PCS Economics[1]

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Abstract

This paper is a brief introduction to the impact of access fees on new competitors into the telecommunications market. The analysis uses the structure of wireless telecommunications. This was chosen since it represents the most fertile ground for understanding the impact of public policy, antitrust theory, and the desire to open up a competitive market. The analysis contained herein is at a simple and overview level, although the conclusions drawn from it are all encompassing.

0.0 Introduction

Access and Interconnect are two separate topics, but highly interrelated. Access is defined as the provision of all systems and services necessary to have one carrier interface with another for the purpose of transferring information, or simply just a voice call. Interconnect is the physical process of connecting the two such carriers. Thus access may embody more elements and to some degree more abstraction than interconnect. Interconnect is simply the physical elements of communications.[2]

In this paper we develop the concept of access because it is through access that competing carriers meet and it is through access that the dominant carrier may have the power to control the nondominant. There are three views of access that are currently in use. These are:

1. ***Access as Externality***: This is the long standing concept of access that is the basis of the current access fee structures. The RBOC contends that it has certain economic externalities of value that it provides any new entrant and that the new entrant brings nothing of value to the table in the process of interconnecting. The RBOC has the responsibility of universal service and furthermore permits the new entrant access to the RBOCs customers, which brings significant value to the new entrant. In fact, RBOCs argue that a new entrant would have no business if the RBOC did not allow it access to "its" customer base.

2. ***Access as Bilateralism***: This is the view currently espoused by the Commission in some of its more recent filings. It is also the view of the New York Public Service Commission in the tariff allowing Rochester Telephone and Time Warner Communications to interoprate. It also is the view of Ameritech in its proposed disaggragation approach. Simply stated, Bilateralism says that there are two or more LECs in a market. LEC A will pay LEC B for access or interconnect and LEC B will pay LEC A. It begs the question of what basis the reimbursement will be made, what rate base concept, if any, will be used, and what process will be applied to ensure equity.[3]

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[1]This paper was presented at the Telecommunications Policy Research Conference, Solomon's Island, October, 1994.

[2]This division of interconnect and access is due to David Reed of OPP at the FCC.

[3]See the Recent book by Baumol and Sidak, Toward Competition in Local Telephony, MIT Press (Cambridge, MA), 1994. The authors assume Bilateralism and then work from there. They do not event broach the question of what is best for the industry. Their approach is an academic treatise on what are optimal reimbursement mechanisms, rather that what allows competition.

3. ***Access as Competitive Leverage***: This concept of access assumes that there is a public policy of free and open competition and that the goal is providing the consumer with the best service at the lowest possible price. It argues that no matter how one attempts to deal with access in the Bilateral approach, abuses are rampant. Thus the only solution in order to achieve some modicum of Pareto optimality from the consumer welfare perspective is to totally eliminate access fees. The Competitive access school say that the price that the consume pays for the service should totally reflect the costs associated with its providers and not with the provider of the service of the person that the individual wants to talk to. For example, my local telephone rate does no change if I desire to talk to someone in Mongolia, even if their rates are much higher due to local inefficiencies. The Competitive Access school says that externalities are public goods, created perforce of the publicly granted monopoly status of the past one hundred years. It states further that Bilateralism is nothing more that an encumbrance that allows the entrenched monopolist to control the growth of new entrants, and is quite simply an artifact of pre-divestiture AT&T operations. The only choice for the Competitive Access school is no access at all and price at cost.

1.0 A Commodicized Product

The provision of wireless telecommunications services is essential the provision of local exchange service. The service offering is that of a wireless toll grade voice or data service provided through a seamless interoperable national network service. Simply stated, this is the commoditization of local exchange service. Namely, the wireless operator is offering, from the consumers perspective, the same product as the existing monopoly local exchange carrier.

2.0 The Basic Economics of Wireless

The provision of wireless service consists of two parts; capital infrastructure and operating expenses. We briefly review these in this section.

2.1 Capital Structure

Let us assume a CDMA system. Such a system uses three components; the switch, the cell controller, and a re-radiator, also called a distributed antenna. We make the following assumptions reading the system design. Namely:

Item	Value
Effective Cell Radius (mi.)	3
Maximum Cell Capacity (trunks, 10 MHz)	600
Capital/Cell, Full	$1 M
Capital per DA, full	$50K
Max DA per cell	10

Now assume that there are no initial customers and that we must cover 1,000 square miles. Since each cell has a 3 mi. radius, or approximately 30 sq. mi., we need approximately 33 cell centers. However, since we can support 10 DAs per cell, this means that we need 3 cell controllers and 30 DAs. The total capital and capital per sub are shown in the following table.[4]

[4]This was the design of Telmarc Group, Inc. in its Pioneer Preference filing in May of 1992 with the FCC and as detailed in June, 1992 with a Response filing. Telmarc was the first to use the Steinbrecher ReRad design applied to CDMA and was the first to use TDMA in a re rad architecture.

Table: CDMA System Design I: Local Area Coverage

Number of Subscribers	*10,000*	*25,000*	*50,000*	*100,000*	*150,000*	*200,000*	*300,000*
Total Area (sq mi)	*1,000*	*1,000*	*1,000*	*1,000*	*1,000*	*1,000*	*1,000*
No Sectors/BTS	*3*	*3*	*3*	*3*	*3*	*3*	*3*
Total Bandwidth (MHz)	*15*	*15*	*15*	*15*	*15*	*15*	*15*
Bandwidth/CDMA Channel	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*
No CDMA Channels (Max/BTS)	*12*	*12*	*12*	*12*	*12*	*12*	*12*
Capacity/BTS (per CDMA Channel)	*75*	*75*	*75*	*75*	*75*	*75*	*75*
No BTS/BSC	*50*	*50*	*50*	*50*	*50*	*50*	*50*
Erlang Load/Customer	*0.08*	*0.08*	*0.08*	*0.08*	*0.08*	*0.08*	*0.08*
Number of Trunks	*800*	*2,000*	*4,000*	*8,000*	*12,000*	*16,000*	*24,000*
Radius/Cell Cluster	*3*	*3*	*3*	*3*	*3*	*3*	*3*
No Sectors	*36*	*36*	*36*	*36*	*36*	*36*	*36*
No BTS	*13*	*13*	*13*	*13*	*14*	*18*	*27*
No BSC	*1*	*1*	*1*	*1*	*1*	*1*	*1*
No CDMA Channels	*13*	*13*	*13*	*13*	*14*	*18*	*27*
No Trunks	*800*	*2,000*	*4,000*	*8,000*	*12,000*	*16,000*	*24,000*
No CDMA Channels/BTS	*1*	*1*	*1*	*1*	*1*	*1*	*1*
No Trunks/BTS	*61*	*153*	*307*	*615*	*857*	*888*	*888*
No Trunks/BSC	*800*	*2,000*	*4,000*	*8,000*	*12,000*	*16,000*	*24,000*
Maximum Subscribers (000)	*158,438*	*158,438*	*158,438*	*158,438*	*183,750*	*303,750*	*683,438*
Fixed Capital/BTS	*$8*	*$8*	*$8*	*$8*	*$8*	*$8*	*$8*
Capital/Sector/BTS	*$18*	*$18*	*$18*	*$18*	*$18*	*$18*	*$18*
Capital/CDMA Channel/BTS	*$85*	*$85*	*$85*	*$85*	*$85*	*$85*	*$85*
Capital/Trunk/BTS	*$3*	*$3*	*$3*	*$3*	*$3*	*$3*	*$3*
Fixed Capital/BSC	*$700*	*$700*	*$700*	*$700*	*$700*	*$700*	*$700*
Capital/BTS/BSC	*$6*	*$6*	*$6*	*$6*	*$6*	*$6*	*$6*
Capital/Trunk/BSC	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*
BTS Capital	*$4,290*	*$7,878*	*$13,884*	*$25,896*	*$38,052*	*$50,598*	*$75,897*
BSC Capital	*$1,578*	*$2,778*	*$4,778*	*$8,778*	*$12,784*	*$16,808*	*$24,862*
Total Capital	*$5,868*	*$10,656*	*$18,662*	*$34,674*	*$50,836*	*$67,406*	*$100,759*
Capital/Sub	*$587*	*$426*	*$373*	*$347*	*$339*	*$337*	*$336*
Efficiency	*6%*	*16%*	*32%*	*63%*	*82%*	*66%*	*44%*

What this shows is that there is scale in the low end of penetration but that the scale disappears as the system grows. In fact, we know that at the limit, there are 12,000 subscribers per $1 M CC. Thus in the Capital per sub, there are almost no scale effects in highly concentrated areas. The analyses of both approaches clearly shows the advantages of CDMA. The Qualcomm design is dominated by the capital per subscriber related to the BSC.

Let us now consider a wide area of coverage. In the first example we assumed that the areas was fixed to 1,000 sq. mi. Now let the area be 8,000 sq. miles, or about the size of the populated area of Massachusetts. The results are shown in the following table.

Table: CDMA in Wide Area Coverage

Number of Subscribers	*10,000*	*25,000*	*50,000*	*100,000*	*150,000*	*200,000*	*300,000*
Total Area (sq mi)	*8,000*	*8,000*	*8,000*	*8,000*	*8,000*	*8,000*	*8,000*
No Sectors/BTS	*3*	*3*	*3*	*3*	*3*	*3*	*3*
Total Bandwidth (MHz)	*15*	*15*	*15*	*15*	*15*	*15*	*15*
Bandwidth/CDMA Channel	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*
No CDMA Channels (Max/BTS)	*12*	*12*	*12*	*12*	*12*	*12*	*12*
Capacity/BTS (per CDMA Channe	*75*	*75*	*75*	*75*	*75*	*75*	*75*
No BTS/BSC	*50*	*50*	*50*	*50*	*50*	*50*	*50*
Erlang Load/Customer	*0.08*	*0.08*	*0.08*	*0.08*	*0.08*	*0.08*	*0.08*
Number of Trunks	*800*	*2,000*	*4,000*	*8,000*	*12,000*	*16,000*	*24,000*
Radius/Cell Cluster	*3*	*3*	*3*	*3*	*3*	*3*	*3*
No Sectors	*284*	*284*	*284*	*284*	*284*	*284*	*284*
No BTS	*95*	*95*	*95*	*95*	*95*	*95*	*95*
No BSC	*2*	*2*	*2*	*2*	*2*	*2*	*2*
No CDMA Channels	*95*	*95*	*95*	*95*	*95*	*95*	*95*
No Trunks	*800*	*2,000*	*4,000*	*8,000*	*12,000*	*16,000*	*24,000*
No CDMA Channels/BTS	*1*	*1*	*1*	*1*	*1*	*1*	*1*
No Trunks/BTS	*8*	*21*	*42*	*84*	*126*	*168*	*252*
No Trunks/BSC	*400*	*1,000*	*2,000*	*4,000*	*6,000*	*8,000*	*12,000*
Maximum Subscribers (000)	*8,460,938*	*8,460,938*	*8,460,938*	*8,460,938*	*8,460,938*	*8,460,938*	*8,460,938*
Fixed Capital/BTS	*$8*	*$8*	*$8*	*$8*	*$8*	*$8*	*$8*
Capital/Sector/BTS	*$18*	*$18*	*$18*	*$18*	*$18*	*$18*	*$18*
Capital/CDMA Channel/BTS	*$85*	*$85*	*$85*	*$85*	*$85*	*$85*	*$85*
Capital/Trunk/BTS	*$3*	*$3*	*$3*	*$3*	*$3*	*$3*	*$3*
Fixed Capital/BSC	*$700*	*$700*	*$700*	*$700*	*$700*	*$700*	*$700*
Capital/BTS/BSC	*$6*	*$6*	*$6*	*$6*	*$6*	*$6*	*$6*
Capital/Trunk/BSC	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*	*$1*
BTS Capital	*$16,245*	*$19,950*	*$25,935*	*$37,905*	*$49,875*	*$61,845*	*$85,785*
BSC Capital	*$2,770*	*$3,970*	*$5,970*	*$9,970*	*$13,970*	*$17,970*	*$25,970*
Total Capital	*$19,015*	*$23,920*	*$31,905*	*$47,875*	*$63,845*	*$79,815*	*$111,755*
Capital/Sub	*$1,902*	*$957*	*$638*	*$479*	*$426*	*$399*	*$373*
Efficiency	*0%*	*0%*	*1%*	*1%*	*2%*	*2%*	*4%*

What is clear is that the need to provide coverage, and not capacity, has a penalty in capital per subscriber. Also not that the capital is independent of the number of subscribers, it is all dominated by coverage requirements, and thus there is significant scale. Thus the main conclusion is that scale exists as a direct result of universal coverage and is not an inherent element of the technology or the business. If there was another way to deliver universal coverage, then scale would disappear. Scale is thus a social policy phenomenon, not inherent in the business itself, at least on the capital side.

2.2 Operating Costs

The operating costs of the business fall into the following five categories:

- National and Local Sales
- Operating Support Functions

- Local Support Services and Administration
- Access
- Auction Fee Amortization

We now consider the Sales Functions and Operating Support Functions in some detail. These include the elements presented in the following Table. They are divided by who provides the service. We have assumed that a National Service Entity, NSE, exists to provide some and that the others are provided locally. The costs of providing these expenses have been detailed elsewhere.

Table: LSO and NSE: Sales & Marketing and Operations

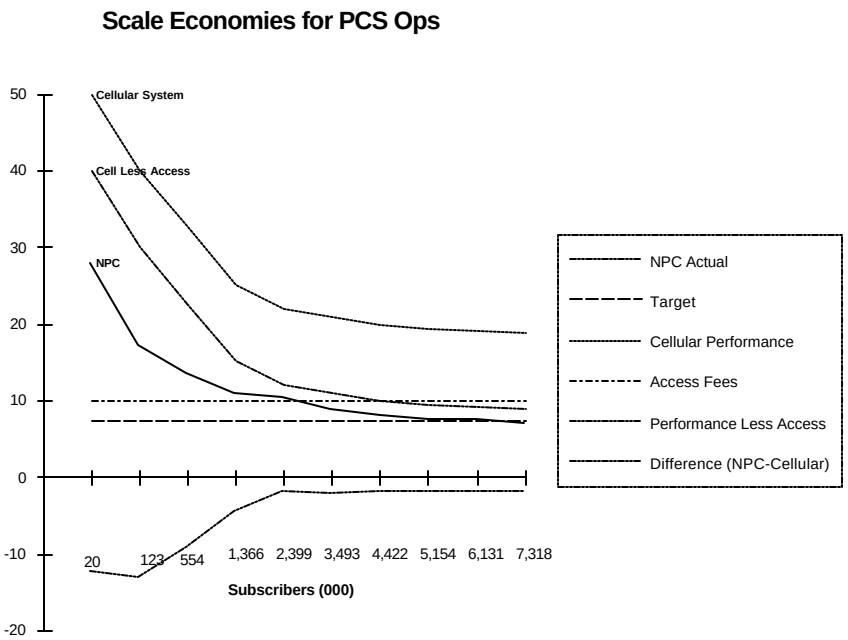
Location	Sales Functions	Operations Functions
LSO	• Direct Sales • Local Advertising • Local Dealers and Resellers • Local Marketing	• Property Leasing • Installation of Cell Sites • Installation of Interconnect • PUC Interface
NSE	• National Advertising • Inbound Telemarketing • Marketing	• Billing • Customer Service • Directory Assistance • Network Management • IEC Interface • Roaming • Provisioning • Repair Dispatching • Inventory Management • FCC Interface • Vendor Negotiation

The financial model for the deliver of the NSE services reflects the following costs. The values are as follows:

Function	Cost/Sub/ Month	Fixed Cost/BTA/Year	Initial Costs/PoP
Billing	$1.65		$0.05
Customer Service	$1.10		$0.04
IEC Interface	$1.25		$0.02
Inventory Management	$1.25		$0.01
Network Management	$1.50		$0.02
Operator Services	$1.75		$0.03
Provisioning	$1.25		$0.01
Repair and Dispatching	$1.00		$0.01
Roaming	$1.25		$0.01
Basic Service Total	$12.00		$0.20
IN Services	NA	NA	NA
Telemarketing	NA	NA	NA

The following Figure depicts the costs for current cellular, with access, without access and the projected cost numbers. These have been determined on the basis of using and improving state of the art delivery systems for the services provided by a National Service Entity. It is clear that there is scale to the “back office” services. In fact the scale effects are quite dramatic. They show that a national service entity may more than half the costs to an entity trying to provide them to itself.

Figure: NSE Cost Structure



The above graph depicts the operating costs per month per customer for cellular and PCS. The costs have been plotted as a function of the total number of subscribers that are being serviced. The costs include all direct costs associated with back office operations including billing, customer service, and other factors. They also include local O&M for the cellular operator and no Directory Assistance, but do not include O&M for PCS but do include DA. Thus the comparison is not exactly equal, however the differences in these costs are generally not significant.

The following six curves are plotted:

- **Estimated Actual Costs:** Plotted as a function of the number of subs based upon the current operating model.
- **Cellular Actual Costs:** Based upon published data from McCaw, Vanguard and other cellular carriers. These include access fees.
- **Access Fees:** Estimated access fees per month per subscriber of $10.
- **Target Price:** Based on the target point of $30 per month customer charge for competitive delivery, namely $9.00 per month per sub.
- **Cellular Performance Less Access:** This is the closest to the NPC cost per month in that access fees are estimated out of these numbers.
- **Difference of Target Less Cellular**: The gap between the two numbers, namely the estimated NPC numbers and the actual Cellular numbers.

The observations are as follows:

- There is significant scale in the delivery of these services based on the model and actual numbers.
- Access fees seem to be merely a fixed offset number for these services.

- There is no way a small system operator can compete with a small base of customers, namely less than 1 million. The costs per sub is too great and will never allow the target price point.

- The business will allow for only large agglomerates of back office service. The NSE concept of NPC is where all of the scale resides in PCS. Capital equipment has no scale in local markets. NSE service elements have dramatic scale.

- Cellular can and most probably address the same issue that NPC has addressed. Most cellular operators are only now understanding the issue of scale in this element.

These observations are key to the following conclusions:

- *A Local Service Operator, LSO or owner of a PCS license, must agglomerate the delivery of NSE services from a single large service provider. There is no other way to compete.*

- *Owners of spectrum who agglomerate markets of 30 million PoPs are barely able to self sustain their operations at 10% penetration. Successful operators must have cumulative PoP coverage of 60 million or more, namely 25% of the U.S. population.*

- *Time to market and rate of penetration drives costs of NSE services down to scale and thus allows aggressive forward pricing by the LSO and in turn allows for more aggressive pricing and penetration.*

This section describes the service requirements for the overall system. The intention is to discuss the system from a requirements perspective and not from an architectural perspective. The requirements for this system reflect the needs to achieve the overall goals of the business.

2.3 Financial Models and Implications

The costs of providing a PCS service are therefore the combination of capital, operating expenses, plus access fees and auction fees. Namely:

$$CF_{PCS}(n) = R(n) - E(n) - C(n) - T(n) - A(n)$$

where R is revenue, C capital, E the operating expenses, T the auction fee, and A the access fee. The net present value for this service is:

$$V_{PCS}(N) = \sum_{n=0}^{N} \frac{R(n) - E(n) - C(n) - T(n) - A(n)}{(1 + m_{PCS})^n}$$

where m is the cost of capital. We use the Net Present Value as a measure of the economic value of the property. It is clear that any new entrant will bear higher up front costs, higher costs of capital, and will necessarily have the need to sell the service, whereas the monopolist has the dedicated base of customers. Thus any new entrant faces a significant risk, not including the burden of inequitable access rates.

Let us use the numbers above to calculate a simple example:

Table: Sample Capital, Expenses, and Profitability of Wireless

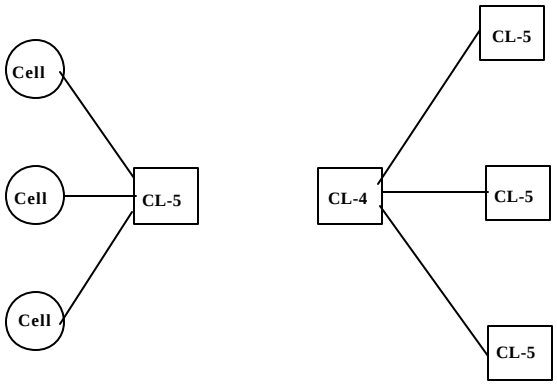
Factor	Expense	Capital	Effective Expense/ Month	Income Statement/ Month
Revenue				$30.00
Local Infrastructure		$180.00	$1.50	
Portable		$300.00	$3.50	
Switch		$240.00	$2.00	
Total Capital		$ 720.00	$7.00	
Operating Support Services	$12/month/ sub		$12.00	
Cost Per New Customer	$300/new sub		$5.00	
Local Operating Services	$3/month/ sub		$3.00	
Net Expenses			$27.50	$27.50
Net Profit Margin/ Before Auction and Access				$2.50
Auction Fee	$10/PoP. 5% penetration. $200 per sub.		$1.50	
Net Profit Margin Before Access				$1.00
Access Fees	$0.05 per minute 600 minutes/ month $30/month		$30.00	
Income				($29.00)

This example shows that with no access fees, the wireless carrier can sell the service, including the portable, for $30 per month, for unlimited local service, such service being for a 35 mile radius of coverage. This is competitive with the existing wide area rates for most BOCs at the current tariff rates. However, if access fees are added, then the profitability disappears. In fact, the access rates are equal to the gross revenue. In the case of sustained access, no competitor will have any opportunity in the local market.

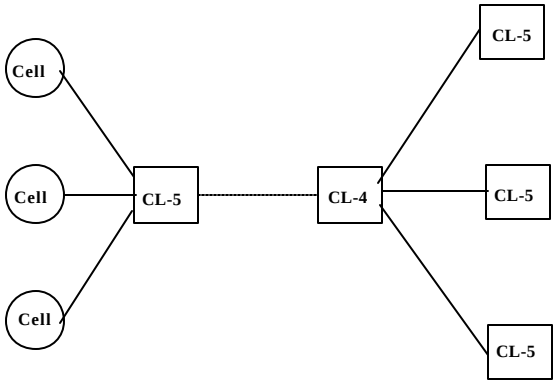
3.0 Access Fee Alternatives

The access issue concerns the interconnection of a wireless local exchange carrier with the existing monopoly. We shall assume that the wireless carrier has all, of the local infrastructure necessary for the delivery of service. We further assume that a wireless customer desires to connect to a monopoly LEC customer or the reverse.

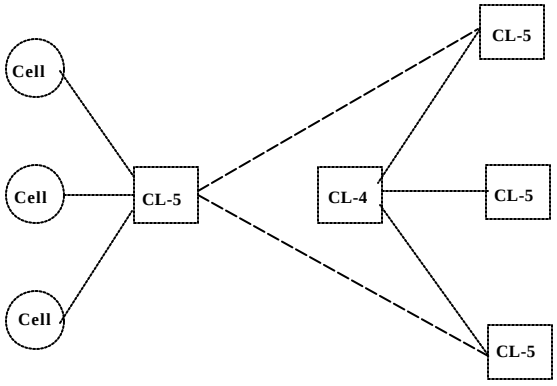
The following figure depicts the current un-connected situation. In the current operation there would be a Class 5 central office switch or equivalent in functionality. The need is to interconnect the RBOC LECs customers with the wireless LEC's customers.



The first case is for Class 5 to Class 4 Interconnect. The following figure depicts this design. In this case the wireless company would interconnect at the toll-tandem level through a class 4 switch and then into the class 5s. The Class 4 is the RBOC LEC. Clearly an access fee to compensate the RBOC LEC for the Class 4 to Class 5 fan out would be acceptable and justifiable.



The second approach is Class 5 to Class 5 interconnect, with no access fee required. It assumes that the Class 4 used by the RBOC LEC is of comparable status in their network and has no use to the wireless LEC. In this case, as shown below, there is a direct interconnect to the RBOCs LEC through the fan out. In this case, the argument is that there should be no access fee.



The cost model for the effects of the proposed tariff structures on the development of the technological infrastructure has been developed below. Specifically, recognizing the proposed bilateral access structure, the model that depicts the results. This section summarizes those results. The model for the pricing is shown below. Here we assume that P is the price and that C are costs. A is the local allocation of costs to price and T is the transfer allocation. This model of access is what has been proposed by the FCC. We shall show that this form leads to the strong possibility of predatory pricing on the part of the existing monopolist and thus is a per se violation of the antitrust laws.

Let the prices charged to the customer be given by:

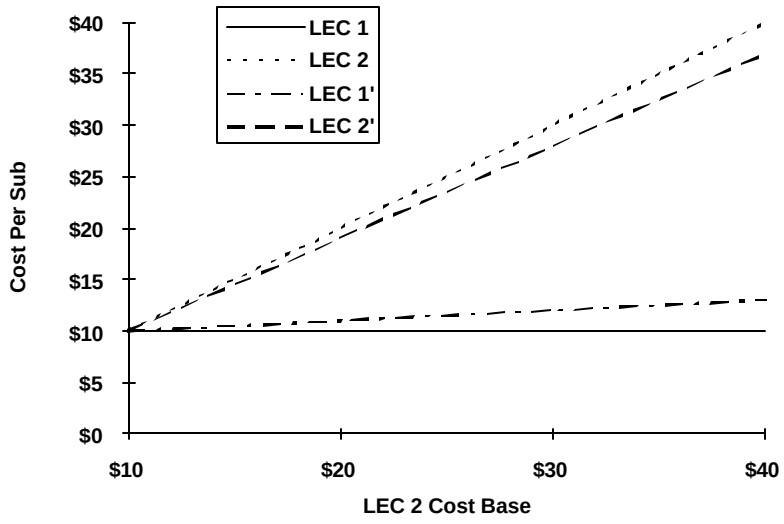
$$P_1 = A_1 C_1 + T_{1,2} C_2$$

$$P_2 = A_2 C_2 + T_{2,1} C_1$$

$$T_{1,2} = 1 - A_2, T_{2,1} = 1 - A_1$$

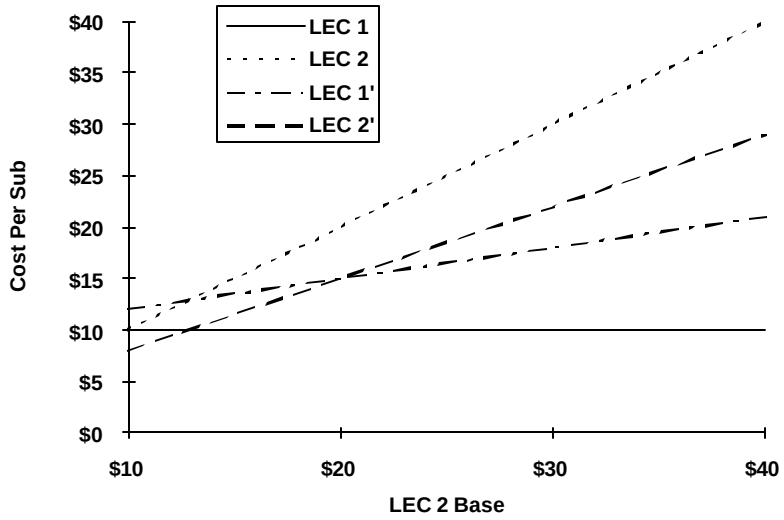
We now consider two cases. In Case 1 we depict an example of where access costs are prorationed on and equal basis, namely 10% of the base each. In this case it is clearly shown that the efficient carriers is taxed by the inefficient and furthermore the inefficient is subsidized by the efficient. Thus in the case of equal proration of transfer rates, the less efficient carrier dominates the efficient through a subsidy.

Figure: Case 1; A=0.9, T=0.1 for Both LECs



In the Case 2 example, we assume that the efficient carrier is allowed to place only 10% of its base in an access charge, and the inefficient carrier places 30% of its base in access charge. The Figure depicts a very important finding. Namely, if the inefficient carrier is allowed to place an excess amount in the base assigned to access, then it is possible for the inefficient carrier to have a lower price to the consume, and in turn drive the price of the efficient carrier above theirs by means of the cross linking of access. The following Figure depicts the fact that until the inefficient carrier is almost twice the efficient t that the inefficient is less than the efficient. This market distortion goes to the heart of where technology and rate base allocations are for access. The Experimenter has been attempting to eliminate access fees through technology as well as other means. If the fees are kept, even as reciprocal, but based on underlying technology, the inefficient technology may drive out the efficient, a form of Gresham's Law of technology.

Figure: Case 2; A_1=0.9, T_{12}=0.3, A_2=0.7, T_{21}=0.1



The conclusion of this is obvious;

- *Under equal allocations of base and percentage, the inefficient carrier is penalized by the inefficiencies of the inefficient carrier.*

- *Under the case of misallocated costs, the inefficient carrier may actual use the efficient carriers costs to price below the efficient, thus driving the efficient out of the market.*

- *The driving of the efficient from the market by the inefficient, occurs only in those market situations wherein an imbalance via government regulations occur. These markets are not cleared and reflect dramatic distortions.*

4.0 Policy Implications

There are several policy implications from this analysis. First let us review the conclusion made.

- *Scale does not exist in capital plant if the plant is allowed to cover the area where the majority of customers are. Scale is significant in capital if there is a demand to cover all customers, no matter how economically efficient.* ***Conclusion: Scale in capital plant is an artifact of social policy mandated by Universal Service****.*

- *Scale exists in the operations support services perforce of common shared processing equipment and common use of software and human resources.* ***Conclusion: There is a natural need for agglomerated National Service Entities to service the Local System Operators. The "Market" will allow such entities to be developed and serve the LSOs as is done with current outsourcing.***

- *Scale is not a problem for the LSO. The LSO has de minimis scale from local capital and has access to the Operating Support Services on a marginal price basis from a NSE.* ***Conclusion: The LSO can compete with the entrenched carrier since the LSO faces no scale and can price the service to market in a short period of time. The LSO does not need large capital resources to do this.***

- *Commoditization of the product offering, namely voice, allows for competition on the basis of price only. The LSO competitor can compete against the LEC RBOC if there is no access fees.* ***Conclusions:***

Access fees are diseconomies of scale to the new entrant. They act as a financial barrier to entry to any new competitor.

- *An new entrant, in an access free environment can compete against the entrenched monopolist with orders of magnitude less investment by leveraging off of as NSE structure and using the new wireless technology. Quality is maintained by the outsourcing of the back office operations.* ***Conclusion: There is no qualification for entry to new competitors other than local operations expertise. The scale and scope in the existing monopolists can be nothing more than an added capital burden on the new entrant.***

- *Bilateral access fees are determined on two key factors: the providers cost base and the providers allocation of assets to access. The analysis of access clearing or settlements using this algorithm leads in all cases to a control of the price and the existence of a monopolists controlled barrier to entry through a manipulation of access fees.* ***Conclusion: Only through the elimination of access fees can any new entrant hope to compete on price and thus benefit the buyer****.*

The areas of policy impact are as follows:

Universal Service: Should Universal Service be mandated to all carriers or should it be a social policy mandated and paid through governmental aegis? It seems to be the convergence of opinion that the latter is true. Thus the capital problem raised in this paper is not significant.

Delimitation of New Entrants: There is a premise that new entrants must have significant capital. The analysis shows this not to be the case. In fact the capital required may be quite low. Thus the FCC's analysis is based on old paradigms of operations resident in RBOC and CATV monopoly operations and do not reflect the cost of competitive service provision.

Restriction for Existing Monopolists: The current wireless market is dominated by the RBOCs with 75% or more of the spectrum under their control. Using their control of the wire market, this leaves less than 5% currently available to competitors. The FCC is establishing an auction process which may allow the RBOCs in all bidding groups. Their capital power will drive out any new competitor and thus ensure the continuation of a de facto monopoly. The only way to avoid this is to mandate that any RBOC be prohibited from bidding for any new spectrum. This is the only way to establish local loop competition.

Potential Antitrust Violations: The RBOCs through control of spectrum, control of access, and control of switching, present a barrier to entry to any new entrant. If the objective is to establish competition, then it is necessary to prevent the continued dominance and to allow for ease of access. The only way to do this is total elimination of any and all access fees between competing LECs.

5.0 Conclusions

This paper is a brief précis of access and its implications in the new wireless world of local exchange services. The premise demonstrated is that any new entrant may be successful with limited capital. This is true only in the case of the elimination of LEC access fees to competing LECs. It is only in this way that the market will be cleared and competitors survive.

6.0 References

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