92
Nor.	2.40	0.74	0.74	1.78	0.38	0.38	0.74	0.74	0.74	0.38	0.74	0.74	3.20	0.74	N/A	0.74	2.40	-	0.74	0.74	0.38	0.74	0.74	0.74	1.78	1.02	
Por.	2.63	1.04	1.04	2.63	1.04	1.28	1.04	1.04	1.21	1.28	1.04	1.04	3.62	1.04	N/A	1.04	2.63	1.21	-	0.80	1.21	1.04	1.21	1.04	2.63	1.47	
Spa.	4.17	1.24	1.24	1.43	1.24	1.24	1.07	1.24	1.24	1.24	1.24	1.24	4.17	1.24	N/A	1.24	4.17	1.24	0.95	-	1.24	1.24	1.24	1.24	3.33	1.70	
Swe.	3.18	0.87	0.73	1.22	0.37	0.37	0.87	0.73	1.13	0.37	0.87	0.87	3.18	0.87	N/A	0.73	3.18	0.37	1.13	1.13	-	0.87	1.13	0.87	1.22	1.14	
Swit.	3.83	0.82	0.82	2.19	1.00	1.00	0.82	0.82	1.00	1.00	1.00	0.82	3.83	0.82	N/A	0.82	3.83	1.00	1.00	1.00	1.00	-	1.00	1.00	2.19	1.42	
Tur.	3.03	1.55	1.55	3.03	1.55	1.55	1.55	1.55	1.55	1.55	1.55	3.03	1.55	1.55	N/A	1.55	3.03	1.55	1.55	1.55	1.55	1.55	-	1.55	3.03	1.87	
U. K.	1.55	0.85	0.65	1.19	0.65	0.85	0.65	0.65	0.65	0.85	0.59	0.75	2.19	0.65	N/A	0.65	1.55	0.85	0.75	0.75	0.85	0.65	0.65	-	1.19	0.90	
U. S.	2.11	1.12	1.12	0.50	1.12	1.12	1.12	1.12	1.12	1.12	1.03	1.12	2.11	1.12	N/A	1.12	2.11	1.12	1.12	1.12	1.12	1.12	1.12	1.03	-	1.21	
From/To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N. Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U. K.	U. S.		

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

Source: OECD

Collection Charges Per Minute (Peak Rate) - Jan. 1990

To	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N. Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U. K.	U. S.	Ave.	
From																										
Aul.	-	1.34	1.34	1.34	1.34	1.34	1.34	1.66	1.34	1.34	1.34	1.66	1.66	N/A	1.34	1.03	1.34	1.66	1.66	1.34	1.66	1.66	1.34	1.34	1.43	
Aus.	2.12	-	0.66	1.36	0.66	1.01	0.66	1.01	1.01	1.01	0.66	2.12	0.66	N/A	0.66	2.12	1.01	1.01	1.01	1.01	0.66	1.01	1.01	1.01	1.36	1.06
Bel.	3.17	0.85	-	1.81	0.85	0.85	0.54	0.85	0.85	0.54	0.85	3.17	0.38	N/A	0.38	3.17	0.85	0.85	0.85	0.85	0.54	0.85	0.54	0.54	1.81	1.13
Can.	1.19	1.47	1.47	-	1.30	1.30	1.19	1.47	1.56	1.30	1.67	1.57	1.30	N/A	1.30	1.19	1.30	1.77	1.77	1.30	1.39	1.77	1.19	0.48	1.38	
Den.	1.42	0.46	0.38	1.42	-	0.27	0.46	0.38	0.46	0.27	0.46	2.19	0.38	N/A	0.38	1.42	0.27	0.46	0.46	0.27	0.46	0.46	0.46	1.42	0.66	
Fin.	1.58	0.93	0.93	1.58	0.47	-	0.93	0.93	1.10	0.47	0.93	3.26	0.93	N/A	0.93	1.58	0.47	1.10	1.10	0.47	0.93	1.10	0.93	1.58	1.11	
Fra.	2.52	0.86	0.59	1.23	0.59	0.86	-	0.59	0.86	0.59	0.59	2.52	0.59	N/A	0.59	2.52	0.86	0.59	0.59	0.86	0.59	0.59	0.59	1.23	0.96	
Ger.	1.66	0.61	0.61	1.66	0.61	0.69	0.61	-	0.61	0.69	0.61	1.95	0.61	N/A	0.61	1.66	0.69	0.61	0.61	0.69	0.61	0.61	0.61	1.66	0.87	
Gre.	3.00	0.64	0.83	2.38	0.83	1.01	0.83	0.83	-	1.50	1.01	3.00	0.83	N/A	0.83	3.00	1.01	1.01	0.83	1.01	0.64	0.64	0.83	2.38	1.28	
Ice.	1.98	1.16	1.16	1.58	0.88	0.96	1.16	1.30	-	1.16	1.30	3.31	1.16	N/A	0.96	2.68	0.88	1.16	1.16	0.88	1.16	1.30	1.00	1.81	1.36	
Ire.	3.50	1.26	0.86	2.11	0.86	1.26	0.86	0.86	1.26	-	0.86	3.50	0.86	N/A	0.86	3.50	1.26	0.86	0.86	1.26	0.86	0.86	0.86	2.11	1.39	
Ita.	3.58	0.89	1.02	2.64	1.02	1.17	0.89	0.89	1.17	1.17	-	3.70	0.89	N/A	1.02	3.70	1.17	1.17	1.02	1.17	1.02	1.17	1.02	2.64	1.52	
Jap.	2.50	3.44	3.17	3.08	3.44	3.44	3.17	3.44	3.44	3.44	3.17	-	3.17	N/A	3.17	3.08	3.44	3.44	3.44	3.44	3.17	3.44	3.17	2.01	3.21	
Lux.	3.17	0.53	0.38	1.90	0.53	0.89	0.53	0.53	0.89	0.53	0.53	3.17	-	N/A	0.38	3.17	0.69	0.89	0.53	0.69	0.53	0.89	0.53	1.90	1.06	
Mex.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neth.	2.76	0.68	0.52	1.23	0.52	0.85	0.52	0.85	0.85	0.68	0.68	2.76	0.52	N/A	-	2.76	0.68	0.85	0.85	0.68	0.52	0.85	0.52	1.23	0.99	
N. Z.	0.84	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	N/A	1.65	-	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.61	
Nor.	2.26	0.70	0.70	1.41	0.36	0.36	0.70	0.70	0.70	0.70	0.70	2.26	0.70	N/A	0.70	2.26	-	0.70	0.70	0.36	0.70	0.70	0.70	1.41	0.92	
Por.	2.12	0.86	0.86	1.83	0.86	0.98	0.86	0.86	0.98	0.86	0.86	2.50	0.86	N/A	0.86	2.12	0.98	-	0.74	0.98	0.86	0.98	0.86	1.83	1.15	
Spa.	3.73	1.10	0.92	3.07	0.92	1.10	0.92	0.92	1.10	0.92	0.92	3.73	0.92	N/A	0.92	3.73	1.10	0.92	-	1.10	1.10	0.92	0.92	3.07	1.52	
Swe.	2.38	0.77	0.64	1.07	0.35	0.35	0.77	0.64	0.98	0.77	0.77	2.38	0.77	N/A	0.64	2.38	0.35	0.98	0.98	-	0.77	0.98	0.77	1.07	0.98	
Swit.	1.96	0.69	0.69	1.22	0.86	0.86	0.69	0.69	1.22	0.86	0.69	1.96	0.69	N/A	0.69	1.96	0.86	0.86	0.86	0.86	-	0.86	0.86	1.22	1.00	
Tur.	3.21	1.61	1.61	3.21	1.61	1.61	1.61	1.61	1.61	1.61	1.61	3.21	1.61	N/A	1.61	3.21	1.61	1.61	1.61	1.61	1.61	-	1.61	3.21	1.93	
U. K.	1.44	0.79	0.65	1.15	0.65	0.79	0.65	0.79	0.79	0.54	0.70	2.02	0.65	N/A	0.65	1.44	0.79	0.70	0.70	0.79	0.65	0.79	-	1.15	0.87	
U. S.	1.92	1.30	1.30	0.50	1.30	1.30	1.30	1.30	1.30	1.16	1.30	1.92	1.30	N/A	1.30	1.92	1.30	1.50	1.30	1.30	1.30	1.30	1.16	-	1.34	
From/To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N. Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U. K.	U. S.		

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

Source: OECD

Collection Charges Per Minute (Peak Rate) - Jan. 1992

To	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.	
From																										
Aul.	1.40	1.40	1.25	1.25	1.25	1.25	1.25	1.64	1.64	1.25	1.25	1.64	1.64	N/A	1.25	1.01	1.25	1.64	1.64	1.25	1.40	1.64	1.25	1.25	1.37	
Aus.	2.40	-	0.74	1.54	0.74	1.14	0.74	1.14	1.14	1.14	0.74	2.40	2.40	N/A	0.74	2.40	1.14	1.14	1.14	1.14	0.74	1.14	1.14	1.14	1.20	
Bel.	3.25	0.98	-	1.17	0.88	0.98	0.63	0.88	0.98	0.63	0.88	2.20	2.44	N/A	0.52	3.25	0.98	0.88	0.88	0.98	0.63	0.98	0.63	1.17	1.10	
Can.	1.20	1.35	1.35	-	1.26	1.13	1.08	1.26	1.62	1.20	1.62	1.52	1.26	N/A	1.20	1.20	1.13	1.62	1.71	1.08	1.26	1.83	1.08	0.44	1.29	
Den.	1.63	0.50	0.50	1.25	-	0.38	0.50	0.44	0.56	0.75	0.50	2.00	0.50	N/A	0.50	1.63	0.38	0.56	0.56	0.38	0.50	0.75	0.50	1.25	0.74	
Fin.	1.34	0.87	0.87	1.34	0.45	-	0.87	0.87	0.87	0.45	0.87	2.25	0.87	N/A	0.87	1.34	0.45	0.87	0.87	0.45	0.87	0.87	0.87	1.34	0.93	
Fra.	2.95	1.02	0.70	1.45	0.70	1.02	-	0.70	0.70	1.02	0.70	2.95	0.70	N/A	0.70	2.95	1.02	0.70	0.70	1.02	0.70	0.70	0.70	1.45	1.13	
Ger.	1.88	0.69	0.69	1.88	0.69	0.78	0.69	-	0.69	0.78	0.69	1.88	0.69	N/A	0.69	1.88	0.78	0.69	0.69	0.78	0.69	0.78	0.69	1.88	0.97	
Gre.	2.11	0.65	0.84	2.11	0.84	0.92	0.84	0.84	-	1.53	0.84	2.68	0.84	N/A	0.84	2.68	0.93	0.84	0.84	0.92	0.65	0.65	0.84	2.11	1.18	
Ice.	2.38	1.39	1.39	1.55	0.98	1.02	1.39	1.14	1.55	-	1.39	3.58	1.39	N/A	1.02	3.21	0.98	1.39	1.14	0.98	1.39	1.55	1.14	1.55	1.52	
Ire.	2.78	0.98	0.98	1.80	0.98	0.98	0.98	0.98	0.98	-	0.98	2.78	0.98	N/A	0.98	2.78	0.98	0.98	0.98	0.98	0.98	1.43	0.77	1.80	1.30	
Ita.	2.81	0.80	0.91	2.59	0.91	1.05	0.80	0.80	1.05	1.05	-	3.31	0.80	N/A	0.91	3.31	1.05	1.05	0.91	1.05	0.80	1.05	0.91	2.59	1.36	
Jap.	1.93	2.47	2.47	1.93	2.47	2.47	2.47	2.47	2.47	2.47	2.47	-	2.47	N/A	2.47	1.93	2.47	2.47	2.47	2.47	2.47	2.47	2.47	1.58	2.36	
Lux.	2.56	0.61	0.43	1.46	0.61	0.98	0.61	0.61	1.46	0.61	0.61	2.56	-	N/A	0.43	2.93	0.79	0.61	0.61	0.79	0.61	1.46	0.61	1.46	1.04	
Mex.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neth.	2.25	0.78	0.59	1.39	0.59	0.96	0.59	0.59	0.78	0.96	0.78	2.25	0.59	N/A	-	2.25	0.78	0.78	0.78	0.78	0.59	0.96	0.59	1.39	0.99	
N.Z.	0.81	1.54	1.54	1.46	1.54	1.54	1.54	1.69	1.69	1.54	1.54	1.54	1.69	N/A	1.54	-	1.54	1.69	1.69	1.54	1.54	1.69	1.46	1.46	1.54	
Nor.	1.27	0.62	0.62	1.03	0.32	0.32	0.62	0.62	0.62	0.62	0.62	1.77	0.62	N/A	0.62	1.27	-	0.62	0.62	0.32	0.62	0.62	0.62	1.03	0.72	
Por.	2.19	1.00	1.00	2.19	1.00	1.17	1.00	1.00	1.17	1.00	1.00	2.92	1.00	N/A	1.00	3.18	1.17	-	0.95	1.17	1.00	1.17	1.00	2.19	1.37	
Spa.	3.92	1.37	1.17	2.84	1.17	1.37	1.17	1.17	1.37	1.17	1.17	3.92	1.17	N/A	1.17	3.92	1.37	1.17	-	1.37	1.37	1.37	1.17	2.84	1.73	
Swe.	2.54	0.82	0.68	1.14	0.37	0.37	0.82	0.68	1.05	0.82	0.82	2.54	0.82	N/A	0.68	2.54	0.37	1.05	1.05	-	0.82	1.05	0.82	1.14	1.04	
Swit.	2.23	0.79	0.79	1.40	0.98	0.98	0.79	0.79	0.98	1.40	0.98	2.23	0.79	N/A	0.79	2.23	0.98	0.98	0.98	0.98	-	0.98	0.98	1.40	1.14	
Tur.	3.19	1.85	1.85	3.19	1.85	1.85	1.85	1.85	1.85	1.85	1.85	3.19	1.85	N/A	1.85	3.19	1.85	1.85	1.85	1.85	1.85	-	1.85	3.19	2.11	
U.K.	1.22	0.76	0.58	0.93	0.58	0.76	0.58	0.58	1.01	0.58	0.58	1.93	0.58	N/A	0.58	1.22	0.76	0.58	0.58	0.76	0.58	1.01	-	0.93	0.79	
U.S.	1.71	1.23	1.30	0.50	1.24	1.39	1.22	1.26	1.46	1.50	1.19	1.25	1.69	N/A	1.21	2.06	1.24	1.50	1.30	1.20	1.30	1.50	1.07	-	1.33	
Aul.																										
Aus.																										
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Can.																										
Den.																										
Fin.																										
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1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

Source: OECD

Collection Charges Per Minute (Cheapest Discount Rate) - Jan. 1992

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.	
From																											
Aul.	-	1.40	0.98	0.93	0.93	0.93	0.93	0.93	1.64	1.32	0.93	0.93	1.64	1.64	N/A	0.93	0.70	0.93	1.64	1.64	0.93	1.40	1.64	0.93	0.93	1.16	
Aus.	2.40	-	0.57	1.54	0.57	0.74	0.57	0.74	0.74	0.74	0.74	0.57	2.40	0.57	N/A	0.57	2.40	0.74	0.74	0.74	0.74	0.57	0.74	0.74	1.54	0.97	
Bel.	3.25	0.73	-	1.17	0.63	0.73	0.46	0.46	0.63	0.98	0.46	0.63	2.20	0.33	N/A	0.38	3.25	0.73	0.63	0.63	0.73	0.46	0.73	0.46	1.17	0.95	
Can.	1.08	1.21	1.21	-	1.13	1.02	0.97	1.13	1.46	1.08	1.08	1.46	1.37	1.13	N/A	1.08	1.08	1.02	1.46	1.54	0.97	1.13	1.83	0.97	0.18	1.16	
Den.	1.63	0.50	0.50	1.25	-	0.38	0.50	0.44	0.56	0.75	0.50	0.56	2.00	0.50	N/A	0.50	1.63	0.38	0.56	0.56	0.38	0.50	0.75	0.50	1.25	0.74	
Fin.	1.00	0.64	0.64	1.00	0.32	-	0.64	0.64	0.87	0.64	0.64	0.87	2.25	0.64	N/A	0.64	1.01	0.32	0.87	0.87	0.32	0.64	0.87	0.64	1.00	0.78	
Fra.	1.99	0.68	0.47	0.88	0.47	0.68	-	0.47	0.47	0.68	0.47	0.47	1.99	0.47	N/A	0.47	1.99	0.68	0.47	0.47	0.68	0.47	0.68	0.47	0.88	0.76	
Ger.	1.88	0.52	0.52	1.88	0.52	0.78	0.52	-	0.52	0.78	0.52	0.52	1.88	0.52	N/A	0.52	1.88	0.78	0.52	0.52	0.78	0.52	0.78	0.52	1.88	0.87	
Gre.	2.11	0.65	0.84	2.11	0.84	0.92	0.84	0.84	-	1.53	0.84	0.84	2.68	0.84	N/A	0.84	2.68	0.93	0.84	0.84	0.92	0.65	0.65	0.84	2.11	1.18	
Ice.	1.66	0.97	0.97	1.08	0.68	0.71	0.97	0.80	1.08	-	1.08	2.50	0.97	0.71	N/A	0.71	2.25	0.68	0.97	0.80	0.68	0.97	1.08	0.80	1.08	1.05	
Ire.	2.78	0.74	0.74	1.35	1.43	0.74	0.74	0.74	0.74	0.74	-	0.74	2.78	0.74	N/A	0.74	2.78	0.74	0.74	0.74	0.74	0.74	1.43	0.39	1.35	1.10	
Ita.	2.81	0.54	0.63	2.59	0.63	0.74	0.54	0.54	1.05	1.05	0.74	-	3.31	0.54	N/A	0.63	3.31	0.74	0.74	0.63	0.74	0.54	0.74	0.63	2.59	1.15	
Jap.	1.15	1.49	1.49	1.15	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	-	1.49	N/A	1.49	1.15	1.49	1.49	1.49	1.49	1.49	1.49	1.49	0.99	1.42	
Lux.	2.56	0.61	0.37	0.98	0.49	0.98	0.49	0.49	1.46	1.46	0.49	0.49	2.56	-	N/A	0.37	2.93	0.79	0.49	0.49	0.79	0.61	1.46	0.49	0.98	0.95	
Mex.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neth.	1.87	0.53	0.43	1.23	0.43	0.64	0.43	0.43	0.53	0.64	0.53	0.53	1.87	0.43	N/A	-	1.87	0.53	0.53	0.53	0.53	0.43	0.96	0.43	1.23	0.77	
N.Z.	0.51	1.54	1.54	1.02	1.02	1.02	1.02	1.02	1.69	1.69	1.54	1.54	1.02	1.69	N/A	1.02	-	1.02	1.69	1.69	1.02	1.54	1.69	1.02	1.02	1.29	
Nor.	1.27	0.50	0.50	0.82	0.25	0.25	0.50	0.50	0.50	0.50	0.50	0.50	1.77	0.50	N/A	0.50	1.27	-	0.50	0.50	0.25	0.50	0.50	0.50	0.82	0.61	
Por.	1.84	1.00	1.00	1.84	1.00	1.17	1.00	1.00	1.17	1.17	1.00	1.00	2.33	1.00	N/A	1.00	3.18	1.17	-	0.95	1.17	1.00	1.17	1.00	1.84	1.30	
Spa.	2.68	0.89	0.07	1.91	0.75	0.89	0.75	0.75	0.89	0.75	0.75	0.75	2.68	0.75	N/A	0.75	2.68	0.89	0.75	-	0.89	0.89	0.89	0.75	1.91	1.11	
Swe.	2.54	0.82	0.68	0.88	0.26	0.26	0.82	0.68	1.05	1.05	0.82	0.82	2.54	0.82	N/A	0.68	2.54	0.26	1.05	1.05	-	0.82	1.05	0.82	0.88	1.01	
Swit.	2.23	0.56	0.56	1.12	0.70	0.70	0.56	0.56	0.70	1.12	0.70	0.56	2.23	0.56	N/A	0.56	2.23	0.70	0.70	0.70	0.70	-	0.70	0.70	1.12	0.91	
Tur.	2.52	1.26	1.26	2.52	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	2.52	1.26	N/A	1.26	2.52	1.26	1.26	1.26	1.26	1.26	-	1.26	2.52	1.51	
U.K.	1.00	0.65	0.48	0.76	0.48	0.65	0.48	0.48	0.85	0.85	0.41	0.48	1.85	0.48	N/A	0.48	1.00	0.65	0.48	0.48	0.65	0.48	0.85	-	0.76	0.67	
U.S.	1.04	0.78	0.78	0.25	0.76	0.86	0.78	0.78	0.87	0.90	0.80	0.78	1.15	0.87	N/A	0.78	1.24	0.76	0.90	0.78	0.74	0.78	0.90	0.70	-	0.82	

Collection Charges Per Minute (Peak rate) - Jan. 1993

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.	
From																											
Aul.	-	1.32	1.32	1.17	1.17	1.17	1.17	1.17	1.54	1.54	1.17	1.17	1.54	1.54	N/A	1.17	0.95	1.17	1.54	1.54	1.17	1.32	1.54	1.17	1.17	1.30	
Aus.	2.55	-	0.79	1.64	0.79	1.21	0.79	0.79	1.21	1.21	1.21	0.79	2.55	0.79	N/A	0.79	2.55	1.21	1.21	1.21	1.21	0.79	1.21	1.21	1.21	1.64	
Bel.	3.11	0.98	-	1.24	0.85	0.98	0.67	0.67	0.85	1.04	0.67	0.85	2.33	0.47	N/A	0.55	3.11	0.98	0.85	0.85	1.08	0.67	1.04	0.67	1.24	1.12	
Can.	1.14	1.28	1.28	-	1.19	1.07	1.02	1.19	1.54	1.14	1.14	1.54	1.44	1.19	N/A	1.14	1.14	1.07	1.54	1.62	1.02	1.19	1.73	1.02	0.42	1.22	
Den.	1.72	0.53	0.46	1.32	-	0.40	0.53	0.46	0.60	0.79	0.53	0.60	2.12	0.53	N/A	0.53	2.65	0.40	0.60	0.60	0.40	0.53	0.79	0.53	1.32	0.82	
Fin.	0.99	0.64	0.64	0.99	0.33	-	0.64	0.64	0.64	0.33	0.64	0.64	1.66	0.64	N/A	0.64	0.99	0.33	0.64	0.64	0.33	0.64	0.64	0.64	0.99	0.69	
Fra.	2.26	1.05	0.68	1.11	0.70	1.05	-	0.68	0.70	1.05	0.70	0.68	2.25	0.68	N/A	0.68	2.26	1.05	0.70	0.68	1.05	0.68	1.05	0.68	1.10	1.02	
Ger.	2.00	0.74	0.74	1.26	0.74	0.83	0.74	-	0.74	0.83	0.74	0.74	2.00	0.74	N/A	0.74	2.00	0.83	0.74	0.74	0.83	0.74	0.83	0.74	1.26	0.97	
Gre.	1.58	0.53	0.67	1.58	0.67	0.81	0.67	0.67	-	1.21	0.67	0.67	2.45	0.67	N/A	0.67	2.45	0.81	0.67	0.67	0.81	0.53	0.53	0.67	1.58	0.97	
Ice.	2.20	1.27	1.27	1.44	0.85	0.89	1.05	0.89	1.44	-	1.27	1.44	2.96	1.27	N/A	0.89	2.96	0.85	1.27	1.05	0.85	1.27	1.44	1.05	1.27	1.35	
Ire.	2.94	1.04	1.04	1.90	1.04	1.04	1.04	1.04	1.04	1.04	-	1.04	2.94	1.04	N/A	1.04	2.94	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.90	1.37	
Ita.	2.83	0.80	0.92	2.61	0.92	1.06	0.80	0.80	1.06	1.06	-	3.33	0.80	0.80	N/A	0.95	3.33	1.06	1.06	0.92	1.06	0.80	1.06	0.92	2.61	1.37	
Jap.	2.05	2.62	2.62	2.05	2.62	2.62	2.62	2.62	2.62	2.62	2.62	-	2.62	2.62	N/A	2.62	2.05	2.62	2.62	2.62	2.62	2.62	2.62	2.62	1.68	2.51	
Lux.	2.37	0.56	0.39	1.35	0.56	0.90	0.56	0.56	0.56	1.35	0.56	0.56	2.37	-	N/A	0.39	2.70	0.73	0.56	0.56	0.73	0.56	1.35	0.56	1.35	0.97	
Mex.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Neth.	1.99	0.82	0.63	1.11	0.63	1.02	0.63	0.63	0.82	1.02	0.82	0.82	1.99	0.63	N/A	-	1.99	0.82	0.82	0.82	0.82	0.63	1.02	0.63	1.11	0.97	
N.Z.	0.68	1.37	1.37	1.31	1.37	1.37	1.37	1.37	1.52	1.52	1.37	1.37	1.37	1.37	N/A	1.37	-	1.37	1.51	1.51	1.37	1.37	1.52	1.31	1.31	1.36	
Nor.	1.30	0.60	0.60	0.96	0.32	0.32	0.60	0.60	0.60	0.60	0.60	0.60	1.80	0.60	N/A	0.60	1.30	-	0.60	0.60	0.32	0.60	0.60	0.60	0.96	0.71	
Por.	2.08	1.25	1.25	2.08	1.25	1.45	1.25	1.25	1.45	1.25	1.25	2.73	1.25	1.25	N/A	1.25	3.63	1.45	-	1.18	1.45	1.25	1.45	1.25	2.08	1.56	
Spa.	3.85	1.28	1.07	1.93	1.07	1.28	1.07	1.07	1.28	1.07	1.07	3.85	1.07	3.85	1.07	1.07	3.85	1.28	1.07	-	1.28	1.28	1.07	1.07	1.93	1.57	
Swe.	2.64	0.85	0.70	1.18	0.39	0.39	0.85	0.70	1.09	1.09	0.85	0.85	2.64	0.85	N/A	0.70	2.64	0.39	1.09	1.09	-	0.85	1.09	0.85	1.18	1.08	
Swit.	1.71	0.71	0.71	0.77	0.71	0.85	0.71	0.71	1.00	1.42	1.00	0.71	1.71	0.71	N/A	0.71	2.28	0.85	1.00	1.00	0.85	-	1.00	0.71	1.28	1.00	
Tur.	3.90	1.95	1.95	3.90	1.95	1.95	1.95	1.95	1.30	1.95	1.95	3.90	1.95	1.95	N/A	1.95	3.90	1.95	1.95	1.95	1.95	1.95	-	1.95	3.90	2.35	
U.K.	1.21	0.76	0.57	0.84	0.57	0.76	0.57	0.57	1.01	0.55	0.57	1.92	0.57	0.57	N/A	0.57	1.21	0.76	0.57	0.57	0.76	1.01	-	0.84	0.78		
U.S.	1.71	1.23	1.30	0.51	1.24	1.39	1.22	1.26	1.54	1.50	1.19	1.25	1.69	1.39	N/A	1.21	2.06	1.24	1.30	1.30	1.20	1.30	1.59	1.07	-	1.33	
Aul.																											
Aus.																											
Bel.																											
Can.																											
Den.																											
Fin.																											
Fra.																											
Ger.																											
Gre.																											
Ice.																											
Ire.																											
Ita.																											
Jap.																											
Lux.																											
Mex.																											
Neth.																											
N.Z.																											
Nor.																											
Por.																											
Spa.																											
Swe.																											
Swit.																											
Tur.																											
U.K.																											
U.S.																											

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

Source: OECD

Collection Charges Per Minute (Peak rate) - Jan. 1994

To	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	UK	US	Ave.	
From																										
Aul.	-	1.17	1.17	1.04	1.04	1.04	1.11	1.30	1.83	0.88	0.95	1.17	1.30	N/A	1.04	0.71	1.04	1.30	1.43	1.04	1.17	1.30	0.88	0.88	1.12	
Aus.	2.41	-	0.75	1.20	0.75	1.15	0.75	1.15	1.15	1.15	0.75	2.41	0.75	N/A	0.75	2.41	1.15	1.15	1.15	1.15	0.75	1.15	1.15	1.20	1.18	
Bel.	1.45	0.58	-	1.02	0.58	0.72	0.48	0.62	0.96	0.58	0.58	1.45	0.43	N/A	0.48	1.45	0.72	0.62	0.62	0.72	0.58	0.87	0.48	1.02	0.76	
Can.	0.92	0.99	1.13	-	0.85	0.74	0.98	1.45	1.01	1.01	1.18	1.25	1.16	N/A	0.67	0.92	0.85	1.31	1.66	0.67	0.67	1.72	0.61	0.41	1.00	
Den.	1.60	0.49	0.45	1.23	-	0.37	0.49	0.43	0.56	0.74	0.49	0.56	0.49	N/A	0.49	2.47	0.37	0.56	0.56	0.37	0.49	0.74	0.49	1.23	0.77	
Fin.	0.84	0.55	0.55	0.84	0.28	-	0.55	0.55	0.55	0.55	0.55	1.42	0.55	N/A	0.55	1.42	0.28	0.55	0.55	0.28	0.55	0.55	0.55	0.84	0.63	
Fra.	1.92	0.92	0.54	1.00	0.65	0.92	-	0.54	0.65	0.92	0.65	1.92	0.54	N/A	0.54	1.92	0.92	0.65	0.54	0.92	0.54	0.92	0.54	1.00	0.88	
Ger.	1.89	0.70	0.70	1.19	0.70	0.78	0.70	-	0.70	0.78	0.70	1.89	0.70	N/A	0.70	1.89	0.78	0.70	0.70	0.78	0.70	0.78	0.70	1.19	0.91	
Gre.	1.31	0.44	0.56	1.31	0.56	0.67	0.56	-	1.01	0.56	0.56	2.04	0.56	N/A	0.56	2.04	0.67	0.56	0.56	0.67	0.44	0.44	0.56	1.31	0.81	
Ice.	1.77	1.02	1.02	1.17	0.69	0.72	0.81	0.69	1.17	-	1.02	1.17	2.38	1.02	N/A	0.72	2.38	0.69	1.02	0.81	0.69	1.02	1.17	0.81	1.02	1.09
Ire.	1.33	0.70	0.53	1.01	0.70	0.70	0.53	0.70	0.70	-	0.70	1.76	0.53	N/A	0.53	1.33	0.70	0.70	0.70	0.70	0.70	1.00	0.44	1.01	0.79	
Ita.	1.86	0.58	0.66	1.43	0.58	0.66	0.58	0.58	0.83	0.66	-	1.86	0.58	N/A	0.66	1.86	0.66	0.66	0.66	0.58	0.58	0.83	0.58	1.43	0.87	
Jap.	2.32	2.99	2.99	2.32	2.99	2.99	2.95	2.95	2.99	2.99	2.99	-	2.99	N/A	2.99	2.34	2.99	2.99	2.99	2.99	2.99	2.99	2.95	1.89	2.85	
Lux.	2.36	0.58	0.42	1.26	0.58	0.79	0.58	0.58	1.26	0.58	0.58	2.36	-	N/A	0.42	2.80	0.79	0.58	0.58	0.79	0.58	1.26	0.58	1.26	0.96	
Mex.	3.71	2.91	2.91	1.03	2.91	2.91	2.91	2.91	2.91	2.91	2.91	3.71	2.91	N/A	2.91	3.71	2.91	2.91	2.91	2.91	2.91	2.91	2.91	0.42	2.96	
Neth.	1.88	0.78	0.59	1.05	0.59	0.97	0.59	0.78	0.97	0.78	0.78	1.88	0.59	N/A	-	1.88	0.78	0.78	0.78	0.78	0.78	0.59	0.97	1.05	0.92	
N.Z.	0.68	1.38	1.38	1.31	1.38	1.38	1.38	1.52	1.52	1.38	1.38	1.38	1.52	N/A	1.38	-	1.38	1.52	1.52	1.38	1.38	1.52	1.31	1.31	1.38	
Nor.	1.06	0.53	0.53	0.71	0.28	0.28	0.53	0.53	0.53	0.53	0.53	1.06	0.53	N/A	0.53	1.06	-	0.53	0.53	0.28	0.53	0.53	0.53	0.71	0.58	
Por.	1.74	0.97	0.97	1.74	0.97	1.18	0.97	0.97	1.18	0.97	0.97	2.22	0.97	N/A	0.97	2.85	1.18	-	0.97	1.18	0.97	1.18	0.97	1.74	1.25	
Spa.	3.07	1.03	0.84	1.53	0.84	1.03	0.84	0.84	1.03	0.84	0.84	3.07	0.84	N/A	0.84	3.07	1.03	0.84	-	1.03	1.03	1.03	0.84	1.53	1.25	
Swe.	1.36	0.64	0.53	0.89	0.29	0.29	0.64	0.53	0.82	0.53	0.64	1.97	0.64	N/A	1.36	1.97	0.29	0.82	0.82	-	0.64	0.82	0.53	0.89	0.80	
Swit.	1.22	0.68	0.68	1.02	0.68	0.68	0.68	0.68	0.95	0.95	0.68	1.62	0.68	N/A	0.61	2.17	0.68	0.95	0.95	0.68	-	0.95	0.54	1.02	0.90	
Tur.	2.44	1.63	1.63	2.44	1.63	1.63	1.63	1.09	1.63	1.63	1.63	2.44	1.63	N/A	1.63	2.44	1.63	1.63	1.63	1.63	1.63	-	1.63	2.44	1.78	
U.K.	1.03	0.65	0.49	0.65	0.49	0.65	0.49	0.49	0.86	0.45	0.49	1.65	0.49	N/A	0.49	1.03	0.65	0.49	0.49	0.65	0.49	0.86	-	0.65	0.66	
U.S.	1.76	1.25	1.38	0.54	1.32	1.39	1.24	1.26	1.68	1.50	1.28	1.41	1.69	N/A	1.23	2.11	1.24	1.57	1.52	1.20	1.36	1.76	1.08	-	1.40	
Aul.																										
Den.																										
Fin.																										
Fra.																										
Ger.																										
Gre.																										
Ice.																										
Ire.																										
Ita.																										
Jap.																										
Lux.																										
Mex.																										
Neth.																										
N.Z.																										
Nor.																										
Por.																										
Spa.																										
Swe.																										
Swit.																										
Tur.																										
U.K.																										
U.S.																										

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

4. Calculation is based on four minutes call where applicable.

Source: OECD

Collection Charges Per Minute (Cheapest Discount rate) - Jan. 1994

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.		
From																												
Aul.	-	1.17	0.84	0.70	0.78	0.78	0.78	0.76	1.30	1.83	0.67	0.67	0.91	1.30	N/A	0.78	0.47	0.78	1.30	1.43	0.78	1.17	1.30	0.67	0.67	Aul.	0.95	
Aus.	2.41	-	0.57	1.20	0.57	0.75	0.57	0.57	0.75	0.75	0.75	0.57	2.41	0.57	N/A	0.57	2.41	0.75	0.75	0.75	0.75	0.57	0.75	0.75	1.20	Aus	0.94	
Bel.	1.45	0.51	-	0.87	0.51	0.62	0.43	0.43	0.54	0.72	0.51	0.51	1.45	0.32	N/A	0.43	1.45	0.62	0.54	0.54	0.62	0.51	0.72	0.43	0.87	Bel.	0.68	
Can.	0.69	0.74	0.85	-	0.65	0.65	0.56	0.73	1.09	0.76	0.76	0.88	0.93	0.87	N/A	0.51	0.69	0.65	0.99	1.25	0.51	0.51	1.29	0.46	0.16	Can.	0.75	
Den.	1.60	0.49	0.45	1.17	-	0.37	0.49	0.43	0.56	0.74	0.49	0.56	1.97	0.49	N/A	0.49	2.47	0.37	0.56	0.56	0.37	0.49	0.74	0.49	0.99	Den.	0.75	
Fin.	0.63	0.41	0.41	0.63	0.20	-	0.41	0.41	0.41	0.41	0.41	0.41	1.42	0.41	N/A	0.41	1.42	0.20	0.41	0.41	0.20	0.41	0.41	0.41	0.63	Fin.	0.50	
Fra.	1.59	0.65	0.45	0.74	0.45	0.65	-	0.45	0.45	0.65	0.45	0.45	1.59	0.45	N/A	0.45	1.59	0.65	0.45	0.45	0.65	0.45	0.65	0.45	0.74	Fra.	0.68	
Ger.	1.89	0.52	0.52	1.19	0.52	0.78	0.52	-	0.52	0.78	0.52	0.52	1.89	0.52	N/A	0.52	1.89	0.78	0.52	0.52	0.78	0.52	0.78	0.52	1.19	Ger.	0.81	
Gre.	0.98	0.33	0.42	0.98	0.42	0.50	0.42	0.42	-	0.75	0.42	0.42	1.53	0.42	N/A	0.42	1.53	0.50	0.42	0.42	0.50	0.33	0.33	0.42	0.98	Gre.	0.60	
Ice.	1.33	0.77	0.77	0.87	0.52	0.55	0.61	0.52	0.87	-	0.77	0.87	1.79	0.77	N/A	0.55	1.79	0.52	0.77	0.61	0.52	0.77	0.87	0.61	0.77	Ice.	0.82	
Ire.	1.02	0.53	0.47	0.78	0.53	0.53	0.47	0.47	0.53	0.53	-	0.53	1.76	0.47	N/A	0.47	1.02	0.53	0.53	0.53	0.53	0.53	0.85	0.34	0.78	Ire.	0.64	
Ita.	1.47	0.46	0.53	1.28	0.46	0.53	0.46	0.46	0.46	0.66	0.53	-	1.47	0.46	N/A	0.53	1.47	0.53	0.53	0.53	0.46	0.46	0.66	0.46	1.28	Ita.	0.70	
Jap.	1.37	1.80	1.80	1.37	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	-	1.80	N/A	1.80	1.39	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.19	Jap.	1.72
Lux.	2.36	0.47	0.37	0.84	0.47	0.79	0.47	0.47	0.47	0.84	0.47	0.47	2.36	-	N/A	0.37	2.80	0.79	0.47	0.47	0.79	0.47	1.26	0.47	0.84	Lux.	0.85	
Mex.	2.48	1.94	1.94	0.45	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	2.48	1.94	-	1.94	2.48	1.94	1.94	1.94	1.94	1.94	1.94	1.94	0.28	Mex.	1.96	
Neth.	1.62	0.54	0.43	0.92	0.43	0.65	0.43	0.43	0.54	0.65	0.54	0.54	1.62	0.43	N/A	-	1.62	0.54	0.54	0.54	0.54	0.43	0.97	0.43	0.92	Neth.	0.71	
N.Z.	0.23	0.76	0.76	0.50	0.50	0.50	0.50	0.50	0.84	0.84	0.63	0.76	0.50	0.84	N/A	0.50	-	0.50	0.84	0.84	0.50	0.76	0.84	0.50	0.50	N.Z.	0.63	
Nor.	1.06	0.42	0.42	0.56	0.23	0.23	0.42	0.42	0.42	0.42	0.42	0.42	1.06	0.42	N/A	0.42	1.06	-	0.42	0.42	0.23	0.42	0.42	0.42	0.67	Nor.	0.50	
Por.	1.18	0.74	0.74	1.18	0.74	0.91	0.74	0.74	0.74	0.91	0.74	0.74	1.48	0.74	N/A	0.74	2.00	0.91	-	0.74	0.91	0.74	0.91	0.74	1.18	Por.	0.92	
Spa.	2.16	0.71	0.58	1.06	0.58	0.71	0.58	0.58	0.58	0.71	0.58	0.58	2.16	0.58	N/A	0.58	2.16	0.71	0.58	-	0.71	0.71	0.71	0.58	1.06	Spa.	0.87	
Swe.	1.36	0.64	0.53	0.68	0.21	0.21	0.64	0.53	0.82	0.53	0.53	0.64	1.97	0.64	N/A	1.36	1.97	0.21	0.82	0.82	-	0.64	0.82	0.53	0.68	Swe.	0.77	
Swit.	1.22	0.54	0.54	0.81	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.54	1.62	0.54	N/A	0.47	2.17	0.54	0.68	0.68	0.54	-	0.68	0.44	0.81	Swit.	0.74	
Tur.	2.17	1.09	1.09	2.17	1.09	1.09	1.09	1.09	0.81	1.09	1.09	1.09	2.17	1.09	N/A	1.09	2.17	1.09	1.09	1.09	1.09	1.09	-	1.09	2.17	Tur.	1.31	
U.K.	0.85	0.55	0.38	0.60	0.38	0.55	0.38	0.38	0.38	0.73	0.35	0.38	1.57	0.38	N/A	0.38	0.60	0.55	0.38	0.38	0.55	0.38	0.73	-	0.60	U.K.	0.54	
U.S.	1.04	0.79	0.82	0.28	0.81	0.86	0.79	0.81	1.00	0.90	0.85	0.88	1.15	0.87	N/A	0.79	1.27	0.76	0.94	0.96	0.74	0.81	1.08	0.71	-	U.S.	0.86	
	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.		

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

4. Calculation is based on four minutes call where applicable.

Source: OECD

Collection Charges Per Minute (Peak Rate) - Jan. 1995

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N. Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U. K.	U. S.	Ave.	
From																											
Aul.	-	1.31	1.31	1.02	1.16	1.16	1.16	1.23	1.45	2.04	0.99	1.06	1.31	1.45	N/A	1.16	0.80	1.16	1.45	1.53	1.16	1.31	1.45	0.99	0.99	1.25	
Aus.	1.58	-	0.70	1.11	0.70	1.11	0.70	0.70	0.70	1.11	1.11	0.70	1.58	0.70	N/A	0.70	1.58	0.70	1.11	0.70	0.70	0.70	1.11	0.70	1.11	0.94	
Bel.	1.49	0.60	-	0.90	0.60	0.75	0.50	0.50	0.64	1.00	0.60	0.60	1.49	0.45	N/A	0.50	1.49	0.75	0.64	0.64	0.75	0.60	0.90	0.50	0.90	0.77	
Can.	0.87	0.93	1.07	-	0.81	0.81	0.70	0.92	1.37	0.96	0.81	1.11	1.18	1.10	N/A	0.64	0.87	0.81	1.24	1.56	0.64	0.64	1.62	0.58	0.39	0.94	
Den.	1.26	0.57	0.50	0.88	-	0.38	0.50	0.44	0.63	0.63	0.57	0.57	1.26	0.50	N/A	0.50	2.01	0.38	0.63	0.63	0.38	0.50	0.75	0.44	0.88	0.69	
Fin.	0.86	0.56	0.53	0.83	0.27	-	0.53	0.53	0.56	0.56	0.56	0.53	1.45	0.56	N/A	0.53	1.45	0.27	0.56	0.53	0.26	0.53	0.56	0.53	0.83	0.63	
Fra.	1.75	0.66	0.55	0.89	0.66	0.66	-	0.55	0.66	0.85	0.66	0.55	1.75	0.55	N/A	0.55	1.75	0.66	0.66	0.55	0.66	0.55	0.94	0.55	0.89	0.81	
Ger.	1.92	0.71	0.71	1.21	0.71	0.79	0.71	-	0.71	0.79	0.71	0.71	1.92	0.71	N/A	0.71	1.92	0.79	0.71	0.71	0.79	0.71	0.79	0.71	1.21	0.93	
Gre.	1.22	0.47	0.56	1.22	0.56	0.56	0.56	0.56	-	1.01	0.56	0.47	2.06	0.56	N/A	0.56	2.06	0.56	0.56	0.56	0.56	0.47	0.47	0.56	1.22	0.78	
Ice.	1.71	1.23	1.23	1.40	0.83	0.87	0.97	0.83	1.40	-	1.23	1.40	2.87	1.23	N/A	0.87	2.30	0.83	1.23	0.97	0.83	1.23	1.13	0.97	1.23	1.25	
Ire.	1.36	0.72	0.54	1.03	0.72	0.72	0.54	0.54	0.72	0.72	-	0.72	1.79	0.54	N/A	0.54	1.36	0.72	0.72	0.72	0.72	0.72	1.01	0.45	1.03	0.81	
Ita.	1.69	0.55	0.55	1.11	0.55	0.55	0.55	0.55	0.81	0.55	0.55	-	1.69	0.55	N/A	0.55	1.69	0.55	0.55	0.55	0.55	0.55	0.81	0.55	1.11	0.77	
Jap.	2.27	2.91	2.91	2.25	2.91	2.91	2.86	2.86	2.91	2.91	2.91	2.91	-	2.91	N/A	2.91	2.27	2.91	2.91	2.91	2.91	2.91	2.91	2.86	1.83	2.77	
Lux.	1.44	0.52	0.43	0.96	0.52	0.71	0.52	0.52	0.59	1.30	0.59	0.52	1.44	-	N/A	0.43	2.22	0.71	0.59	0.59	0.71	0.52	1.30	0.52	0.96	0.81	
Mex.	3.50	2.74	2.74	0.97	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	3.50	2.74	N/A	2.74	3.50	2.74	2.74	2.74	2.74	2.74	2.74	2.74	0.39	2.78	
Neth.	1.92	0.80	0.52	0.93	0.60	0.99	0.52	0.52	0.80	0.99	0.80	0.80	1.92	0.52	N/A	-	1.92	0.80	0.80	0.80	0.49	0.49	0.99	0.60	0.93	0.89	
N. Z.	0.71	1.51	1.51	1.28	1.51	1.51	1.51	1.51	1.67	1.67	1.51	1.51	1.40	1.67	N/A	1.51	-	1.51	1.67	1.67	1.51	1.51	1.67	1.28	1.28	1.48	
Nor.	0.71	0.49	0.49	0.57	0.28	0.28	0.49	0.49	0.57	0.49	0.49	0.49	1.05	0.49	N/A	0.49	1.05	-	0.57	0.57	0.28	0.49	0.71	0.49	0.57	0.55	
Por.	1.48	0.88	0.88	1.50	0.88	1.09	0.88	0.88	0.88	1.09	0.88	0.88	2.08	0.88	N/A	0.88	2.77	1.09	-	0.88	1.09	0.88	1.09	0.88	1.39	1.14	
Spa.	2.91	0.71	0.71	1.25	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	2.43	0.71	N/A	0.71	2.91	0.71	0.71	-	0.71	0.71	0.98	0.71	1.25	1.03	
Swe.	1.37	0.64	0.53	0.80	0.26	0.26	0.64	0.53	0.64	0.53	0.53	0.64	1.79	0.64	N/A	0.53	1.37	0.26	0.64	0.64	-	0.64	0.82	0.48	0.80	0.70	
Swit.	1.32	0.73	0.73	0.88	0.73	0.73	0.66	0.73	1.02	1.02	1.02	0.66	1.76	0.73	N/A	0.58	2.34	0.73	1.02	1.02	0.73	-	1.02	0.58	0.88	0.94	
Tur.	1.75	1.17	1.17	1.75	1.17	1.17	1.17	1.17	0.78	1.17	1.17	1.17	1.75	1.17	N/A	1.17	1.75	1.17	1.17	1.17	1.17	1.17	-	1.17	1.75	1.28	
U. K.	0.89	0.60	0.46	0.66	0.46	0.58	0.46	0.46	0.46	0.88	0.38	0.46	1.33	0.46	N/A	0.46	0.89	0.60	0.46	0.46	0.60	0.46	0.46	-	0.66	0.59	
U. S.	1.61	1.40	1.58	0.55	1.39	1.44	1.24	1.20	1.91	1.61	1.34	1.45	1.65	1.40	N/A	1.22	1.72	1.27	1.54	1.53	1.21	1.43	1.91	1.05	-	1.42	
From/To																											

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

4. Calculation is based on four minutes call where applicable.

Source: OECD

Collection Charges Per Minute (Cheapest Discount Rate) - Jan. 1995

To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.	
From																											
Aul.	-	1.31	0.94	0.78	0.87	0.87	0.87	0.85	1.45	2.04	0.75	0.75	1.02	1.45	N/A	0.87	0.53	0.87	1.45	1.34	0.87	1.31	1.45	0.75	0.75	1.05	
Aus.	1.23	-	0.53	0.70	0.53	0.70	0.53	0.53	0.53	0.70	0.70	0.53	1.23	0.53	N/A	0.53	1.23	0.53	0.70	0.53	0.53	0.53	0.70	0.53	0.70	0.67	
Bel.	1.49	0.53	-	0.78	0.53	0.64	0.45	0.45	0.56	0.75	0.53	0.53	1.49	0.33	N/A	0.45	1.49	0.64	0.56	0.56	0.64	0.53	0.75	0.45	0.75	0.69	
Can.	0.65	0.70	0.81	-	0.61	0.61	0.53	0.69	1.03	0.72	0.61	0.83	0.88	0.82	N/A	0.48	0.65	0.61	0.93	1.18	0.48	0.48	1.22	0.44	0.16	0.70	
Den.	1.26	0.57	0.50	0.70	-	0.38	0.50	0.44	0.63	0.57	0.57	0.57	1.26	0.50	N/A	0.50	2.01	0.38	0.63	0.63	0.38	0.50	0.75	0.44	0.70	0.67	
Fin.	0.65	0.41	0.41	0.62	0.20	-	0.41	0.41	0.41	0.41	0.41	0.41	1.45	0.41	N/A	0.41	1.45	0.20	0.41	0.41	0.18	0.41	0.56	0.41	0.62	0.51	
Fra.	1.62	0.46	0.46	0.68	0.46	0.46	-	0.46	0.46	0.65	0.46	0.46	1.62	0.46	N/A	0.46	1.62	0.46	0.46	0.46	0.46	0.46	0.66	0.46	0.68	0.65	
Ger.	1.92	0.53	0.53	1.21	0.53	0.79	0.53	-	0.53	0.79	0.53	0.53	1.92	0.53	N/A	0.53	1.92	0.79	0.53	0.53	0.79	0.53	0.79	0.53	1.21	0.83	
Gre.	0.91	0.35	0.42	0.91	0.42	0.42	0.42	0.42	-	0.76	0.42	0.35	1.55	0.42	N/A	0.42	1.55	0.42	0.42	0.42	0.42	0.42	0.35	0.35	0.42	0.91	0.58
Ice.	1.29	0.92	0.92	1.05	0.62	0.65	0.73	0.62	1.05	-	0.92	1.05	2.15	0.92	N/A	0.65	1.73	0.62	0.92	0.73	0.62	0.92	0.84	0.73	0.92	0.94	
Ire.	1.04	0.54	0.48	0.79	0.54	0.54	0.48	0.48	0.54	0.54	-	0.54	1.79	0.48	N/A	0.48	1.04	0.54	0.54	0.54	0.54	0.54	0.87	0.34	0.79	0.65	
Ita.	1.42	0.43	0.43	0.86	0.43	0.43	0.43	0.43	0.43	0.65	0.43	-	1.42	0.43	N/A	0.43	1.42	0.43	0.43	0.43	0.43	0.43	0.65	0.43	0.86	0.62	
Jap.	1.35	1.79	1.79	1.32	1.79	1.79	1.74	1.74	1.79	1.79	1.79	1.79	-	1.79	N/A	1.79	1.35	1.79	1.79	1.79	1.79	1.79	1.79	1.74	1.10	1.69	
Lux.	1.44	0.44	0.38	0.78	0.44	0.71	0.44	0.44	0.49	0.87	0.49	0.44	1.44	-	N/A	0.38	2.22	0.71	0.49	0.49	0.71	0.44	1.30	0.44	0.78	0.73	
Mex.	2.33	1.83	1.83	0.43	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	2.33	1.83	-	1.83	2.33	1.83	1.83	1.83	1.83	1.83	1.83	1.83	0.26	1.85	
Neth.	1.65	0.66	0.47	0.82	0.49	0.80	0.47	0.47	0.66	0.80	0.66	0.66	1.65	0.47	N/A	-	1.65	0.66	0.66	0.66	0.44	0.44	0.80	0.49	0.82	0.75	
N.Z.	0.25	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.92	0.92	0.55	0.55	0.55	0.92	N/A	0.55	-	0.55	0.92	0.92	0.55	0.55	0.92	0.55	0.55	0.63	
Nor.	0.57	0.42	0.42	0.49	0.22	0.22	0.42	0.42	0.49	0.42	0.42	0.42	1.05	0.42	N/A	0.42	1.05	-	0.49	0.49	0.22	0.42	0.57	0.42	0.49	0.48	
Por.	1.07	0.69	0.69	1.07	0.69	0.87	0.69	0.69	0.69	0.87	0.69	0.69	1.39	0.69	N/A	0.69	1.89	0.87	-	0.69	0.87	0.69	0.87	0.69	1.01	0.86	
Spa.	2.06	0.55	0.55	1.00	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	2.06	0.55	N/A	0.55	2.06	0.55	0.55	-	0.55	0.55	0.68	0.55	1.00	0.79	
Swe.	1.28	0.53	0.45	0.62	0.19	0.19	0.53	0.45	0.53	0.45	0.45	0.53	1.65	0.53	N/A	0.45	1.28	0.19	0.53	0.53	-	0.53	0.69	0.40	0.62	0.59	
Swit.	1.32	0.55	0.55	0.69	0.55	0.55	0.55	0.55	0.69	0.69	0.69	0.48	1.76	0.55	N/A	0.45	2.34	0.55	0.69	0.69	0.55	-	0.69	0.45	0.69	0.75	
Tur.	1.40	0.78	0.78	1.40	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1.40	0.78	N/A	0.78	1.40	0.78	0.78	0.78	0.78	0.78	-	0.78	1.40	0.91	
U.K.	0.77	0.51	0.38	0.61	0.38	0.51	0.38	0.38	0.38	0.74	0.26	0.38	1.27	0.38	N/A	0.38	0.77	0.51	0.38	0.38	0.51	0.38	0.38	-	0.61	0.51	
U.S.	0.92	0.83	0.85	0.31	0.86	0.78	0.75	0.74	0.96	0.99	0.78	0.96	0.91	0.77	N/A	0.75	0.99	0.78	0.98	0.95	0.75	0.76	1.24	0.66	-	0.84	
	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ice.	Ire.	Ita.	Jap.	Lux.	Mex.	Neth.	N.Z.	Nor.	Por.	Spa.	Swe.	Swit.	Tur.	U.K.	U.S.	Ave.	

1. Calculation uses exchange rate of previous year.

2. Taxes are excluded.

3. The charges in the shaded cells are more than twice (lightly shaded cells) or three times (densely shaded cells) of the charge applicable from the opposite direction.

4. Calculation is based on four minutes call where applicable.

Source: OECD

Exchange Rate used for calculation.

	For '88	For '89	For '90	For '91	For '92	For '93	For '94	For '95
Austria	1.43	1.28	1.26	1.28	1.28	1.36	1.47	1.37
Australia	12.64	12.34	13.23	11.37	11.67	10.99	11.63	11.42
Belgium	37.33	36.77	39.40	33.42	34.16	32.15	34.56	33.46
Canada	1.33	1.23	1.18	1.17	1.15	1.21	1.29	1.37
Denmark	6.84	6.73	7.31	6.19	6.40	6.04	6.48	6.36
Finland	4.40	4.19	4.29	3.82	4.04	4.49	5.72	5.22
France	6.01	5.96	6.38	5.45	5.45	5.29	5.66	5.55
Germany	1.80	1.76	1.88	1.62	1.66	1.56	1.65	1.62
Greece	135.43	141.64	162.42	158.23	182.06	190.47	229.14	242.20
Iceland	38.68	43.03	57.04	58.36	59.07	57.62	67.65	7-
Ireland	0.67	0.66	0.71	0.60	0.62	0.59	0.68	0.67
Italy	1296.07	1302.00	1372.09	1198.00	1240.65	1232.00	1572.00	1613.00
Japan	144.64	128.20	137.96	144.80	134.50	126.70	111.20	102.20
Luxembourg	37.33	36.77	39.40	33.42	34.162	32.15	34.56	33.46
Mexico	2.24145	2.28	2.6795	2.9419	3.074	3.1174	3.1904	3.39
Netherlands	2.03	1.98	2.12	1.82	1.87	1.76	1.86	1.82
New Zealand	1.70	1.53	1.67	1.68	1.73	1.86	1.85	1.69
Norway	6.74	6.52	6.90	6.26	6.48	6.21	7.09	7.06
Portugal	140.88	143.94	157.46	142.31	144.35	134.82	160.65	166.00
Spain	123.48	116.49	118.38	101.94	103.93	102.40	127.24	134.00
Sweden	6.34	6.13	6.45	5.92	6.05	5.82	7.78	7.72
Switzerland	1.49	1.46	1.64	1.39	1.43	1.41	1.48	1.37
Turkey	857.22	1419.40	2121.68	2606.50	4168.99	6860.60	10968.70	29778.00
United Kingdom	0.61	0.56	0.61	0.56	0.57	0.57	0.67	0.65
United States	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: OECD

Total International Simple Resale Price per minute for Selected OECD countries (D in Table 10)

[Per minute price of 56 / 64 kbit/s Digital Leased Line Service + Call Charges on both ends (0 km)]

	To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ita.	Jap.	Neth.	Nor.	Por.	Spa.	Swa.	Swi.	Tur.	UK	US	Ave.	
From																							
Aul.																							
Aus.		0.39																					Aul. 0.39
Bel.		0.25	0.25																				Aus. 0.38
Can.		0.18	0.28	0.19																			Bel. 0.32
Den.		0.28	0.24	0.18	0.18																		Can. 0.30
Fin.		0.21	0.22	0.16	0.15	0.09																	Den. 0.30
Fra.		0.35	0.26	0.17	0.17	0.19	0.16																Fin. 0.28
Ger.		0.28	0.24	0.17	0.17	0.15	0.14	0.16															Fra. 0.32
Gre.		0.28	0.25	0.19	0.22	0.17	0.14	0.19	0.20														Ger. 0.31
Ita.		0.26	0.25	0.20	0.18	0.18	0.16	0.18	0.18	0.16													Gre. 0.31
Jap.		0.34	0.54	0.40	0.27	0.43	0.37	0.42	0.41	0.43	0.41												Ita. 0.30
Neth.		0.23	0.24	0.16	0.16	0.15	0.13	0.19	0.16	0.16	0.17	0.39											Jap. 0.51
Nor.		0.23	0.25	0.18	0.17	0.11	0.08	0.19	0.17	0.16	0.17	0.38	0.16										Neth. 0.30
Por.		0.29	0.27	0.20	0.18	0.19	0.17	0.19	0.20	0.19	0.19	0.42	0.18	0.19									Nor. 0.30
Spa.		0.21	0.24	0.17	0.15	0.15	0.13	0.16	0.16	0.15	0.16	0.37	0.15	0.17	0.14								Por. 0.32
Swa.		0.23	0.23	0.16	0.15	0.09	0.07	0.17	0.15	0.16	0.17	0.38	0.14	0.08	0.18	0.15							Spa. 0.19
Swi.		0.30	0.31	0.25	0.24	0.25	0.22	0.23	0.23	0.26	0.25	0.46	0.23	0.25	0.27	0.24	0.23						Swa. 0.29
Tur.		0.39	0.34	0.28	0.33	0.26	0.23	0.29	0.27	0.16	0.28	0.54	0.25	0.25	0.29	0.24	0.25	0.34					Swi. 0.38
UK		0.29	0.27	0.18	0.19	0.17	0.15	0.20	0.19	0.22	0.19	0.44	0.17	0.18	0.19	0.17	0.16	0.27	0.31				Tur. 0.40
US		0.33	0.35	0.24	0.15	0.24	0.21	0.22	0.22	0.27	0.23	0.37	0.22	0.23	0.26	0.22	0.20	0.30	0.28	0.24			UK 0.33
																							US 0.36
		Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ita.	Jap.	Neth.	Nor.	Por.	Spa.	Swa.	Swi.	Tur.	UK	US	Ave.	

1. Leased line charge per minute is calculated assuming that 64 kbit/s leased line has four voice paths with 25 per cent usage ratio.

2. Leased line charges are calculated by adding half leased line price of both terminating countries.

3. Leased line charges are the cheapest price available at September 1994. IDD collection charges are from January 1995.

4. Calculation uses 1994 exchange rates.

Source: OECD, ITU/LYNX

The Ratio of Total International Simple Resale Price per minute compared to IDD collection charge in Selected OECD countries (D/E in Table 10)

	To	Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ita.	Jap.	Neth.	Nor.	Por.	Spa.	Swa.	Swi.	Tur.	UK	US	Ave.
From																						
Aul.			30%	19%	17%	24%	18%	30%	23%	19%	13%	26%	20%	20%	20%	14%	20%	23%	27%	29%	34%	22%
Aus.		25%		36%	25%	34%	20%	38%	34%	36%	23%	34%	34%	36%	24%	34%	33%	44%	31%	39%	32%	32%
Bel.		16%	42%		21%	29%	21%	34%	34%	30%	20%	27%	33%	24%	31%	26%	22%	42%	31%	35%	26%	29%
Can.		20%	30%	17%		22%	19%	24%	18%	16%	18%	23%	26%	21%	15%	10%	24%	38%	20%	33%	37%	23%
Den.		22%	42%	35%	20%		25%	37%	35%	27%	28%	34%	30%	30%	30%	24%	25%	50%	35%	39%	27%	31%
Fin.		25%	40%	29%	18%	34%		29%	27%	26%	28%	25%	24%	31%	31%	24%	25%	42%	42%	28%	26%	29%
Fra.		20%	40%	30%	19%	28%	23%		29%	28%	21%	24%	34%	28%	29%	28%	25%	42%	30%	35%	25%	28%
Ger.		15%	34%	24%	14%	22%	18%	23%		29%	23%	22%	22%	21%	28%	23%	19%	33%	34%	27%	18%	24%
Gre.		23%	55%	34%	18%	30%	26%	34%	36%		16%	21%	29%	29%	34%	27%	28%	55%	35%	40%	22%	31%
Ita.		15%	46%	36%	16%	33%	29%	32%	34%	29%		24%	32%	32%	35%	29%	31%	45%	34%	35%	21%	31%
Jap.		15%	19%	14%	12%	15%	13%	15%	14%	15%	14%		13%	13%	15%	13%	13%	16%	19%	15%	20%	15%
Neth.		12%	30%	31%	18%	25%	13%	36%	30%	20%	18%	20%		20%	22%	19%	28%	47%	25%	28%	23%	25%
Nor.		32%	51%	37%	29%	40%	30%	38%	34%	28%	35%	36%	32%		33%	30%	30%	52%	35%	36%	40%	36%
Por.		20%	30%	23%	12%	21%	16%	22%	23%	22%	17%	20%	20%	17%	17%	16%	17%	31%	27%	21%	18%	21%
Spa.		7%	34%	24%	12%	21%	18%	22%	23%	21%	23%	15%	22%	25%	20%		21%	34%	24%	24%	17%	21%
Swa.		17%	36%	30%	19%	36%	25%	26%	28%	25%	32%	22%	26%	32%	29%	23%		36%	30%	33%	25%	28%
Swi.		23%	42%	34%	28%	35%	31%	35%	32%	25%	24%	26%	40%	35%	27%	23%	32%		34%	47%	34%	32%
Tur.		22%	29%	24%	19%	22%	20%	25%	23%	21%	24%	31%	21%	21%	21%	20%	21%	30%		27%	16%	23%
UK		33%	45%	38%	29%	37%	25%	43%	41%	49%	22%	33%	37%	30%	40%	38%	26%	59%	68%		37%	38%
US		21%	25%	15%	26%	17%	15%	18%	18%	14%	14%	23%	18%	18%	17%	14%	17%	21%	15%	23%		18%
		Aul.	Aus.	Bel.	Can.	Den.	Fin.	Fra.	Ger.	Gre.	Ita.	Jap.	Neth.	Nor.	Por.	Spa.	Swa.	Swi.	Tur.	UK	US	Ave.

1. Leased line charge per minute is calculated assuming that 64 kbit/s leased line has four voice paths with 25 per cent usage ratio.

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Source: OECD, ITU/LYNX