

METHODOLOGICAL NOTE CONCERNING THE INTRODUCTION OF ASYMMETRIC ARRANGEMENTS

Note by the ITU Secretariat, 29th September 1998

Background

In the Chairman's Working Document Rev. 2 (25th August 1998) submitted to the second plenary meeting of the Focus Group, the Chairman indicated that "*by bilateral agreement, it may be possible to vary the 50/50 arrangements, in the transition towards cost-oriented rates, in order to accelerate accounting rate reductions or to cushion sudden falls in net settlement payments, especially for the Least Developed Countries and other economies with a teledensity of less than 1 line per 100 inhabitants.*" Furthermore, the Working Document solicits additional contribution from Members of the Focus Group that could assist in making progress on this issue.

The issue of asymmetry generated considerable discussion at the Focus Group Plenary meeting. Consequently it was proposed to put symmetric and asymmetric arrangements on the same footing so that, on the basis of contributions, the Chairman could suggest a consensus point of view in the next revision of the Working Document. The ITU Secretariat was also requested to develop a methodological note on this issue. This note responds to that request.

Definition of asymmetric arrangements

The part of the accounting rate which corresponds to the facilities made available in each country is fixed by agreement among administrations. This part of the accounting rate is called the "*accounting rate share*". In the overwhelming majority of correspondent relations, the accounting rate is split in a 50/50 manner (i.e., the accounting rate shares of the two administrations are the same). This might be considered a "*symmetric arrangement*". However, there may be cases where the accounting rate is not split in a 50/50 manner (i.e., the accounting rate share for one administration is higher than for the other). Then we use the term "*asymmetric arrangement*".

The purpose of deviating from a 50/50 split of the accounting rate is to recognize underlying cost differences between terminal administrations. Insofar as the accounting rate share continues to be well above the actual cost of terminating calls, then an asymmetric arrangement might be interpreted as corresponding to a differential subsidy level. In the Chairman's Working Document, it was proposed that, in relations between countries with different levels of teledensity, the country with the higher teledensity may wish to give favourable consideration to an asymmetric arrangement in order to assist in enhancing Universal Access to telecommunications. The issue of Universal Access/Service is not considered here, but will be the subject of a subsequent methodological note.

A political history of asymmetric arrangements

In 1984, the Independent Commission for World Wide Telecommunications Development, in its report entitled "The Missing Link", recommended that "*Member States of the ITU consider in the light of their own circumstances a rearrangement of their international traffic accounting procedures with the aim of setting aside a small portion of revenues from calls between developing countries and industrialized countries.*"

As a follow-up of this particular Recommendation, the Secretary-General of the ITU, who was assigned the task of monitoring the implementation of the Report and stimulating progress, explored possibilities in this regard. Examination in the ITU Secretariat showed that sharing of revenues of international traffic on the basis of costs might be a useful approach. A precedent for this existed in the form of the Commonwealth Wayleave Schemes which ran from 1948 to 1973, and in the Commonwealth Telecommunications Financial Agreement (CTFA) which replaced it and which ran from 1973 until 1983.¹ It was considered that the costs

¹ For documentation on these two schemes, please see the paper "Liberalisation and Reform of the International Telecommunication Settlement Arrangements", by Tim Kelly and Peter Stern, which is available on the ITU website at: <http://www.itu.int/intset/ITUpap/index.html>

in developing countries were likely to be somewhat higher than those in developed countries. ITU-T Recommendation D.150 offered a ready basis for such an arrangement, as it provided for the sharing of the traffic accounting revenues in proportions other than the normal 50/50, when costs differ greatly.

The Secretary-General initiated a study in 1987 to examine the cost characteristics of providing international telecommunication services in the industrialized and developing countries to see if, in practice, the premise of significant cost differentials could be established. The results of the study were also intended to provide administrations with objective and analytical cost data, as a basis for further action. The team of two experts which conducted the study during the year 1987/1988 could not come to any definitive conclusions as adequate reliable data were not obtainable. They recommended that administrations should undertake a further study to build on the findings of the report. The WATTC'88 Melbourne considered the matter and adopted Resolution PL/3 instructing the Secretary-General to continue the study and make the findings available to the Member Administrations. The Secretary-General accordingly arranged for the resumption of the study in March 1989 by a team of two experts to be carried out in two phases.

The follow-up study of the costs of providing and operating international telephone service between industrialized and developing countries was concluded in 1990². A detailed report was submitted in which it was concluded that, on average, the total cost per minute of telephone calls is about 2.08 times higher in a given group of developing countries compared with the cost in a given group of industrialized countries. However, the study also showed that if we compare only countries with high costs amongst the industrialized countries and countries with low costs amongst the developing countries, then the result would be reversed. The big disparities in the results had, once again, confirmed the wisdom of establishing bilateral agreements before implementing asymmetric rates.

Taking into account this study and a number of contributions from both developing and developed countries, ITU-T Study Group 3 decided, in 1992 to revise Recommendation D.155 which now contains the following principles governing the apportionment of accounting rates in paragraph 3.2.2 :

“In the case of traffic routed over direct circuits, the accounting rate is in principle shared equally between the administrations of the terminal countries in respect of each traffic direction. A sharing basis of other than 50/50 may be agreed if both administrations agree:

- that cost-orientated accounting rates have been achieved; and*
- that the costs incurred by each administration for the provision of international telephone service are not essentially equivalent.”*

The application of this Recommendation necessitates the determination of costs of providing international telecommunication services by both parties. However, many administrations have difficulties in determining their real cost of providing services. ITU-T Study Group 3 has adopted, in December 1997, a new Annex D to Recommendation D.140 on “Transitional arrangements to cost orientated mechanisms”. In this new Annex, several special provisions are proposed to facilitate the transition by developing countries, in particular the Least Developed Countries. For the first time, the possibility of alternatives to the 50/50 arrangements are proposed with the specific purpose of cushioning revenue reductions, provided that such alterations are made within the context of an agreement to achieve cost orientated rates.

In addition to discussions with Study Group 3, asymmetric arrangements are a perennial topic of conversation at ITU Plenipotentiaries. Resolution 22 from Kyoto, which builds upon an earlier Resolution from Nice, deals with the apportionment of revenues for international telecommunication services. The Resolution argues that where non 50/50 arrangements result in extra revenue for developing countries, then this revenue could be used to improve telecommunication networks. A similar draft Resolution has been proposed for Minneapolis.

In practice, asymmetric arrangements remain rare under the accounting rate revenue division procedure. There is some anecdotal evidence that asymmetric arrangements may be more common, but that they are simply not disclosed officially. For instance, in cases where a transit operator discloses different confidential rates to the two parties in a particular relationship, the actual accounting rate may be effectively

² See ITU (1990) “Follow-up study of the costs of providing and operating international telephone service between industrialised and developing countries”

split in a non 50/50 manner (see discussion in contribution 28). It is not possible to verify the extent to which this actually occurs.

One reason why asymmetric arrangements are rare is that the United States, from which some 30 per cent of all international traffic originates, until recently specifically required a symmetrical 50/50 split of the accounting rate as part of its International Settlements Policy (ISP). This policy was supposedly liberalised to some degree in December 1996 following the issuance of the FCC's "Flexibility Order" which permitted carriers to file petitions for waivers from the three main requirements of the ISP, which are a 50/50 split of the accounting rate, parallel accounting rates between US carriers, and proportionate return of traffic.

In the 22 months which have passed since the Flexibility Order was passed, there are still only a handful of cases where the 50/50 split requirement has been relaxed. The principal example is the case of AT&T and AAC&R of the Dominican Republic which is described in Box 1. The main reason why there are so few cases are that applications for waivers from 50/50 split are routinely opposed by other US carriers. For instance, the proposed asymmetric arrangement between AT&T and KDD—which initially proposed a 0.24/0.18 SDR split and was later modified to a 0.19/0.10 split—was opposed by MCI and Sprint and was eventually denied by the FCC.

In August 1998, the FCC issued a Notice of Proposed RuleMaking proposing a further relaxation of the ISP among the WTO Member Countries. This may result in an Order later this year or early next year. However, just because the requirements of the ISP are lifted does not mean that US carriers would be motivated to deviate from a 50/50 split, and it is hard to see what motivation they might have for doing so.

Box 1: Rare sightings of asymmetric arrangements

As indicated above, asymmetric arrangements are rare within the accounting rate division procedure and few people have ever seen one, though they continue to generate considerable discussion. Since the FCC's Flexibility Order was issued in December 1996, a number of asymmetric arrangements have been proposed but the majority were denied. There exist some examples between US carriers and Mexican carriers which relate mainly to frontier arrangements or to freephone (1-800) services. There also exists a potentially asymmetric arrangement between AT&T and Optus of Australia³.

However, the main example is between AT&T and AAC&R, the third carrier in the Dominican Republic, and it is worth examining the details. These arrangements were filed in May 1997 and were approved in September 1997 despite opposition from the Direccion General de Telecomunicaciones (DGT) on behalf of the Government of the Dominican Republic. The agreement, which was due to run from the 1 January 1997 to 30 September 1998, contains the following provisions:

1. For traffic below 10 million minutes in each direction, there are no settlements. In other words, it operates as a sender-keeps-all arrangement.
2. For traffic between 10 and 30 million minutes, AAC&R receives 24 US cents per minute and AT&T receives 10 US cents per minute.
3. For traffic above 30 million minutes, AAC&R receives 22 US cents per minute and AT&T receives 10 US cents.

In practice, therefore, for a traffic stream of say 15 million minutes in each direction, AT&T would pay a net settlement of 4.67 US cents per minute.

In interpreting these arrangements, it is worth noting that AAC&R has no local network in either country and the asymmetric arrangements could not therefore be interpreted as a cross-subsidy to meet Universal Service Obligations. Furthermore, given that this arrangement steals traffic away from CODETEL, the main operator, which has an accounting rate of between 60-80 US cents per minute with different US carriers, then this arrangement might be said to be undermining Universal Service. This is the reason it was opposed by the government of the Dominican Republic.

Use of asymmetric arrangements to achieve a faster reduction in the accounting rate

One potential reason for introducing asymmetric arrangements is that it may allow for a faster rate of reduction in the total accounting rate (i.e., the sum of the accounting rate shares) than might otherwise be possible without affecting greatly net settlement payments to developing countries. This argument is advanced by the TAF Group (Message 1) and by OFTA (Message 21), among others.

The numeric example given in the conceptual framework document (see the message 21 from Mr. A.S.K. Wong, the Focus Group Vice-Chair) demonstrates that, with an uneven split of 51/49, the

³ For a full listing of waivers to the ISP, see the listings on the FCC website at: <http://www.fcc.gov/ib/td/pf/account.html>.

accounting rate could be reduced by 15% without requiring any change in the net settlement payment. This is higher than the average annual reduction of 12% in the global accounting rates achieved over the last three years. The magnitude of the uneven split would depend on the ratio of traffic imbalance and the rate of accounting rate reduction.

By working through the algebra in the following equation, it can be shown that an arrangement based on non-50/50 shares could be an effective method for reducing the total accounting rate without reducing net settlements.

$$aM\alpha(1-\lambda)TAR_0 - M(1-\alpha)(1-\lambda)(TAR_0) = aM(0.5TAR_0) - M(0.5TAR_0)$$

where a = ratio of incoming to outgoing traffic

M = minutes of outgoing traffic

α = share in the TAR of the net outgoing party

λ = percentage reduction in the TAR in period 1

TAR_0 = total accounting rate in period 0

For simplicity, the above equation assumes no change in the traffic volume under the condition of unchanged net settlement payment in period 1. By taking away $M(TAR_0)$ from each term in the equation, the equation becomes:

$$a\alpha(1-\lambda) - (1-\alpha)(1-\lambda) = a(0.5) - (0.5)$$

The ratio of accounting rate share in period 1 (α) could be resolved once the values of a and λ are known. By assuming certain values for a and λ , the following values could be obtained for α and $(1-\alpha)$ -

In/Out traffic ratio (a)	Rate of accounting rate reduction (λ)	Accounting rate share α : $(1-\alpha)$, necessary to leave net settlements unchanged
5:4	15%	51/49
5:4	20%	51/49
5:1	15%	56/44
5:1	20%	58/42

It can be seen that the ratio of traffic imbalance is more significant than the rate of accounting rate reduction in determining the accounting rate share. Nevertheless, an in/out traffic ratio of 5:1 is a somewhat extreme assumption. Data in the nine case studies indicate that an in/out ratio of 3.2:1 was the highest recorded. That means, the accounting rate shares may not need to deviate so substantially from the 50/50 split in order to attain a reduction in the accounting rate of 15-20%.

Different incentives for introducing asymmetric arrangements

The main difficulty with introducing asymmetry is that there needs to be incentives for both parties in order to reach a bilateral agreement. This should not be a problem for the operator gaining the above 50 per cent share, usually the developing country operator. The introduction of asymmetric arrangements could mean that the net settlement inpayment might increase and it might mean that the collection charge for outgoing traffic could be reduced. However, as shown in Box 1, it is difficult to trace what these benefits might be in the main current example of asymmetric arrangements, between AT&T and AAC&R of the Dominican Republic. Indeed, insofar as benefits are likely to accrue to the developing country, they are likely to be in the form of opportunities to engage in reverse call back (see Box 2), whereby the direction of traffic on a particular route is reversed in order to benefit from the lower termination charges in the developed country. Given that many developing countries currently prohibit call-back, they may need to review their current policies in order to benefit from this potential advantage.

It is harder to imagine what the incentives for the use of asymmetric arrangements might be for the operator which is the net payer, usually from a developed country. Indeed, they may view any deviation from a 50/50 split of the accounting rate as a kind of differential subsidy level which would be contrary to the principle of cost orientation. Furthermore, such cross-border subsidies are not readily accepted by carriers seeking to lower their costs in order to price their services more competitively. Nevertheless, it is possible to envisage three possible cases where a motivation to offer asymmetric arrangements might exist:

1. It could be that asymmetric rates are offered as a way of providing services that might not otherwise be possible (such as freephone or calling card services). The sums involved are likely to be relatively modest.
2. Alternatively, asymmetric rates might be offered in return for the custom of the partner country, for instance in buying equipment from the developed country. In former times, when service providers such as AT&T were integrated with equipment manufacturing operations, this type of motivation was more common than it is now.
3. In markets where there are multiple carriers but no rules on proportionate return or parallel accounting rates, one carrier in the developed country might offer an asymmetric rate in order to gain a greater share of return traffic, or of total traffic, on the route.

All of these scenarios are possible. However, none of them would be sufficient in themselves to justify the developed country operator using asymmetric arrangements for anything more than a trial basis, of limited duration, or for limited traffic streams.

The following example shows how the incentives for introducing asymmetric arrangements are likely to be different for operators in developed and developing countries. Assume that the 1990 study on cost differentials, quoted earlier, is still valid on certain routes, and that the costs of terminating traffic are 10 cents per minute in country A and 20 cents per minute in country B. The actual accounting rate is 80 cents per minute divided 50/50, and traffic is 2 million minutes from A to B and 1 million minutes from B to A.

If A and B decide to reduce the accounting rate by 25 per cent, the new rate would be 60 cents per minute.

In the symmetric case (30 cents / 30 cents), for each incoming minute, country A gains:

$$30 \text{ cents settlement minus } 10 \text{ cents costs} = 20 \text{ cents surplus.}$$

As A receives 1 million minutes, the total surplus is:

$$20 \text{ cents multiplied by } 1 \text{ million minutes} = 0.2 \text{ million dollars.}$$

For B

$$30 \text{ cents settlement minus } 20 \text{ cents costs multiplied by } 2 \text{ million minutes} = 0.2 \text{ million dollars.}$$

Thus, A uses this surplus in order to subsidize its collection charge for the traffic from A to B. B might use this surplus for developing its national telecommunication infrastructure.

If we now reduce the accounting rate by 25 %, i.e. 0.60 cent, but slightly change the percentage split, to 52/48 in favour of country B, the result is as follows:

The surplus of A is :

$$1 \text{ million} \times (0.60 \text{ cents} \times 48/100 - 10 \text{ cents}) = 0.188 \text{ million dollars}$$

The surplus of B is :

$$2 \text{ million} \times (0.60 \text{ cents} \times 52/100 - 20 \text{ cents}) = 0.224 \text{ million dollars.}$$

A now has less surplus but B has additional surplus. The difference (which is 0.224 million dollars minus 0.188 million dollars = 0.036 million dollars) can be considered as a subsidy from A to B. In order to reduce the accounting rate by 25%, B receives in reality 18% (0.036/0.2) of subsidy which is an advantageous arrangement for country B. This arrangement would hardly be considered acceptable to country A which receives 6% less inpayment (0.012 / 0.2) and has 12 % greater outpayment (0.024/0.2).

ROA	Share	1 min. Outpayment	1 min. Inpayment	Outpayment	Inpayment	Difference
A	50%	30 cents	30 cents	0.6 million \$	0.3 million \$	+0.3 million \$
	52%	31.2 cents	28.8 cents	0.624 million \$	0.288 million \$	+0.336 million \$
B	50%	30 cents	30 cents	0.3 million \$	0.6 million \$	-0.3 million \$
	48%	28.8 cents	31.2 cents	0.288 million \$	0.624 million \$	-0.336 million \$

The above example has not taken into account any possible variation of traffic. Several contributions submitted to the Focus Group mentioned the importance of the degree of response to a price change (i.e. the price elasticity of demand, as discussed in contributions 27, from Werner Neu, and 33 from TEMIC). It was stated that the reduction in price stimulates the demand and therefore a decline in settlement rates when associated with collection charge reductions will not result in a proportional reduction in operating income and could even result in an overall increase in revenues. Unfortunately, this is not necessarily the case for many developing countries which have insufficient telecommunication infrastructure to absorb any surplus traffic. Where developing countries use hard currency for capital to invest in their network, any reduction in settlement rates may not necessarily be passed on to consumers in the form of collection charge reductions. However, in cases where settlement rate reductions are passed on to consumers in the developing country and result in increased demand for outgoing calls, asymmetric arrangements could benefit both the developing country, through higher locally-raised revenues, and the developed country, through lower settlement payments.

Issues for the Focus Group

This paper has illustrated the fact that, despite the intense discussion surrounding the introduction of asymmetric arrangements within the accounting rate system, the benefits still remain to be substantiated. Furthermore, in the known cases where such arrangements have been implemented, they have rarely brought benefits to developing countries because they are usually implemented outside the framework of the accounting rate system. On the assumption that asymmetric rates could be implemented within the accounting rate system, developing countries would, *inter alia*, need to review current policies restricting the availability of call-back services in order to benefit from the opportunities for “reverse call-back” that asymmetric rates might bring.

In light of the issues raised in this paper, the Group may wish to consider the following:

- In the transition to cost-oriented rates, the introduction of asymmetric arrangements could be used to achieve a faster rate of reduction in the total accounting rate than could otherwise be achieved without significantly reducing the net settlement payment. In such cases, the asymmetric arrangements might be introduced with only a marginal variation, by a few percentage points, from the 50/50 split.

- In line with Recommendations D.150 and D.155, asymmetric arrangements could be introduced where cost-oriented rates have already been achieved and where underlying cost differences can be demonstrated, to the satisfaction of both parties.
- It is also proposed that asymmetric arrangements could be introduced in the transition towards cost-oriented rates in order to provide targeted assistance to the LDCs and other low teledensity countries which might otherwise be adversely affected by the changes in the international telecommunications environment. The specific purpose would be to assist operators in those countries to maintain their existing Universal Service Obligations and to extend access to telecommunication services. This point will be explored further in a subsequent methodological note to be prepared by the ITU Secretariat.

Within the framework of the International Telecommunication Regulations, asymmetric arrangements can only be implemented by bilateral agreement. It appears unlikely to be possible to gain multilateral agreement on the use of asymmetric arrangements. However, it may be possible for the Focus Group to suggest guidelines for their use. For that reasons, further contributions from members of the Focus Group are solicited on areas where the possible introduction of asymmetric arrangements could prove mutually beneficial for operators in developed and developing countries alike.

Box 2: Like traffic, like water

International telephone traffic is a bit like water; it will always tend to flow downhill. In other words, all other things being equal, the direction of telephone traffic will be dictated by price differentials in the same way that flows of water reflect underlying gradients.

Historically, thanks to the accounting rate system, there was effectively no gradient in the wholesale price because the same rate (the *accounting rate share*, or *settlement rate*) was applied in both directions. Thus, insofar as there was a price differential, it was in the prices charged to end-users (the *collection charge*) and the mark-up that this represented over the settlement rate. In competitive markets with significant economies of scale, such as the United States, the margin between the retail price and the wholesale price tended to be lower than in other countries, so that more traffic originated from the United States than from other countries.

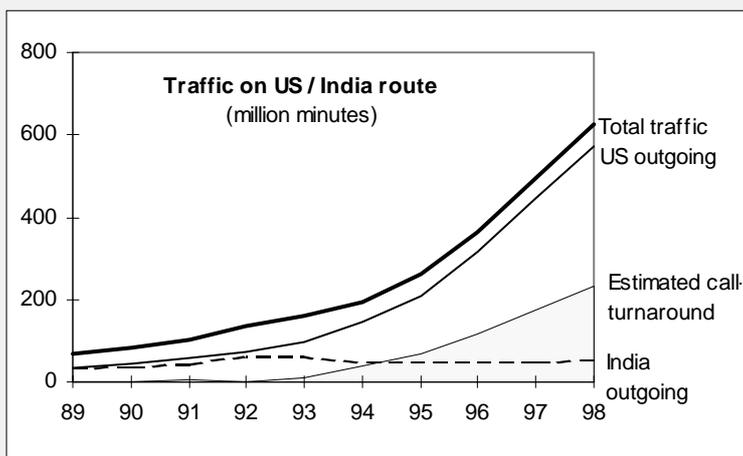
In the early 1990s two things happened which have accentuated this existing trend: First, computer technology became available which made it easier to reverse the direction of a call, through call-back, calling cards or country-direct services. Second, wholesale carriers in the United States began selling outbound capacity at rates either at, or just below, the settlement rate. They were encouraged to do this because a bizarre US regulation—proportionate return of traffic—meant that they could afford to lose money on outbound traffic in order to gain a proportionately higher rate of return traffic. Thus proportionate return created an artificial “gradient” in the settlement rate which made it more interesting to terminate traffic in foreign countries than in the United States. As a result of these developments, call-turnaround is now a multi-billion dollar industry (see Box Figure 2 below which illustrates the case of India).

Many developing countries have tried to ban call-back. But the reality is that because call-back reverses the direction of traffic, to flow *to* them rather than *from* them, developing countries have benefited from greatly increased net settlement payments. Call-back has been to the advantage of developing countries, especially compared with alternatives such as refile, resale or Internet telephony. For a country such as India, call-turnaround probably generated around 233 million minutes of traffic in the 1997/98 financial year and contributed to India’s net settlement inpayment of more than half a billion US dollars from the United States.

But what would happen if a real gradient were created in the settlement rate, through the use of asymmetric arrangements? What would happen if, say, India charged US 25 cents per minute to terminate traffic in the sub-continent while US carriers charged only US 10 cents to terminate traffic in the United States. This proposition is not as far fetched as it may seem, because even though India is a member of the WTO, and therefore theoretically eligible to enter the US market, it did not make any real commitments to open up its own market for international telephony. The logical outcome would be that it would become more interesting to terminate traffic in the United States than in India. Thus the direction of call-back would be reversed. A switch located on Indian territory would be able to offer US residents a rate only slightly above US 10 cents per minute whereas US based carriers could only compete at rates above US 25 cents per minute. Of course, the Indian operator offering the call-back service would have to make a net settlement payment towards the United States, but this would be more than adequately compensated by the revenues raised in the US market. For Indian operators, as well as for US operators with subsidiaries in India, this market opportunity would be difficult to resist.

Box Figure 2: The call-turnaround effect

International telephone traffic on routes between US and India, 1989-98



Note: Call-turnaround traffic is estimated by projecting forward the pre-1993 balance of outgoing and incoming traffic and comparing this with the actual outcome after 1993.

Source: ITU/TeleGeography “Direction of Traffic Database.”