

Latin American and Caribbean Telecommunication Finance and Trade Colloquium

**LIBERALIZATION AND REFORM OF INTERNATIONAL
TELECOMMUNICATION SETTLEMENT
ARRANGEMENTS**

**Peter A. Stern, Tim Kelly¹
International Telecommunication Union, Geneva**

Brasilia, 14 - 16 July 1997

¹The views expressed in this paper are those of the authors and do not necessarily reflect the opinions of the ITU or its membership.

Abstract

The recent WTO Agreement on basic telecommunications and the FCC's benchmarking proceeding have given renewed importance to the discussions on international telecommunication settlements and, in particular, the accounting rates system. The discussion is not new. It was given a high profile at the beginning of this decade when the influential Financial Times accused the ITU of being a cartel of monopoly, international network operators ripping off the public to the tune of tens of billions of dollars.

The concern at the time was, as it is today, the huge settlement deficit of some industrialized countries and especially that of the US which has grown from about US\$ 2 billions annually at the beginning of the decade to over US\$ 5 billions today.

The actions of national regulators such as the FCC, and OFTEL in the UK, and international organizations, such as the OECD and the European Commission which have taken an interest in the issue, have not been particularly successful in reducing these enormous imbalances, in spite of the fact that international network operators have been able to negotiate substantial reductions in accounting rates over this period. The ITU has also defined rules to achieve non-discriminatory, cost-oriented accounting rates.

The problem is that accounting rates are still well above cost and are used almost universally to subsidize other services. It has traditionally been easier to cross-subsidize essential high cost services from what at one time were considered "luxury" services such as domestic and international long distance. This is less and less the case. The globalization of economic activity has increased the requirement for economical, world-wide communications. There is pressure to reduce the price of international communications. Technology and the trend to liberalization have increased the opportunity for arbitrage where the price of international services are too high. This will inevitably put pressure on these prices and on the traditional international settlement arrangements. The international telecommunication system, which was characterized by the correspondent relationship among monopoly international operators using the accounting rates system, will give way to a system in which many arrangements including accounting rates, termination charges, interconnection arrangements, end-to-end provision and sender-keeps-all, will exist side-by-side.

This paper explains the traditional arrangements and reviews some of the reasons why these are coming under coming under pressure. It also reviews some of the previous and current action to reform the system within international organizations like the ITU, the OECD, the WTO, and European Commission and national regulators such as the FCC and OFTEL. It elaborates on some of the most recent actions within ITU Study Group 3, which deals specifically with international accounting and settlement issues, as well as the initiatives of the ITU Secretary-General, who established a special group of experts to examine the issue. Finally, the paper looks at the possible shape of future arrangements.

INTRODUCTION

The World Trade Organization (WTO) agreement on basic telecommunication services concluded in mid-February and the recent proposal by the Federal Communication Commission (FCC), the US regulator, to limit the amounts that US carriers would be allowed to pay out to their foreign correspondents for terminating US telephone, have thrown renewed light on the thorny issue of accounting and settlements in the international telephone system. Indeed, the current method of settling accounts among international telecommunication operators, dominated by the so-called “accounting rate method”, is at the very heart of the international telecommunication system which has ensured the orderly and steady development of international telecommunications for over 140 years.

The system, however, has come under pressure especially over the last 10 or 15 years because it is no longer able to satisfy fully the needs of a growing number of alternatives to the traditional arrangements. These alternatives are a result of technology and the growing trend in liberalization.

This paper presents a brief overview of the traditional system, examines the pressures that have been brought to bear on it, and the efforts to find solutions by regulators and international organizations such as the ITU and the OECD. Of most current interest are the most recent FCC benchmarking Notice for Proposed Rule Making (NPRM), the work of ITU-T Study Group 3 which is responsible for studies relating to tariff and accounting principles for international telecommunication services, telecommunication economic and policy issues, and policy issues related to carriage and the recommendations of the ITU Secretary General’s Informal Expert Group on International Telecommunication Settlements.

TRADITIONAL ARRANGEMENTS

Traditional Arrangements for Charging and Accounting in International Telecommunications

The international telecommunication system was, and in many relationships continues to be characterized by sovereign international operators interconnecting with each other to jointly provide international telecommunication facilities and services. Until quite recently, international operators in almost all countries were monopolies. They were generally also the sole providers of local and domestic long distance facilities and services. For a long time the only significant exception to this model was the Cable & Wireless owned telegraph cable network which spanned the British Empire during the latter part of the 19th and the earlier part of the 20th century and which was broken up only after the Second World War when the assets of Cable & Wireless were nationalized in many countries of the British Commonwealth.

The Traditional International Telecommunication Accounting and Settlement Arrangements

Under these traditional arrangements, accounting for international telecommunications traffic between and among countries was carried out within an international framework of standards known as Recommendations developed and approved by members of the International Telecommunication Union (ITU) within the International Telegraph and

Telephone Consultative Committee (CCITT), now known as the Telecommunication Standardization Sector (ITU-T). International operators tended to adhere to these internationally agreed standards because they facilitated not only the interconnectivity and interoperability of the international network, but also provided a degree of harmony in operating and administering it. International telecommunication operators and service providers were and are, however, free to agree to any arrangements between or among themselves, so long as this does not cause technical harm to the whole network.

International telecommunication accounting practices distinguish between remuneration of the corresponding carrier in the country of destination or transit for the delivery of its traffic (accounting rate) and the charge in national currency collected by an operator from its customers for the international facilities and services provided (collection charge). According to ITU-T Recommendations D.150 and D.155, which concern tariff and accounting practices in the international telephone service, the carrier in the destination country can be remunerated on the basis of a flat-rate price per circuit, the traffic units carried, or through a procedure whereby accounting revenue is shared between terminal operators. A fourth option, "sender keeps all", involves no exchange of international accounts. These are briefly described below:

- Under the **Flat-Rate Price Method**, the international carrier of the country of destination receives payment for facilities provided at a flat-rate price per circuit covering the international circuit section provided by the country of destination, the use of its international exchange, and the national extension. While very rarely applied for the remuneration of the country of destination, this method is used to remunerate the transit point in direct transits.
- Under the **Traffic-Unit Price Method**, the international carrier of the country of destination receives payment on the basis of the price it has established per unit of traffic. This price is related to the facilities made available and takes account of the length of the international circuit section provided by the country of destination, the use of its international exchange, and the national extension. This method was used in Europe and the Mediterranean Basin on the basis of the standard rates established by the TEUREM Group.
- Under the most commonly used method, the **Accounting-Revenue Division Method** or **Accounting Rate Method**, the value of traffic in each direction between two corresponding international carriers is multiplied by a mutually agreed tariff or "accounting rate" to give an accounting revenue which is "in principle, shared equally between the (carriers) of the terminal countries in respect of each traffic direction". In theory, international carriers can agree on other than equal shares when their costs or the extent of the facilities that each provides vary significantly; however, in practice, accounting rates are shared 50/50. If, during a given settlement period (say, a month or a quarter), there is more traffic flowing in one direction than the other, the carrier which receives more traffic than it sends will receive a greater amount of compensation from the corresponding operator for delivering its traffic than it has to pay out. The direction of the traffic imbalance, therefore, determines which operator has to pay its partner in a bilateral relations more than it receives. If, for example, the accounting rate between Brazil and a given foreign destination is \$ 1.00 and the accounting rate is divided 50/50, then Brazil pays its foreign partner $\frac{1}{2} \times 1.00 = \$ 0.50$ per minute of traffic to deliver each call to its destination from the mid-point to the destination subscriber (The factor by which the minutes of traffic are multiplied is also referred to as the "settlement rate"); to facilitate

accounting, however, partners in a bilateral relation look at the sum of the traffic in both directions for a given period and apply the accounting rate only to the difference. If, therefore, during the period there are more minutes of traffic flowing into Colombia than flowing out, the imbalance obtained by multiplying by half of the accounting rate gives the net "traffic settlement". The greater a country's outgoing traffic imbalance with another country, the greater its net payments outflow. The long run trend has been to reductions in accounting rates reflecting the decreasing unit cost to the international carrier to deliver the traffic that it receives and the decreasing charges collected by the originating operator for an international call.

- When there is minimal or no imbalance in the traffic exchanged between terminal points, the corresponding carriers may agree that no accounting is necessary. The **Sender Keeps All Method** is used for example in relations among the Southern African Development Council countries (i.e. Malawi, Zambia, Zimbabwe, South Africa, Botswana, Mozambique) where the traffic exchanged is roughly equal in each direction and for the Internet where there are no accounts exchanged at the higher network levels.

What the first three of these methods have in common is that they "unbundle", to some extent, the different costs involved in providing service. For telephone service, there are three main cost elements involved: the international transmission link (usually a submarine cable or satellite link); an international gateway switch (generally located in the territory of the terminating country); and a national extension to the end-user, receiving the call. Under the traditional paradigm of joint service provision, the accounting rate comprised an aggregation of these different charges. In a competitive environment, individual carriers will want to be able to provide some of these facilities for themselves, or to purchase them from carriers other than the carrier to which the end-user is connected.

Collection Charges

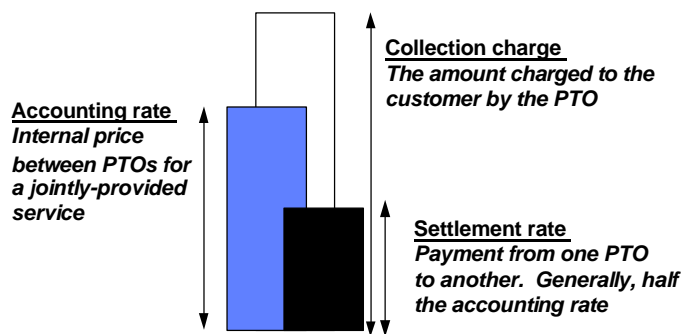
Collection charges are considered to be a purely national matter fixed by the provider of the international services subject to government, regulatory, financial and competitive constraints. Collection charges for a given service may differ considerably at each end of a given relation.

The ability of the international carrier to set prices for its international services and facilities allows for a more efficient use of the international network. For example, lower tariffs in off-peak hours to certain destinations can stimulate traffic to fill circuits which would otherwise lay idle but which are required to cater for peak periods. This flexibility has been enhanced through computerization of real-time information on capacity utilization which allows fine tuning of collection charges applied to different destinations at different times. The same flexibility to adjust prices charged for their services allows airlines and hotels to optimize the use of fixed capacity.

Characteristic of this international accounting and payments mechanism is that each customer's contact is limited to the local telecommunications company that provides these (basic) services to its premises. The customer settles the total cost of an international call that it has initiated with this carrier which then settles with the international carrier (if they are not one and the same) according to a formula that they have agreed between themselves. The international carrier then settles with its foreign partner according to one of the international settlement procedures just described. Neither the domestic nor the international

carrier have any transactional responsibilities with respect to a customer in a foreign country that originates or receives a call.

A graphical illustration of an accounting rate, a settlement rate (normally half the accounting rate) and a collection charge can be found at Figure 1.



Source: ITU World Telecommunication Report, 1996/97

Figure 1
Accounting Rate, Settlement Rate, Collection Charge
(PTO = Public Telecommunication Operator)

Transit Arrangements

Carriers in countries which are used as transit points between origin and destination are remunerated either according to a **flat-rate price** for facilities made available on a dedicated circuit basis rather than on demand or according to a **traffic-unit price** on the traffic which is switched through the transit point(s). The terminal and transit carriers in a switched transit relation would normally negotiate an accounting rate for the relation and then divide it into two terminal shares and one or more transit shares. The balance of the accounting rate after deduction of the transit share(s) is normally divided equally between the terminal carriers; however, as in the case of direct relations they may also agree to something other than a 50/50 share.

With the advent of competition for transit traffic, transit carriers began in the late 1970's to offer so-called Transit Remuneration Plans (TRPs), whereby transit facilities were offered to terminal operators at competitive rates. These rates were then deducted from the total rate between the two terminals. The balance is then divided between the terminal carriers.

This competition for transit traffic has more recently lead to international operators' refiling each other's international traffic. Refile is discussed later in this paper.

EXAMPLES OF OTHER SCHEMES

Other methods used by telecommunication operators for compensating each other for the carriage and delivery of traffic have been successfully implemented in the past. For example, in international telecommunications the countries of the British Commonwealth continued to maintain special, co-operative arrangements for nearly 40 years among the sovereign, international operators even after the assets of Cable & Wireless were nationalized. At one time these arrangements shared revenues (the Wayleave Schemes) and at another shared costs (Commonwealth Telecommunications Financial Arrangements, CTFA) with the purpose of promoting the use of and development of the world-wide Commonwealth network among the nearly 30 countries of the Commonwealth Telecommunication Organization (CTO). Even while they maintained these special schemes among themselves, these countries continued to account for and settle traffic accounts between themselves and other countries (referred to as "foreign" destinations) according to the traditional accounting rates mechanism. These unique schemes which were no longer compatible with the rapidly growing international telecommunication network are described in Annex 1.

Until 1997 the regional telephone companies which form the Stentor (earlier Telecom Canada) alliance to provide local and domestic long distance services in Canada had a co-operative, revenue sharing scheme among themselves known as the Telecom Canada Revenue Settlement Plan and which had the effect of providing support to the smaller members. This scheme which is described briefly in Annex 2 has now been replaced by a system of transit and termination charge payments.

Intelsat and Inmarsat, two International Satellite Organizations (ISOs), were also formed under similar cooperative arrangements where each member contributes capital in proportion to its use of the system. The utilization charges are established at a level which generates the revenue required to meet the operation, maintenance and administration of the system as well as amortization of, and compensation for use of, capital.

PRESSURES FOR REFORM

Pressures to Reform the Accounting Rate System²

The most commonly used system, the accounting rate system, generally worked well so long as a number of conditions were met. Chief among these were the conditions that international services were provided on either side of a relationship by single international operators, in each country and that there was not too large a disparity in traffic flowing in each direction. Traffic disparities were acceptable to the extent that they outweighed the advantages of the accounting rate system, namely, its simplicity, ease of administration, and cost effectiveness. In effect, the transaction costs are minimal as there are no complex cost and revenue calculations to do. These traffic disparities were due to a number of socio-economic, cultural, and technical factors. Traditionally, for example, subscribers in countries such as the USA, Canada, and Australia tended to make more calls overseas than vice-versa because it was cheaper, because immigrants that had established in the USA, Canada, and Australia were generally richer than their overseas cousins, and because Canadians and Americans, used to unmetered calls, tended to make longer calls. Also, when the USA had a large contingent of military stationed overseas, especially in Europe, there was a significant impact on traffic direction by calls to these military personnel from their families in the USA.

² Some of the discussion in this section is inspired from World Telecommunication Development Report 1996/97, Chapter 6. International Telecommunication Union, ISBN 92-61-06391-8

In addition, traffic imbalances were attributable to large disparities in collection charges between partners, the greater difficulty of completing calls in one direction than the other and to certain calling patterns between families and businesses. In addition, the lack of foreign exchange in certain countries often provided an incentive for discouraging outbound traffic growth.

An operator with a traffic imbalance in its favour had every interest to maintain or even increase that imbalance. Its partner, however, will do anything to mitigate the financial impact of that imbalance by negotiating to have the accounting rate reduced and, where appropriate, assisting the other partner to overcome any technical difficulties which hamper outgoing calls.

While these factors were important and caused concern already in the mid-1980s particularly in the USA because of growing imbalances in traffic and resulting outflow of payments, it was only in the last few years that the disparity between outgoing and incoming traffic in the USA and the net USA outpayments have skyrocketed.

Figure 2 shows the growing divergence between outgoing and incoming traffic in the United States since 1975. The United States has been a net exporter of calls throughout the period. However, while incoming traffic grew by 20.8 per cent per year, outgoing traffic grew by 24.0 per cent per year. Thus, a surplus of outgoing over incoming traffic of 51 million minutes in 1975 had become a surplus of 8.6 billion minutes (including Canada and Mexico) by 1995. As can be seen from Figure 3, this surplus on outgoing traffic translated into a net US deficit on settlement payments of some US\$ 5.1 billion in 1995.

Figure 4 shows the net settlement payments from the US to selected countries in this region in 1995. That year the net US deficit with Mexico, the US's largest deficit stream among all countries, represented 17% of the US's total net deficit of US\$ 5.1 billion.

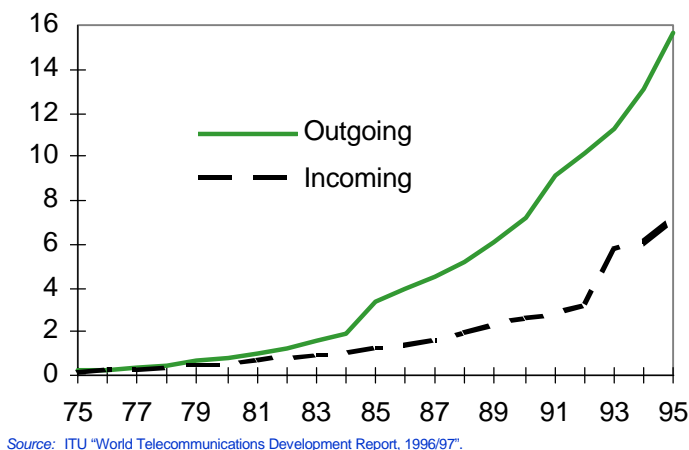
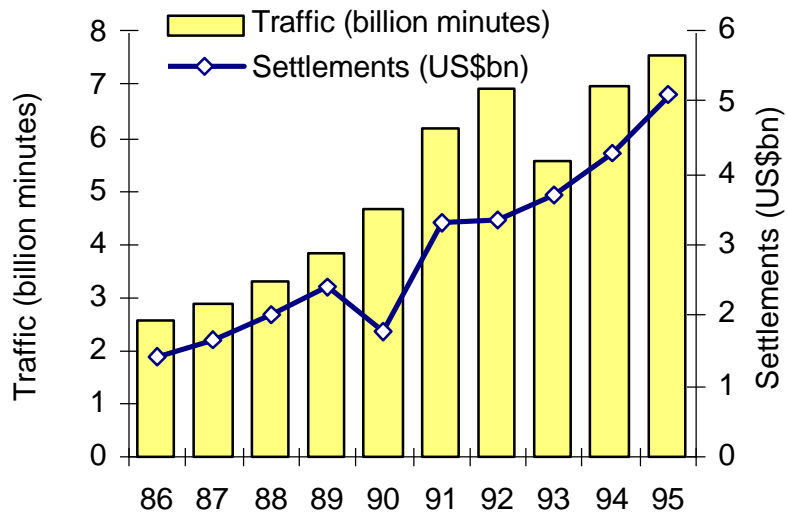


Figure 2
US International Telephone Traffic, 1975-1995:
The Growing Divergence Between Outgoing and Incoming Traffic
(in billions of minutes)

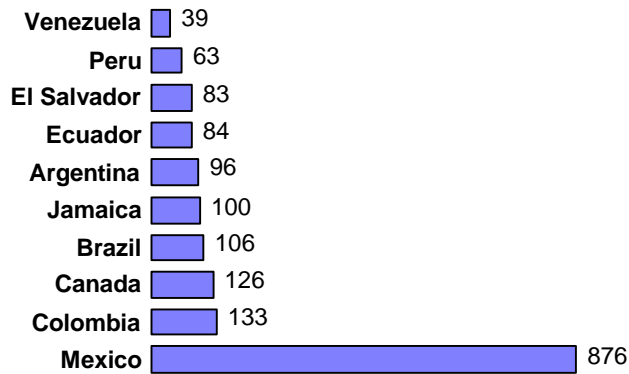


Source: ITU "World Telecommunications Development Report, 1996/97".

Figure 3

Net US Traffic and Settlement Payments

[Net traffic is outgoing minus incoming traffic, in billions of minutes (left axis). Net settlements are settlement payouts less settlement receipts from foreign carriers (excluding transit traffic), in US \$ billions (right axis)]



Source: FCC

Figure 4

Net US Outpayments to Selected Countries in the Latin American and Caribbean Region in 1995 (US \$ millions)

The reduction in collection charges and settlement rates has had some impact on the deficit (for instance, the deficit per surplus minute has fallen from US\$ 1.42 in 1983 to US\$ 0.59 in 1995) but the overall growth in traffic is so strong that it almost overrides the

effect of this reduction. Between 1990 and 1995, when the average US accounting rate fell by 43 per cent the US net settlements deficit rose by US\$ 3.3 billion, or 289 per cent

What has caused this exponential growth in traffic imbalance and US net outpayments? The introduction of competition in many countries, a process begun in the mid-1980s, along with advances in technology have facilitated the growth of alternatives to the traditional arrangements of routing international traffic and operators' compensating each other for delivery of this traffic.

The resale of private leased circuits for telephone and the establishment of private international networks has been facilitated by provisions allowing for special arrangements in the International Telecommunication Regulations (ITR, Melbourne, 1988) and the revision of ITU-T Recommendations D.1 and D.2. Recommendation D.1, which contains the general principles for the lease of private circuits, was revised in 1991 to permit international private leased circuits to be connected simultaneously at both ends to the public switched telephone network (PSTN), "if agreed between the (ITU) members concerned in conformity with their national laws to be applied regarding the provision of certain services" (paragraph 4.1). Previously such interconnection was permitted at only one end and leased circuits could only be used "to exchange communications relating to the business of the customer". (paragraph 1.7 of the earlier version of Recommendation D.1). Paragraph 4.1 of the revised Recommendation D.1 is important and reflects Article 9 of the ITR that bypass of the public telephone network is only legally possible if agreed by the administrations (regulators) concerned. Indeed, many countries, that made offers on basic telecommunications at the recently concluded World Trade Organization (WTO) negotiations, have made market access limitations to prevent bypass of the PSTN where this has not been completely liberalized.

The liberalization of the use of private leased circuits has facilitated the provision of International Simple Resale (ISR) and Private Networks including Managed Data Network Services (MDNS) and International Virtual Private Network Services (IVPNS). These services, often provided by other than the network operators, have become formidable competitors to these same operators not only in the provision of data and value added services but also more recently in voice services.

- **International Simple Resale (ISR)** is offered by service providers that lease circuits (international private leased circuits) from international network operators, gather traffic to a particular destination from a variety of different customers, and then route this traffic via the leased circuits to their destination. The ISR service provider can charge their clients per minute while paying only a fixed-rate fee to the network operators from whom they lease the circuits. The service requires the ability to lease lines from international network operators which can be connected to the public switched network at both ends. Countries which permit ISR between themselves include: Canada, USA, UK, Sweden, Finland, Australia and New Zealand. In many of these countries ISR was and is used to allow a greater degree of competition in international voice services before the full opening of international voice markets. Allowing interconnection at both ends of international private leased circuits has also facilitated the practice of refile and hubbing, which may not always be legal.
- **Private Networks** are established by private companies for their own use or by service providers such as IBM, SITA, Infonet, CompuServe, and others to provide a variety of services to third parties on a commercial basis These services include managed data network services including circuit and packet (using a variety of technologies and

protocols such as ITU-T Recommendations X.25 and X.28, IBM's SNA, frame relay and ATM, and TCP/IP, the Internet protocol) switched data, value added services, electronic messaging including e-mail and electronic data interchange (EDI), facsimile, access to data bases and the Internet, and sometimes voice). These service providers build their networks by putting together international and domestic circuits leased from network operators. The latter are not remaining idle and are forming global alliances such as Unisource, GlobalOne, and Concert, which are purchasing half circuits at arm's length from their parent companies to provide private network services in competition with the former. The network operators, who own the capacity at each end of a given facility, charge for hypothetical, matching half-circuits, each terminating at some notional mid-point under the ocean or at a border. Prices of international private leased circuits, which are higher than the cost of the various forms of ownership or quasi-ownership, do not show as much variation as do telephone call charges; however, included in these prices are generally extensions of the leased circuit capacity to the service providers' premises, restoration in case of circuit failure, quality of service guarantees, flexibility in duration of lease etc.

- **Voice Over Data Networks.** While voice can be provided over circuit switched data networks, packet switching networks using ITU-T Recommendation X.25 technology have been too slow. Newer and faster packet switching technologies such as Frame Relay and Asynchronous Transfer Mode (ATM) allow real time voice to be offered over packet switched networks. Private network operators who offer various types of data services to third parties may often also offer voice if they have the capability to provide Frame Relay or indeed ATM. This often presents a dilemma for the regulator in a country where private data services can be resold but there are restrictions to bypassing the Public Switched Telephone Network (PSTN). Voice over the Internet has been facilitated by a protocol known as the User Datagram Protocol (UDP). Voice over data is significant in that it permits accounting rate by-pass because data communication networks tend to employ alternative revenue division mechanisms, such as private leased circuits or sender-keeps-all for the Internet.
- **International Virtual Private Network Services (IVPNS)** are commonly offered by the major network operators or alliances of network operators. They offer to individual clients the chance to gain the benefits of a private network (facilities such as short number dialling, centralized billing, call discounts, data transmission, facsimile store and forward, etc.) while retaining the the use and the flexibility of the public network. IVPNS have also been facilitated by the formation of network operator alliances such as Concert, World Partners, and Unisource. which are specifically targeting this part of the market. IVPNS avoid the traditional arrangements for charging and accounting.

What these alternatives have in common are that they avoid the traditional arrangements for accounting for and settling traffic accounts and that they generally respect the rules and regulations of all countries involved. The latter is not always true for the practice of refile and hubbing.

- **Refile and Hubbing:** exploits differences in accounting rates between countries to route traffic by the least cost path but not always with the agreement or knowledge of all network operators involved. So, for instance, if the combined accounting rates between United Kingdom and the United States and the United Kingdom and France is lower than that between France and the United States, there is an incentive to route calls between France and the United States via the United Kingdom as this would be the least cost route. Refile

and hubbing is often used in association with international private networks or international simple resale so that, in the example above, traffic on the UK/US route, where international simple resale is permitted, might be aggregated onto a leased line and would then break out into the PSTN for delivery to other European destinations even where such a breakout may not be permitted. Fierce competition in transit traffic has also caused network operators to hub and refile traffic through their international gateways, not always in agreement with the destination countries. Newly established, competing international operators that do not have circuits to every country in the world often rely on providers of refile services to deliver their traffic to destinations with low density traffic.³

Technology and more aggressive marketing have facilitated alternative calling procedures which continue to rely on the traditional accounting and settlements procedures but have the effect of significantly altering traffic flows and, therefore, skewing balances. Their effect is to turn the normal direction of the call around and can thus be referred to as call-turnaround procedures or practices. These are calling cards, country direct/home services and call-back, which all result in reversing the "normal" direction of the traffic flow. They are the cause for a growing outflow of traffic from countries such as the US in which network operators and service providers which offer these services are located.

- **Calling Cards:** enable subscribers to make calls when abroad using a personal identification number, and to have those calls billed to their home account. For the operators offering the service, this helps maintain brand loyalty among major customers, provides a form of competition in foreign markets and allows operators potentially lucrative financial services markets.
- **Country- or Home Direct Services:** enable travellers when abroad to call a particular number which establishes contact with an operator in the home country. From there, the call can be switched to the chosen number in the home country or in a third country. For the operator, the range of advantages is similar to those of calling cards with the added bonus of being able to charge a premium rate for the service provided by the operator. For the subscriber, the main advantage is that it eliminates the requirement of having to find out local details for dialling codes or charges, or to deal with operator services in a foreign language. Market access for both calling card services and country-direct services is usually negotiated at the same time as the negotiation of the accounting rate.
- **Call-back** is a procedure by which telecommunications service providers can provide switched international telephone service in a foreign country at rates which are significantly lower than the rates of international calls in that country. Most call-back operators are located in the USA because of that country's comparatively lower charges for wholesale capacity; these call-back operators effectively provide a US dial tone to foreign customers who can then make a call to anywhere in the world at very competitive rates. There are several forms of call-back. The most common is code calling which in its simplest form involves a foreign customer making an international direct dial call to the call-back operator's switch (say in the USA), letting the number ring and then hanging up. The call-back operator's switch recognizes the caller's telephone number and calls back immediately providing a US dial tone. There is no charge for the initial call from the customer to the call-back operator in the US because the call is not completed. The customer pays for the call from the call back operator to his own telephone plus the call

³ It is US policy to promote the US as a hub for international traffic. See FCC Order and Notice of Proposed Rulemaking in the Matter of Rules and Policies on Foreign Participation in the US Telecommunication Market - IB Docket No. 97-142 (4 June 1997).

that he dials from the call-back operator's switch to anywhere in the world. There are other variations of this where, for example, the customer does not necessarily have to make the call from his or her own telephone. There are other methods some of which are more pernicious and involve fraud. These include: identify input, local connection, constant calling or bombardment, and answer signal suppression. There are more than 60 countries that prohibit call-back. Some have stated this also in their WTO basic telecommunication commitments. In practice, however, there is little that they can do to prevent it.

The effect of these call-turnaround procedures is illustrated for two traffic streams (US-Hong Kong and US-Germany) in Figures 5a and 5b, respectively. In estimating the effect of call-turnaround it is assumed that the effect of other call alternatives remains the same; that is, the difference between outgoing and incoming traffic for the two countries concerned continues to grow normally.

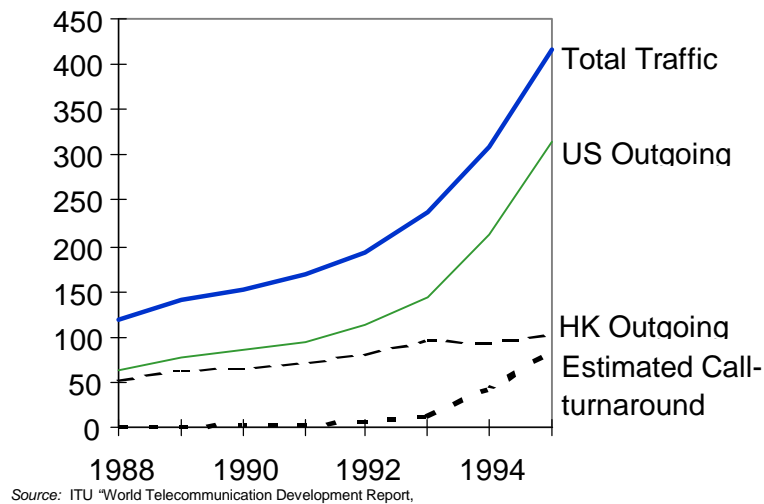


Figure 5a
Effects of Call-Turnaround on US-Hong Kong Traffic
(in millions of minutes)

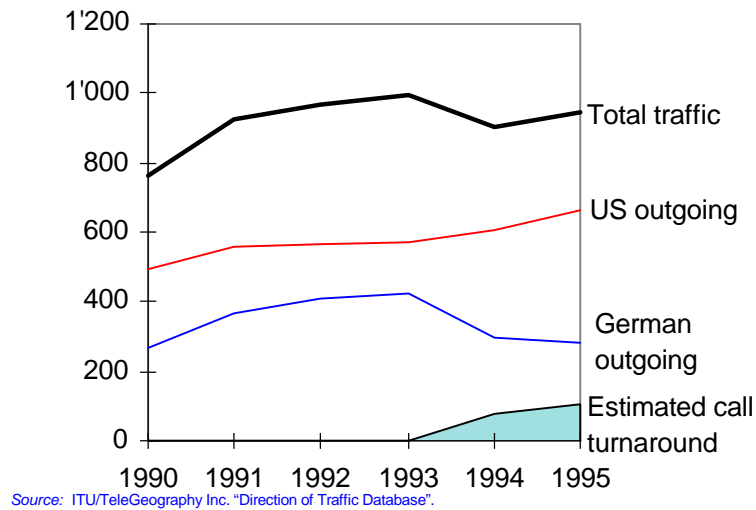


Figure 5b
Effects of Call-Turnaround on US-Germany Traffic
(in millions of minutes)

REGULATORY AND POLICY ACTION TO REFORM THE INTERNATIONAL TELECOMMUNICATION SETTLEMENT SYSTEM

FCC, OFTEL and the OECD

At the beginning of this decade the FCC, the United States regulator, and several international organizations including the OECD, the European Commission and the ITU began to look seriously at reforming the current arrangements. The FCC began proceedings "to bring international accounting rates closer to the cost of providing international telecommunication services and to reduce US international calling prices by as much as 50%." The European Commission began to examine European network operators' pricing practices because of the wide disparity among local, long distance, and intra-European long distance rates and the OECD, which had during the later 1980s been examining the impact on trade and economic development of telecommunication network-based services, began to turn its intention to international telecommunication accounting and settlement procedures in order to determine the trade distortive effects of non-cost band prices and the impact on other sectors of liberalizing telecommunications. Within the ITU, CCITT (now ITU-T) Study Group 3 which is responsible for charging and accounting practices in international telecommunications, also began to look at the costing mechanism behind accounting rates.

In May 1991 the FCC ordered US international operators to reduce their accounting rates to something between:

SDR 0.275 (US\$ 0.39) and 0.42 (US\$ 0.60) for USA-Asia relations; and SDR 0.165 (US\$ 0.23) and 0.275 (US\$ 0.39) for USA-Europe relations.⁴

This first benchmarking order also streamlined some of the regulatory procedures required for these operators to reduce their accounting rates and introduced some flexibility in the FCC's 1986 International Settlements Policy (ISP) which is intended to prevent non-US international operators from discriminating among US international operators and requires (a) uniform and equally divided accounting rates, (b) non-discriminatory treatment of US international operators and (c) proportionate return of traffic. These could henceforth be different if justified by differences in cost. Later that same year the FCC allowed the resale of international private leased circuits for the provision of international telecommunication services, including voice to third parties, but only with countries that allowed similar resale in the return direction to avoid one-way bypass of the accounting rates. This was intended to increase competition in the international telephone service and put pressure on prices. It opened the door to International Simple Resale (ISR). In December 1996 the FCC introduced even greater flexibility in its ISP policy by allowing US international operators to deviate from uniform accounting rates, equal divisions, and proportionate return traffic requirements by allowing them to negotiate alternative settlement payments, which do not necessarily have to be based on the traditional bilateral accounting rates, in relations where the foreign correspondent is in a country which has a sufficient level of competition in its telecommunication sector.

Figure 6 shows the average per minute US call prices and settlement rates from 1990 and projected to 2000. It is interesting to note the growing gap between the two, with the settlement rate falling faster than the average call prices.

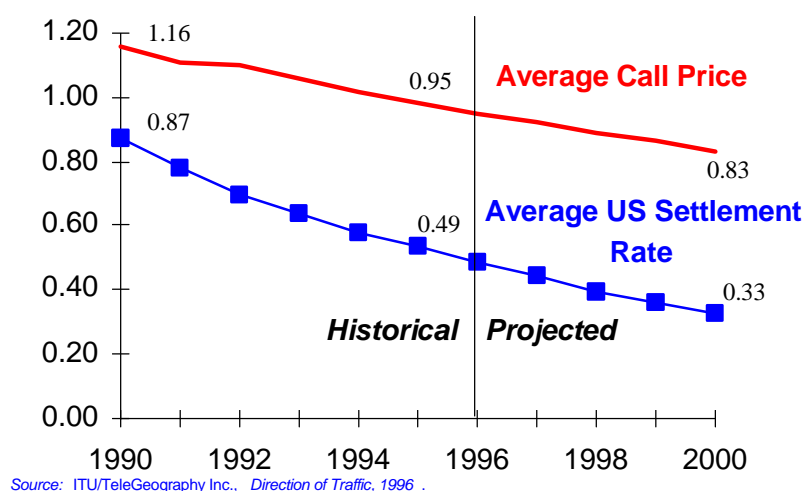


Figure 6
Average Per Minute US Call Prices and Settlement Rates⁵

⁴ Regulation of International Accounting Rates, CC Docket No. 90-337 (Phase II), Second Report and Order and Second Further Notice of Proposed Rule Making - 7 FCC Rcd. 8040 (1992)

⁵ Projections are based on a simple extrapolation of recent trends and represent a "base case" scenario. The "average price per minute" is calculated by taking the average peak rate tariff for each country to its top twenty traffic destinations weighted by its annual traffic to those destinations. The

Also in 1991 OFTEL the UK regulator decided for the first time to include international call charges into BT's price cap. Like the FCC, OFTEL also decided to allow ISR with countries that allowed it in the reverse direction. Later, the CRTC, the Canadian regulator, authorized the resale of international private leased circuits for voice and permitted interconnection of such circuits at both ends.

With regulators in Sweden, Australia and New Zealand taking the same liberalizing steps, the possibility of ISR between these countries became possible. Therefore, even without fully opening their markets to facilities-based provision of international telephone services, these countries were able to ensure a certain degree of competition in these services and the resulting pressure on prices. These countries along with many others (the European Union, for example) have liberalized or are in the process of liberalizing facilities-based international services markets. This will put further pressure on accounting rates not only in relations between these countries but on others; however, it also creates concerns about one-way bypass of the accounting rate in relations where markets have been opened at one end but not at the other. This was one of the concerns of the United States, when it refused to sign an agreement which would have concluded the WTO basic telecommunications negotiations in April 1996. There was eventually an agreement 10 months later in February 1997.

During the initial phases of its work on this subject in the early 1990s, the OECD, which also established an ad hoc group of experts to help it in its work, looked at various alternatives to the accounting rate regime. The alternative it fixed upon was the application of a non-discriminatory access or termination charge which would be applied subject to national treatment and most-favorite nation (MFN) principles. In other words, the fee for terminating an international call would be no higher than the price of an equivalent domestic long distance call. A foreign carrier would pay no more than a domestic carrier and the same charge would apply to all foreign operators. Termination charges would be cost-based and would be calculated using, for example, the traffic-unit price method described in ITU-T Recommendation D.150 or D.300R for the TEUREM countries.

For the OECD another way of putting pressure on accounting rate levels was to make them public; however, most network operators consider these to be commercially confidential and therefore not subject to any transparency provisions such as those of Article 3 of the GATS. Only the regulators in the US and UK have so far required these to be made public. The OECD did, however, manage to obtain data on trends in accounting rate levels and has been publishing these for its 30 member countries since 1992. The ITU also publishes similar information for a selection of its participating members.

International Telecommunication Union

ITU-T Study Group 3's work concentrated on the cost-based, non-discriminatory aspects of accounting rates. The principle of bringing prices into line with costs is central to ITU-T Recommendation D.140 (Accounting rate principles for the international telephone service) which states that "accounting rates for international telephone service should be cost-oriented and should take into account relevant cost trends". This is in itself not new; there is a similar

average shown is based on 27 leading economies and is expressed in constant 1995 US \$ exchange rates. The "average settlement rate per minute" is based on a weighted average of the US settlement rate with the same economies.

provision in the International Telecommunications Regulations (ITR). Additionally, however, the Recommendation D.140 states that “administrations should seek to achieve cost-oriented accounting rates in an expeditious manner and that they “should aim to agree to staged reductions over a period of up to 5 years with greater flexibility being given to relations with developing countries”. Recommendation D.140 also describes elements to be taken into account when determining the cost of providing international service and provides for publication of trends in accounting rates.

Figure 7 shows the evolution of the average accounting rate (in SDR) for all countries along side the accounting rates (in SDRs) recommended by three of the ITU’s regional tariff groups, namely, Africa (TAF); Asia and Oceania (TAS); and Europe and the Middle East (TEUREM) in ITU-T Recommendations D.600R, D.500R and D300R, respectively. In the Asia and Oceania region about 50% of countries have by now agreed to use the TAS recommended rates in relations between themselves. In Africa most rates are still above the recommended rates. These rates are, as Figure 7 shows, still well above what at least the FCC considers to be the real cost of delivery of an international call continues to facilitate arbitrage arrangements and bypass as described earlier in this paper.

More recently, ITU-T Study Group 3 has focused its work on the future of the international telecommunication settlements systems and accounting rates. More and more of the 80 or so countries that now participate in the work of this Group have come to realize that they need to come to grips with the inevitable changes to the traditional arrangements. At its most recent meeting in May 1997, there was general agreement that:

- the asymmetrical situation resulting from traffic relations between countries with liberalized markets and countries with monopoly international operators has created incentives for alternative routing and settlements, especially when accounting rates are well above cost;
- the move toward cost-oriented accounting rates is inevitable and, indeed, desirable as a means for network operators to cope with the growing number of alternatives. Most countries attending the May 1997 Study Group 3 meeting endorsed the principles of Recommendation D.140 but countries that depend on accounting rate revenues to invest in their network want the maximum time to bring their networks up to an acceptable level of development and at the same time find alternative sources of finance. They argued that even the most developed countries depended and continue to depend on cross subsidization to finance network development and that this required much more time than the adjustment periods being proposed for them by the FCC and, indeed, in Recommendation D140;
- in the future, accounting rates, interconnection charges, termination charges, sender keeps all, and end-to-end provision will very likely exist side by side. To facilitate understanding each of these Study Group 3 was to establish rules and pricing guidelines for, at least, the first three of these methods. In the absence of universally acceptable costing methodologies, it was proposed that various proxies including some variant of FCC’s tariffed component pricing (TCP) methodology be used as a first approximation to cost-based prices. This would be facilitated by unbundling accounting rates, interconnection charges, and termination charges into the network components to which they apply Study Group 3 will therefore concentrate on establishing rules to determine the rates for the various international settlements schemes that will, in the future, exist side-

by-side. It remains to be seen if the ITU will be able to establish Recommendations or even guidelines which will be followed, or if, on the contrary, more and more international traffic will fall outside of any internationally agreed rules and guidelines;

- the impact of moving toward cost-based prices needs to be better understood. The proposed case studies (proposed to be financed by the ITU's Development Sector) should help clarify this impact, determine what transitional arrangements could be implemented to mitigate the effects of moving toward cost-based prices, and also help determine appropriate costing methodologies. The objectives and methods for case studies should be established at the next Study Group 3 meeting;
- it would be preferable to proceed on a multilateral rather than bilateral or indeed unilateral basis to establish acceptable prices and arrangements in international relations;
- there is a need to develop a common understanding and terminology, not only for the possible alternatives to the accounting rate regime, but also for the various calling alternatives such as refile, hubbing, least-cost routing, and call-back;
- there is a need to gather, analyze, and disseminate information, not only on calling and settlement alternatives and their impact, but also on costing methodologies, and options to finance network development.

Several delegations at this meeting (including Hong Kong, Russia, Korea, Australia and Sweden) supported arrangements which would include some forms of termination or interconnection charges. It was suggested that Recommendation D.150 should be amended to reflect this.

Between now and its next meeting (2-13 December 1997) Study Group 3 has given itself an ambitious objective to define, compare and determine the methods of implementing the various alternatives to accounting rates and the methodologies to achieve cost-oriented prices. It also wants to gather information to develop reference values or target ranges and determine appropriate time scales for the transition to new arrangements and ways to mitigate the impact of the move to cost oriented prices.

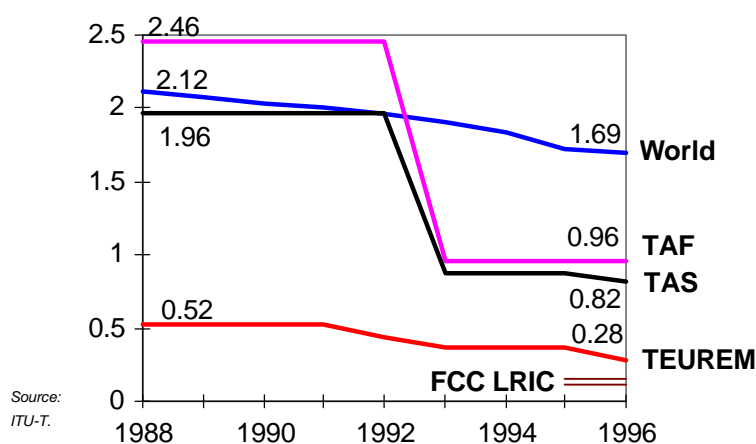


Figure 7
Evolution of Average World and ITU Recommended Regional Accounting Rates (in SDR)

International Telecommunication Settlements and the World Trade Organization

International telecommunication settlements, and, in particular the accounting rate regime, were discussed during the Uruguay Round negotiations and right up to the signing of the agreement on basic telecommunications on 15 February 1997. The main trade-related issues raised were non-discrimination (MFN), transparency and cost-based pricing.

Proponents of including accounting rates in the negotiations argued that they were discriminatory because the prices charged for the same service (to terminate an international call) were different for different foreign operators. Prices are determined by market and not by cost and are, indeed, well above cost. This, they argued, creates a barrier to trade of not only telecommunications, but all other services and goods and should therefore be subject to the GATS disciplines of non-discrimination, transparency, cost-oriented pricing and anti-competitive safeguards. Others, however, argued that accounting rates were prices determined in commercial negotiations and should therefore not be subject to GATS disciplines, no more, for example, than are prices charged to each other by the various airlines.

An earlier draft of the GATS Telecommunications Annex, contained a provision that access to, and use of, Public Telecommunications Transport Networks and Services (PTTNS) should be cost-oriented, without a definition of "cost-oriented". This was a controversial issue with proponents of including a reference to pricing arguing that above cost prices were a barrier to trade and opponents arguing that such prices were commercial measures and therefore not subject to GATS disciplines. The reference to pricing was deleted in the final deliberation of the GATS.

Later during the work of the Negotiating Group on Basic Telecommunications (NGBT), the Australian delegation put forward a proposal that GATS disciplines be applied to "termination services", that is, the services that one network operator provides to another in terminating a call in its network. For Australia the accounting rate system, which is used as

the means of compensating for termination services, is inherently inconsistent with a number of GATS disciplines including Most Favorite Nation (MFN, Article II), transparency (Article III), national treatment (Article XVII), and provisions to prevent anti-competitive behavior (Articles VIII and IX). Indeed, Australia argued that the accounting rate system had a trade distortive effect similar to that of a tariff, where the tariff equivalent of an accounting rate is the difference between the settlement rate (half the accounting rate) and the actual cost of the service. Australia's proposal to schedule commitments for trade in termination services or, alternatively for the NGBT to develop other disciplines for termination services, was not supported.

Also during the NGBT negotiations, as the Reference Paper on regulatory principles was being developed, there was a provision supported by the US to require publication of accounting rates. This was not retained.

One of the three issues that arose at the end of NGBT was that of one way bypass or the possibility that in relationships between monopoly and liberalized markets it would be possible for the monopoly operator could bypass the accounting rate for international traffic that it sent to the liberalized market while, at the same time, continuing to benefit from accounting rate settlements for incoming traffic. Failure to resolve this and the other issues resulted in the negotiations having to be extended for another 9 ½ months to February 1997. Initially, there were proposals to implement various licensing and anti-competitive safeguard measures to prevent one way bypass. However, in the end, the US, which was the most concerned that one-way bypass would exacerbate an already large payments imbalance, decided to deal with the issue not through GBT or reciprocal measures, but by updating its accounting rates benchmarks. A successful implementation of the FCC's 1096/7 benchmarking NPRM, therefore became a condition for the US to be able to sign onto the 15 February 1997 basic telecommunications agreement.⁶

In the GBT offers which were made by 15 February 1997 five countries took out Article II (MFN) exemptions with respect to accounting rates. There was an understanding reached that no action would be taken by any Member with regard to the application of accounting rates and that the issue would be reviewed not later than the commencement of the next round of trade in services negotiations to begin by 1 January 2000.

The FCC's 1996/7 Benchmark Proceeding

In December 1996, the FCC issued a Notice for Proposed Rule-making (NPRM) establishing benchmark settlement rates (one half the accounting rate) for international telephone service between the United States and 65 countries representing the largest traffic streams with the US.⁷

The rates proposed by the FCC are 15.4 cents/minute for upper income (GNP/capita \geq \$ 8,956) countries, 19.1 cents/minute for middle income (\$ 8,956 \geq GNP/capita \geq \$ 726) countries, and 23.4 cents/minute for lower income (\$726 \geq GNP/capita) countries. If the

⁶ The FCC proposes to continue to maintain some competitive safeguards with respect to the resale of facilities-based private lines to prevent one-way bypass in cases where accounting rates have not reached benchmark levels (see FCC Order and Notice of Proposed Rulemaking in the Matter of Rules and Policies on Foreign Participation in the US Telecommunication Market - IB Docket No. 97-142 (4 June 1997).

⁷ International Settlement Rates, Notice of Proposed Rule Making, IB Docket, No. 96-261, December 19, 1996.

FCC's proposals are adopted (likely by the end of August 1997), US international operators will have to move to these or lower rates within 1-2 years for upper income countries, 2-3 years for middle income countries, and 4-5 years for lower income countries. For foreign carriers not willing to agree to these benchmark rates in the specified time period, there is the threat of the FCC's directing US international operators to withhold any payment above the benchmark rate.

The benchmarks have been calculated based on "tariffed" prices for two of three network components used to provide international telephone service, namely, the international transmission facilities, both cable and satellite, and including the link to the international gateway and the national network (or extension) component consisting of national exchanges, national transmission and local loop facilities. Tariffed prices are based on corresponding operators tariff rates and serve as a proxy for costs of each of these network elements, which the FCC was not able to obtain. A price for the third component, the international switching facilities including associated transmission and signaling equipment, is obtained from ITU studies. The sum of these three components gives the benchmark rate or a "tariffed components price" which the FCC estimates to be a generous proxy for what it believes to be the real cost for terminating US originating traffic, namely, 6-9 cents/minute (based on long run incremental costs = LRIC).

Table 1 shows the "tariffed component prices" which the FCC has calculated for countries of the Latin America and Caribbean region.

| Country | Tariffed Component Prices (cents) |
|-------------------|-----------------------------------|
| Argentina | 32.1 |
| Barbados | 12.0 |
| Brazil | 27.8 |
| Chile | 18.6 |
| Colombia | 18.5 |
| Costa Rica | 10.3 |
| Ecuador | 10.3 |
| El Salvador | 11.8 |
| Guatemala | 10.3 |
| Guyana | 12.0 |
| Honduras | 16.6 |
| Jamaica | 8.7 |
| Mexico | 16.8 |
| Nicaragua | 12.3 |
| Panama | 19.4 |
| Peru | 16.1 |
| Trinidad & Tobago | 14.6 |
| Uruguay | 22.3 |
| Venezuela | 23.8 |

Source: FCC NPRM, 19 December 1997

Table 1
FCC's Tariffed Components Prices for Selected Countries
in the Latin America and Caribbean Region

Figure 8 shows the various estimates and benchmarks for the cost of terminating international telephone calls. The FCC's 1997 benchmark range is compressed and reduced with respect to its 1991 benchmark range and is quite close to the 25 cents calculated by the ITU secretariat as a maximum rangew that should prevail on a majority of routes.

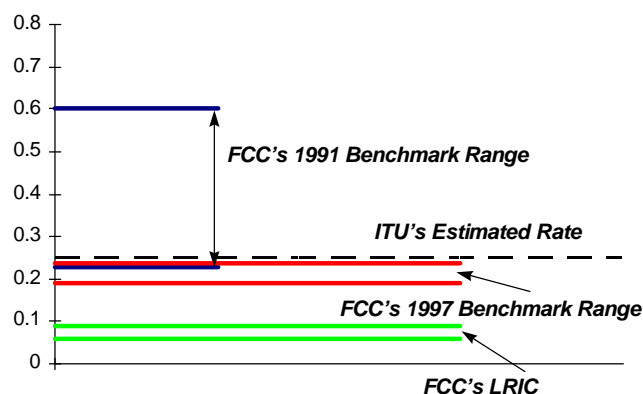


Figure 8
Settlement Rate Ranges (US \$/min)

There are several weaknesses in the FCC's method:

- The tariffs for the international component are based on the price of private leased high speed digital circuits (T1, E1), the number of voice grade circuits that can be derived from a private line half circuit and an estimate for the rate of utilization per month at an estimate for circuit multiplication. This is based on the rate of usage for US originating and destined traffic and may not be representative of the actual utilization for a given country for all its traffic streams;
- The cost of the international switching component is based on estimates produced by a regional tariff groups (representing the European and Mediterranean Basin (TEUREM) countries) and may not represent real the costs in other parts of the world;
- The national extension prices are based on published domestic prices to which some averaging (for distance) and weighting (for traffic coming from the US) has been applied. They exclude any element of fixed charges.

The FCC's benchmark proceeding is seen to be a way of resolving one of the three outstanding WTO Negotiating Group on Basic Telecommunication (NGBT) issues following the failure to conclude negotiations at the end of April 1996 and which enabled their successful conclusion in February 1997. This concerned the potential of a one way bypass of settlement rates in relations where there is a monopoly at one end and an open market at the other. A monopoly in a country with a closed market could establish an international gateway in the US, deliver all its US destined traffic to this gateway, and then arrange with a US domestic operator for it to be delivered to its ultimate destination. It would not have to pay an

accounting rate share to any US international operator. On the other hand, the US international operators who would be precluded from doing the same in the correspondent country because of the closed market, would have to pay out an accounting rate share to the monopoly. This would, according to the US international operators, only exacerbate the US settlements deficit which was some US\$ 5.1 billion in 1995.

In the subsequent basic telecommunication negotiations, under the Group on Basic Telecommunications, the United States was under pressure to sign agreement especially since there had been progress made in satisfying US requirements related to the two other outstanding issues, liberalization of satellite services, and getting more countries to sign on and/or improving their offers. Since not all countries were ready or able to open their international telecommunication markets by 1 January 1998, the FCC's benchmark proceeding was required to satisfy internal US concerns about the financial impact of one-way bypass especially with high settlement rates.

The Informal Expert Group on International Settlements

An Informal Expert Group on International Telecommunication Settlements met at the end of March 1997 at the invitation of the ITU Secretary General to provide him independent advice on the important changes that are taking place in the existing international settlement arrangements and to suggest ways that the ITU with the co-operation of others can assist countries in making the necessary adjustments⁸.

The Group noted that the accelerated pace of liberalization of telecommunications around the world was putting relentless pressure on the existing system which has been dominated by the accounting-rates method of settling accounts among international telecommunications operators. The impending opening of telecommunications markets in the European Union, the recently concluded WTO basic telecommunications negotiations and the growth of alternative ways of providing international services were underscoring the inevitable trend to new arrangements. The initiative by the FCC late this year to revise its benchmark accounting rates was in this respect to be seen more as a symptom of the changes that are taking place rather than a cause for them. More recently, the FCC's proposal to ease entry requirements for foreign operators in the US international telecommunication market will make the US even more attractive as a hub for international traffic and will make the pressure on the existing bilateral relationship arrangements event greater.⁹

While it did not recommend making any structural changes to the traditional accounting rates system or, for that matter, replacing it, the Group recognized that in the foreseeable future several systems would exist side by side: the accounting rates system; various forms of call termination and interconnection arrangements; end-to-end provision of services; and sender-keeps-all. What the Group did emphasize, though, was the need to move as quickly as possible towards cost-based prices for international services. Its recommendations to the Secretary-General of the ITU are summarized in Box 1.

⁸ Available at <http://www.itu.int/intset>. This web site contains many background documents originally assembled for the Informal Expert Group.

⁹ The FCC's Order and NPRM on Rules and Policies on Foreign Participation in the US Telecommunications Market (IB Docket No. 97-142, 4 June 1997) eliminates the effective competitive opportunities (ECO) test for entry into the US international market, eliminates the ECO text for applications to get a cable landing licence, and will allow up to 100% foreign ownership of common carrier radio licences for carriers and operators from WTO member countries.

**GUIDING PRINCIPLES FOR ACCOUNTING RATE REFORM:
RECOMMENDATIONS OF THE INFORMAL EXPERT GROUP
TO THE ITU SECRETARY-GENERAL**

- 1. Support liberalization in telecommunication markets and the move to transparent, non-discriminatory, cost-oriented international settlement arrangements;**
- 2. Structure “new cooperative relationships” among all stakeholders to facilitate the movement toward new arrangements;**
- 3. Ensure the effective collection and dissemination of data to assist decision makers in making the necessary adjustments;**
- 4. Assist in developing costing methodologies and pricing principles, implementing the WTO agreement, and dealing with universal services issues;**
- 5. Articulate a general range of settlement rates to which current rates are likely to evolve;**
- 6. Mobilize support from other international institutions to help countries make the inevitable adjustments.**

Box 1

The Six Guiding Principles for International Telecommunication Reform Proposed by the Informal Expert Group to the ITU Secretary General, 1997

The role of telecommunications in delivering other goods and services is recognized in the Telecommunications Annex of the General Agreement in Trade in Services (GATS). Providing international telecommunication services at economically efficient prices was therefore seen by the Group as essential for countries that were developing not only telecommunications but other service sectors. For this reason the Group recommended to the ITU Secretary-General that he should not only confirm the inevitable trend toward more open telecommunication markets and the resulting lower prices and revenues for international services but also advocate a rapid, but orderly, multilateral transition to new cost-oriented arrangements. Because this transition will cause hardship for many countries that have depended on revenues from above cost priced international services, the Group recommended a number of concrete steps to help these countries mitigate the effects of a reduction in revenues from international settlements. Figure 10 shows the dependence on settlement payments in selected countries of the region. Countries such as Jamaica (with a large expatriate population in the US and Canada) and El Salvador depend on international settlements for half their total revenues.

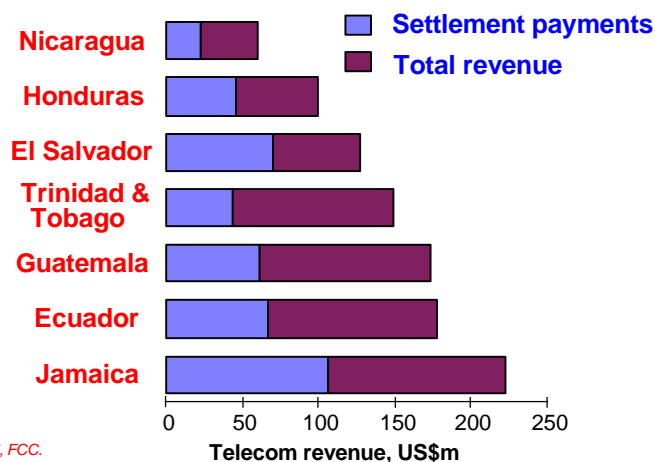


Figure 9
Dependence on Settlement Payments in Selected Countries in the Region

The ITU has an essential role to play in implementing and co-ordinating these steps which are:

1. Countries should be assisted in making the adjustments needed to offset a reduction in international payments. This would include help in restructuring prices of telecommunication services, developing costing models and methodologies, expanding and increasing the efficiency of their, developing new services, implementing the WTO agreement, and dealing with universal services issues. The ITU, the World Bank, the large international operators and others were urged to make financial and other resources available so that information, advice, loans and loan guarantees could be provided to these countries, in addition to financial guarantees to maintain settlement payments at a predetermined level for a given period as a means to sharing the burden of adjustment.
2. ITU-T Study Group 3 should help countries in facilitating the transition to new arrangements. In this respect Study Group 3 should establish the effects of liberalization and determine the impact of the new arrangements on the settlement system, in general, and also on individual countries. This would involve an assessment of the impact of voice services provided over various types of data networks including Frame Relay, ATM and the Internet. It would study and explain the effect of traffic arbitrage, refile and other calling alternatives and establish the impact on revenues of international services. This would also involve collection of data, providing explanations by all means possible, and suggesting ways that countries can cope with these inevitable changes
3. The ITU should initiate and co-ordinate a series of independent case studies of network operators, primarily in low income countries, to get a more realistic picture of the effect of a reduction in international settlement payments. This exercise should help in determining some practical steps that can be taken and the time

required to adjust to the inevitable changes. The model(s) developed for these case studies can then serve to assist other countries. This should be financed by voluntary contributions and funds from the ITU's Development Sector.

4. The ITU should gather, organize and make widely available by electronic and other means timely information to assist policy makers, regulators, and operators involved in the transition process. This would include but not be limited to information on settlement rates and interconnection charges (where publicly available), domestic prices and price reform, costing of network elements and services, building a new regulatory framework, establishing an independent regulatory body, developing anti-competitive safeguards, meeting universal service obligations, and managing scarce resources in a competitive environment.

In order to achieve these ambitious objectives the Group recommended that the ITU take the initiative to structure a new co-operative relationship among national regulatory bodies, telecommunications operators, and multilateral institutions including the World Bank and the WTO in order to give countries the multilateral support that they need to make the necessary adjustments. The new cooperative relationship should include reciprocal commitments by national regulators to respect the multilateral dimension of the regulatory initiatives that will be taken.

FUTURE ARRANGEMENTS

What will the international telecommunication system and more specifically the international telecommunication accounting and settlement arrangements look like in the future? This is of course difficult to predict; however, most likely for the foreseeable future a number of arrangements will exist side by side and will depend on the degree of market opening that exists between and among partners in given relations. The systems which will exist side by side will likely include:

- **Non-discriminatory Access or Call Termination Charges** similar to those which are currently used in the public telegram service with a fixed charge to terminate the call from the international gateway and generally including the cost of the destination operator's international facility, its international switch, and the national extension. If applied in a non-discriminatory manner, this charge would be the same for all international operators, and indeed, national operators making the same interconnection. It would likely also be transparent; that is, the call termination fees charged by a country would be open for all to see. Network operators would be able to choose their own termination charges and thereby their own trade-off between traffic stimulation and revenue generation, the latter option being perhaps attractive to network operators in developing countries. However, the establishment of unilateral call charges would imply the abandonment, in part at least, of the principle of equal division of revenues from a particular route. Also, there is less incentive for a monopoly to lower its termination charge because there is no assurance that its correspondent in other countries will lower their termination charges which would be applied equally to everyone. There has, nevertheless, been support for a system with call termination charges. The OECD has been promoting the idea and more recently, at the May 1997 ITU Study Group 3 meeting, several countries gave this method their support. For example, the Government of Hong Kong proposed at that meeting that each country publish the standards, non-discriminatory tariff which each of its (competing) international operators will charge anyone to terminate international traffic. Also, according to this proposal, in the transition to a cost-based tariff (equivalent, in the minds

of many, to the long run incremental cost of conveying the traffic), the ITU should calculate a ceiling based on some proxy for the cost. Indeed, there were proposals that Recommendation D.150, which defines four methods of settling international telecommunication accounts, be modified to include terminal charges, which would typically be composed of three elements:

- some part of the operator's international facilities;
 - the international switch;
 - the national extension.
- **Facilities-based Interconnection**, in which the network operator originating the call pays for the use of certain facilities used to terminate the call, such as transmission lines, switches or the local loop. The recent WTO agreement to liberalize basic telecommunications has greatly enhanced the possibility of facilities-based interconnection arrangements whereby interconnection can be provided at any point in the network of an operator receiving and delivering an international call. The international operator originating the call will determine the particular arrangement that suits it the best under given circumstances. It will be able to determine how far into the network of the "host" operator it is prepared to deliver and hand over its traffic. Typically, it might choose to establish a point of presence or interconnection at the corresponding operator's international switch, at its trunk exchange, or at its local exchange (In the extreme, it may wish to deliver its traffic to the destination customer without interconnecting into any other operator's network). After 1 January 1998, in the European Union (EU), operators from one country will be free to establish points of presence anywhere in another country of the Union and negotiate interconnection charges and arrangements with any operator established in that country to deliver their traffic to its destination. According to EU law¹⁰ and in the case of network operators with "significant market power" interconnection rates and conditions have to be cost-based, transparent (i.e. published), sufficiently unbundled and non-discriminatory.
 - Interconnection fees have an advantage in that they are conceptually easy to understand, but they are open to abuse because they are often negotiated with an in-built bias to the operator who receives more calls than it originates (usually the fixed-link operator). Interconnection agreements are generally negotiated on the basis of market power rather than actual costs or needs. Facilities-based interconnection charges differ from call termination charges in that they are inherently non-transparent (they are confidential and not intended for publication) and discriminatory (they are the outcome of negotiations and can therefore be expected to vary considerably, even when offered by the same incumbent). There were suggestion at the recently held meeting of ITU-T Study Group 3 that interconnection charges be made transparent, non-discriminatory and cost-based (through benchmarking) and that such provisions be included in a revised Recommendation D.150.
 - **End-to End Service Provision** Global alliances such as Worldpartners/Unisource, GlobalOne, and Concert are purchasing half circuits from their parent companies (usually at arm's length) and from other facilities based operators to build global networks on which they can provide all sorts of data, value-added and, if permitted, voice services to multinational customers. Traffic flowing over these ever-growing networks is not accounted

¹⁰ Art. 86 of the Treaty of Rome, which deals with competitive safeguards, and EU Interconnection Directive.

for according to the traditional correspondent relationship model. Arrangements in the destination country can be according to anyone of a number of regimes: termination, interconnection or even accounting rates.

- **Accounting Rates.** Accounting rates will continue to exist in many relations, not only because there may be a monopoly operator at one or both ends of the relation, but because it may be the most economical and most suitable arrangement in a particular circumstance. Indeed, it is likely that accounting rates will continue to exist alongside termination charges and interconnection arrangements. If, in a country with a liberalized regime, the originator of international traffic has the option among several ways of having its traffic delivered, it will choose the least cost solution. It may be cheaper to continue to use the accounting rate system with one destination operator or service provider but an interconnection arrangement with another. The originator of the traffic may find it more economical to establish points of presence in a country and make arrangements with local operators or service providers who have either established their own local networks (using fibre optic rings or wireless local loops, say) or are simply reselling the local services of other network operators. The result of this “competition” between accounting rates, interconnection charges and termination charges will eventually drive on the price of accounting rates closer to their cost.¹¹
- **Sender Keeps All,** in which the network operator originating the call keeps all of the revenues it collects. This is already practiced in some parts of the world for instance between the UK and Ireland, in the former Soviet Union, and among the Southern African countries, and for the Internet. The main drawbacks with sender-keeps-all are that it does little to promote network development (in that there are no financial flows from the core to the periphery of a network) and there is little possibility for allocating different priorities to different traffic streams. Furthermore, sender-keeps-all depends on balanced traffic flows within a network, which is patently not the case in either the telephone network or the Internet.

CONCLUSION

As telecommunication markets around the world are being influenced by initiatives such as those of the European Union and the World Trade Organization, the possibilities for an originator of international traffic to deliver its traffic to the destination subscriber in another country will multiply. It may continue with the traditional correspondent relationship arrangements such as accounting rates to have the traffic delivered by a full-service network operator in the destination country. (This will certainly remain the case where there is a monopoly) or it may decide that in certain countries it is more economical to deliver the traffic as close as possible to the destination subscriber by establishing one or more points of presence. The most suitable arrangement in the circumstance will determine the sort of accounting arrangement that will be used. In more and more cases several systems will exist side-by-side, even in relations between the same two countries. It is unlikely that any one system will predominate, as was the case for such a long time with accounting rates.

The accounting rates system will continue to exist, but the possibilities opened by the liberalization of telecommunication markets and the alternative means to settle international

¹¹ See Kees van Ophem, “Cross-Border Interconnection and Accounting Rates: A Competition Law and Newcomer’s Perspective”, IBA Conference, Cannes, April 1997.

telecommunication accounts will inevitably put pressure on above-cost accounting rates. Revenues from the international service will most certainly drop and network operators that have depended on such revenues to develop their networks will be forced to make adjustments. This was essentially the conclusion of the Secretary-General's Informal Expert Group on International Settlements which met at the end of March 1997. Several of its recommendations for action to assist countries to make adjustments are in the process of being considered by the ITU, the World Bank, and other organizations. The ITU Council has recently endorsed the proposal that a World Telecommunication Policy Forum (WTPF) be convened in March 1998, on the general theme of trade in telecommunication services, and more specifically, on "policy and regulatory issues related to preserving and strengthening the financial foundations of the telecommunications industry in the emerging liberalized environment (i.e. issues related to tariffs, accounting and settlement payments, and investment)".

Dr. Peter A. Stern is Special Advisor, International Telecommunication Policy, at the International Telecommunication Union (ITU) in Geneva. He coordinated and participated in the Informal Expert Group on International Telecommunication Settlements which recently made a number of recommendations to the Secretary-General for ITU action to assist countries adjust to new settlement arrangements. He is also consultant to the World Bank and the World Trade Organization (WTO) advising governments on telecommunication sector reform and the making of market liberalization commitments under the General Agreement in Trade in Services (GATS).

Previously, he was at Teleglobe Canada, Canada's international telecommunication operator, where he held a number of senior positions in the regulatory, policy, government and international relations, and Engineering areas. He was Canada's Representative on the Commonwealth Telecommunication Organization and a member of the Board of Directors of the Telecommunications Executive Management Institute of Canada (TEMIC).

He is co-author of several books on sector reform (two with the World Bank) and has written numerous papers on telecommunication policy, regulation and trade. He holds three patents in signal processing for facsimile. Dr. Stern has a B.A.Sc degree in Electrical Engineering from the University of Toronto, a Ph.D. from the Faculty of Sciences, University of Paris and an MA in Economics from Concordia University in Montreal.

Dr. Tim Kelly is Head of Operations Analysis within the Strategic Planning Unit of the International Telecommunication Union (ITU), a post he has held since 1993. Before joining ITU he spent five years as a Communications Policy Analyst with the Organisation for Economic Co-operation and Development (OECD) and three years with Logica Consultancy Ltd. He has an MA (Hons) degree in Geography and a Ph.D in industrial economics from Cambridge University. Over the last twelve years, Dr Kelly has specialised in the economics of the telecommunications industry. He is the co-author of a number of books on the subject including the ITU's annual "World Telecommunication Development Report", "Direction of Traffic" (1996), "African Telecommunication Indicators" (1996), "OECD Communications Outlook" (1993), and "Performance indicators for public telecommunications operators" (1991).

Examples of Two Co-operative Accounting Schemes in International Telecommunications: The Commonwealth Wayleave Schemes and The Commonwealth Telecommunications Financial Arrangements (CTFA)

The Commonwealth Wayleave Schemes

Under the Wayleave Schemes which were in effect among Commonwealth countries from 1948 to 1973, expenses of the Commonwealth network, known as the "common-user system" were shared on the basis of each partner's so-called "Wayleave" revenue. Total actual expenses incurred by all partners in a given year were re-allocated to each partner in proportion to its shares of the total revenue. There were rules governing the costs that could be charged to Wayleave expenditure and their calculation and rules for excluding certain revenues and adjustments for other revenues where the collection charges for a given service in a given relation fell outside certain limits. Revenue derived from traffic coming from outside the common user system (known as foreign traffic) was shared 50/50 between the point of entry and terminal partner. The first Wayleave Scheme had the great merit of promoting the maximum use of the Commonwealth network and helped the poorer countries finance development of their facilities with the cost being borne by the partnership as a whole spread over the life of the facility; it had the disadvantage, however, that any move by a partner to increase or lower its collection rates, terminal charges or other element of net Wayleave revenue, affected all other Partners. This in turn made it almost impossible for a partner to assess the result of a decision to change its collection rates and at the same time the scheme did not encourage careful control of expenditure by individual partners, since their expenditures were shared by the partnership as a whole.

In 1958 a second parallel Wayleave scheme (Wayleave II) was introduced to cater for the broadband submarine cable systems which were being introduced into the Commonwealth system. Usage of these systems was measured by each partner's Wayleave revenue with expenditure shared accordingly. In intra-Commonwealth relations a fixed scale of accounting rates, varying according to distance, was used instead of actual revenue. This meant that changes in Partners' intra-Commonwealth collection rates did not affect other Partners through the Wayleave II accounts. Revenues for traffic coming into the common-user system were retained by the entry point.

The Commonwealth Telecommunications Financial Agreement (CTFA)

The Wayleave schemes were replaced in 1973 by the Commonwealth Telecommunications Financial Arrangements or CTFA, a scheme whereby the cost of each partner's facilities which made up the Commonwealth common user system was recovered from each other partner in proportion to the use the latter made of that facility with use measured in terms of units of traffic actually carried over each facility. The system required detailed calculations both of usage on a stream by stream basis according to units of traffic and of incurred unit costs (such as maintenance, depreciation, rental, and administration costs) of each separate segment. The scheme had provisions for sharing costs of facilities operated jointly with administrations which were not members of the Organization and, furthermore, it had some built-in adjustments designed

to maximize the utilization of the common-user network and to counterbalance certain financial disparities between partners using different technologies.

In relations between any two partners revenues were shared equally between the two terminal points. Transit partners did not share in the revenues; however, they were compensated for the use of their facilities under the cost sharing part of the scheme which included an adequate return on capital invested. Revenues equalled traffic times accounting rate and not the amounts actually collected by each partner (Partners were free to set their collection charges according to their own needs and priorities). CTFA provided a partnership agreed set of accounting rates and divisions for use in all intra-Commonwealth relations. At the outset these rates were generally lower than prevailing rates outside the partnership and were much more reflective of the cost of providing facilities. The lower rates also encouraged the growth of traffic on the common-user Commonwealth network.

The scheme had a number of features which were beneficial to the partnership. For example, since unit costs of facilities on direct relationships were averaged and the same charges were paid by both partners in a given relation, the high cost partner (most often the developing country partner) shared in the economies of scale of the lower cost partner. Unrestricted use of network transit facilities at cost (including return on capital) was of significant benefit to partners that depended heavily on Commonwealth transit points since the charges were usually lower than the share of the accounting rate or the fixed fees borne by foreign administrations. The system encouraged partners to attract traffic from outside of the partnership and encouraged development of common-user facilities.

The system did, however, have its disadvantages. It was complex (with the degree of complexity increasing with the introduction of the new technologies and services). It was costly to administer, it did not always give the expected results, and the final settlements could not be calculated until each and every partner had submitted its reconciled and audited accounts (which was no mean achievement). Consequently, the Organization decided in 1983 to move to the accounting rates system being used by other administrations with, however, a small preferential adjustment being applied to the accounting rate division in relations between developing and the developed partners in favour of the former; that is, an other than 50/50 division of the accounting rate. The preferential adjustments were intended to ensure that the developing partners enjoyed the same advantage from the economies of scale as did the major partners. Lost with the old system was a built-in incentive for members of the Commonwealth Telecommunications Organization to develop and improve their international facilities which linked them to their Commonwealth partners and other foreign destinations. In 1991 the 30 members of the Organization decided to discontinue the preferential accounting rates adjustment and to concentrate their effort and resources on a program of development and training where assistance could be directed to improving the network, its operation and administration. In international settlement terms therefore the history of the Commonwealth partnership evolved from an end-to-end arrangement, where one company, Cable & Wireless, owned and operated the British Empire telegraph cable network, through some unique co-operative revenue and cost sharing schemes, and finally to the nearly universally applied accounting revenue division method with a 50/50 split of the accounting rate.

Example of a Domestic Revenue Sharing Plan: The Co-operative Scheme Applied Among Members of the Stentor Alliance of Regional Telephone Companies in Canada

While not international carriers, the nine members of the Telecom Canada alliance had a revenue sharing arrangement called the Telecom Canada Revenue Settlement Plan which compensated each member company in proportion to its cost of providing domestic long distance services. In this plan collected toll revenues net of commission paid to independent telephone companies were put in a common pool from which settlements were paid out (or received as the case may be) for Canada-US traffic (settlements with US long distance carriers), Canada-overseas traffic (settlements with Teleglobe Canada), and Telesat Canada traffic (for domestic satellite services). Each member was then reimbursed from the pool for its portion of the so-called Recoverable Assigned Costs which included maintenance, depreciation, traffic, financial expenses and income tax. The residual portion of the pool was then distributed in proportion to each member's non-traffic sensitive access cost (the subscriber loop) assigned to Telecom Canada services in relation to total system assigned access cost. The assignment of access cost was based on the ratio of Telecom Canada direct costs to the direct transmission and switching costs associated with the local and monopoly toll services. This arrangement therefore provided for a cooperative arrangement among independent telephone companies each with its territorial franchise ensure the existence of a Canada-wide long distance network.

This revenue sharing system was replaced recently by a system where each member keeps its toll revenues and pays other members transit and a termination fees for calls sent on to other members or terminated. These fees are the same for all members and are based on cost calculations.