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October 24, 2006

Marlene H. Dortch
Secretary
Federal Communications Commission
The Portals
445 12th Street, S. W.
Washington, D. C. 20554

Dear Ms. Dortch:

Subject: Submission of Comments to the Federal Communications Commission on proposals submitted by AT&T Inc. and BellSouth Corporation
DA 06-2035 and **WC Docket Number 06-74**
Re: Application for consent to transfer of control filed by AT&T Inc. and BellSouth Corporation

EXECUTIVE SUMMARY:

AT&T Inc. (AT&T) and BellSouth Corporation (BellSouth), the Applicants, have filed a series of applications pursuant to sections 214 and 310(d) of the Communications Act of 1934, as amended1 and section 2 of the Cable Landing License Act.2 In these applications, the Applicants seek the approval of the Federal Commission (FCC) to transfer control of licenses and authorizations held directly and indirectly by BellSouth to AT&T.

The FCC, by Public Notice DA 06-2035 dated 13th October, 2006, has sought comments from interested parties on various aspects of the merger. In this notice the FCC have also attached a letter dated October 13th 2006, from Robert W. Quinn, Jr., Senior Vice President, Federal Regulatory, of AT&T Services, Inc., addressed to The Honorable Kevin Martin, Chairman of the Federal Communications Commission.

Specifically in this letter, Mr. Quinn writes that: "As an initial matter, we reiterated our firm conviction that the merger should be approved promptly without any conditions whatsoever. We noted that, throughout the course of this proceeding, AT&T and BellSouth have demonstrated that the merger will decidedly advance the public interest by bringing together two companies with complementary assets and strengths, thereby creating a more efficient, more innovative company capable of accelerating and expanding the delivery of high quality advanced technologies and services to all classes of customers, large and small. We have shown that the merger will solidify and secure the nation's status as a world leader in telecommunications and that it will strengthen national security. And we have shown that all of these benefits will be realized without any cognizable harm to competition."

In this submission, we argue that the merger, with or without conditions, should not be approved. The merger will harm the public interest by retarding the growth of productive efficiency, by retarding the deployment of new and advanced technologies that augment the

technological quality of networks and expand the delivery of high quality services to customers, both large and small alike, and there is likely to be cognizable harm to competition.

We, Dr. Sumit K. Majumdar, Professor of Technology Strategy at the School of Management of the University of Texas at Dallas, the author of this submission, Dr. Rabih Moussawi, currently of Wharton Research Data Services, and formerly a doctoral student at the University of Texas at Dallas and Dr. Ulku Yaylacicegli, currently of the University of North Carolina at Wilmington, also a former doctoral student University of Texas at Dallas, have carried out extensive empirical research on the performance consequences of the mergers that have been approved and implemented within the local exchange sector of the United States telecommunications industry. Specifically, we evaluated all of the mergers that occurred in the local exchange sector between 1988 and 2001.

Our results establish that the mergers approved in the past have not created the expected synergy effects that are expected to arise when companies with complementary assets pool their assets together. Mergers have led to increased market power and, therefore, have been of harm to competition. What has increased for the merged firms have been their ability to generate relatively higher revenues relative to those that have not merged. No sales volume growth is noted; hence noted relative revenue increases are due to price increases. No cost efficiency gains by the merged firms are noted. In fact, several measures of operational performance have deteriorated in the post-merger period, thus vitiating expectations that efficiency gains are to be made after mergers. Underinvestment of technology is observed following merger activities. Therefore, expectations that mergers will lead to increased investments and up gradation of the communications infrastructure, and for technological progressiveness have also been vitiated.

Much of the debate on the gains from mergers have been carried out in the absence of empirical analysis as to whether the past mergers have actually worked, and enhanced performance as expected. While a substantial of assertions are put forth that mergers will be in the public interest, the reasoning behind such assertions are based on speculative analytical modeling or simulation analysis. The evidence as to whether the past mergers have worked out or not has not been considered in policy deliberations. We provide the evidence for this issue, for the period between 1988 and 2001, when the majority of the mergers between local exchange companies took place, which shows that the performance consequences of the mergers that took place have been negative.

Our analysis establishes that the generally espoused reasons for mergers to occur and be approved, that efficiencies will be enhanced, that the firms will become more technologically progressive and that competition will not be harmed, are not found to be valid. In view of this crucial overall finding, we recommend that the proposed merger between AT&T, now a local exchange carrier, and BellSouth Corporation, also a regional holding company in the local exchange sector be not approved, irrespective of conditions, as this merger is unlikely to engender efficiencies, it is likely to retard technological progressiveness of the merged company, and thereby of much of the US local network, and it is also likely to harm competition. The proposed merger will not be in the public interest.

DETAILS OF OUR ANALYSIS AND ASSESSMENT

In the subsequent sections below we provide the detailed analysis behind our conclusions.

1. The expectations from mergers generally:

We have earlier referred to the statement by the AT&T Senior Vice President for Federal Regulatory Affairs that the AT&T and BellSouth merger is expected to provide complementarities, enhance efficiency and lead to technology investments. The literature, in general also supports the existence of these motives.

For example, the potential efficiency benefits from mergers and acquisitions include operating efficiencies (Ravenscraft and Scherer, 1987). Operational efficiencies may arise from economies of scale (Stigler, 1958), production economies of scope, consumption economies of scope, improved resource allocation, through more resources in the hands of better managers, moving to alternative less costly technologies or asset configurations, improved use of information and expertise, improved focus on core skills of the firm, a more effective combination of assets, and reductions in transaction costs. It may be that mergers or acquisitions are the quickest, cheapest, or only way to attain these benefits. One major cost savings for common carriers is also the savings from access charges.

Acquisition of more and better network assets and technical abilities have been another primary factor of acquisitions by the larger and more stable carriers seeking to expand their networks. Such acquisitions aim to integrate the network infrastructure and content of the merging companies in addition to enhance the ability to deployed advanced infrastructures (Goldman, Gotts, Piaskoski, 2003). As a general proposition, society benefits from conduct that encourages innovation to lower costs and develops new and improved products.

Another major reason for mergers is the acquisition of market power and the achievement of economies of scale. In combining resources and customers, firms hope to create market power by eliminating actual competition or potential competition (Goldman, Gotts, Piaskoski, 2003). The late Nobel laureate, George Stigler, in 1950, argued that market expansion might have been a primary motivation for many of the mergers and acquisitions during the last quarter of the nineteenth century and the first half of the 20th century. Following the passage and enforcement of effective anti-merger legislation in 1950, mergers between competing firms with significant market shares, those mergers most likely to be anticompetitive, became relatively rare, and those that did occur, mainly in the 1980s and 1990s, were allowed only after review by the anti-trust agencies or other regulatory agencies.

2. The evidence as to the impact of mergers generally:

Types of existing evidence on the effects of mergers on economic performance come from studies of shareholder wealth creation or large sample performance studies. Performance studies of accounting data fail to find consistent evidence of improved

performance or productivity gains (Healy, Palepu, and Ruback 1992; Ravenscraft and Scherer, 1987). These studies focus on accounting rates of return, profit margins, cash flow returns, expense ratios and several other accounting and financial measures of firm performance. These studies try to control for confounding factors by comparing the post acquisition changes in financial performance to industry averages or to multiple regression based estimates of what would have occurred absent the acquisition. In general, it is believed that the overall result of acquisitions is negative rather than positive (Ruback, 1988; Jensen, et al., 1983; Agrawal, et al., 1992).

3. Expectations and assessment of the impact of telecommunications mergers:

While studying the economic performance impacts of mergers in the US telecommunications industry, it is not feasible to use studies that look at stockholder wealth impacts. Due to the nature of telecommunications industry holding companies, it is impossible to accurately proxy for specific division market values, mainly for operating companies, in isolation from other divisions under a holding company. Therefore, financial, operating, and technology statistics have to be used when examining the performance impact of mergers on telecommunications firms. Yet, the vital specific comprehensive post-merger performance evidence is absent.

Between 1996 and 2001, several transactions worth several billion dollars took place in the telecommunications sector. They all claimed various efficiency gains from the integrated operations of the merging companies. For the merger of SBC and Ameritech in 1998, the parties submitted that product development and testing costs could be spread over a larger number of access lines, and over $50 million could be saved annually by reducing office space. There were also projected cost savings of over $300 million from combining respective provisioning and maintenance, switching operations and network engineering, and other miscellaneous categories of savings (Goldman, Gotts, Piaskoski, 2003). Yet, the reality is bleak. Ferguson (2004) argues that the phone companies' mergers have reduced overall productivity growth, increased U.S. dependence on imported energy, worsened the recession in the telecommunications and information technology sectors, and impeded progress in fields ranging from education to national security.

4. Framework for empirical study and the coverage of our analysis:

In order to capture the impact of mergers in the US telecommunications industry, we use three broad measures as dependent variables to evaluate post-merger performance:

(A) financial performance,
(B) operational performance and
(C) technological performance.

The financial performance variables constructed for this study include liquidity and growth measures. Accounting measures more effectively measure the direct results of post-acquisition performance than stock price, which reflects the future expectations of investors (Grant, Jammine and Thomas, 1988). We use the following measures of financial performance, per Christensen et al. (1981) and Cornett et al. (1992):

[1] cash flow over assets and
[2] growth in sales.

Cash flow over assets is calculated as the ratio of total operating revenues to total assets. If this variable rises in the absence of sales growth, which is exogenous, then it is an indication that market power is being exercised and prices raised (Farrell and Shapiro, 1990).

Post-acquisition operating efficiency, measured by the efficiencies gained across various operational expense lines, is the key for achieving the anticipated acquisition benefits for a combining firm. Operational synergy is a key acquisition objective and a determinant of post-acquisition performance (Brush, 1996). Operational performance variables are used to measure how efficiently operational assets are used by the operating telecommunications companies pre and post merger.

Five main expense ratio constructs derived for five important revenue generating divisions are considered as adequate measures of operational performance:

[1] plant expense ratio is the ratio of total plant specific operations expenses to total communications plants in service;

[2] operator systems expense ratio is computed by taking the ratio of operator system expenses to operator systems plant;

[3] the ratio of total cable and wire facilities expenses to total operating revenues is used as proxy for the facility expense ratio;

[4] information transfer expense ratio is the ratio of total information originating-terminating expenses to total information originating and terminating plant investment;

[5] finally, the ratio of total central office transmission expenses to total central office transmission plant is used to construct the central office transmission expense ratio.

Similar constructs are used by Brush (1996) and Linn et al. (1994). Since all the operational performance variables are expense ratios, an improvement in operational performance is equivalent to decrease in these expense ratios according to the justifications used by merging firms.

Finally, we examine the technology dimension by testing the effects of mergers on the technological progressiveness of the carriers. Technological progressiveness of firms plays an important role in shaping firm performance and survival (Klepper and Simmons, 2000).

Measures are computed respectively by taking:

[1] the ratio of total kilometers of fiber to total access lines,

[2] the ratio of total fiber kilometers to total cable kilometers, and

[3] the ratio of total digital lines to total analog lines

Majumdar (1997) and Koski and Majumdar (2002) have used similar constructs. If the rationales for the merger activities are realized, we expect investments in advanced technology to improve following a merger. Otherwise, the lack of technological investments post-merger would be an indication of the resources being diverted elsewhere.

In a dynamic panel data framework, we have regresses each performance measure against prior performance values, variables controlling for merger effects and variables that control for other factors.

We therefore attempt to capture any merger shocks on performance, and test the economic and statistical significance of these shocks. If mergers are to add value to firms by creating synergies, then the gains from synergies would lead to cost efficiencies and technological advancements. On the other hand, if the mergers are constructed merely to increase market power, no cost efficiencies or advancements would be expected but financial performance would not necessarily suffer. Mergers can lead to industry consolidation integrations that affect the other firms in the market through the creation of oligopolies. This, in turn, increases prices and lets the companies extract excessive rents (Farrell and Katz, 2000).

The oligopoly formation trend of the telecom industry and the market power theory which addresses the trade off between market power and efficiency suggest to us the following hypotheses:

H1: Mergers, if exercised to increase market power, are followed by a significant improvement of financial performance of the telecommunications operating companies.

H2: Mergers, if exercised to increase market power, are followed by a significant deterioration of operational performance, as captured in the expense ratios, of the telecommunications operating companies.

H3: Mergers, if exercised to increase market power, are followed by a significant deterioration of technological performance of the telecommunications operating companies.

To test these three performance hypotheses, we use the following regressions, where variables are indexed over acquired firms (i) and over time (t).

Financial performance:

$$FIN\_PERF_{it} = \beta_0 + \sum_{s=1}^{2} \beta_{1s} f(FIN\_PERF_{it-s}) + \beta_2 MergerDummy + \beta_3 OPR\_PERF_{it-1} + \beta_4 TECH\_PERF_{it-1} + \beta_i^c \, CONTROLS + \varepsilon$$

Operational performance:

$$OPR\_PERF_{it} = \alpha_0 + \sum_{s=1}^{2} \alpha_{1s} f(OPR\_PERF_{it-s}) + \alpha_2 MergerDummy + \alpha_3 FIN\_PERF_{it-1} + \alpha_4 TECH\_PERF_{it-1} + \alpha_i^c \, CONTROLS + \varepsilon$$

Technological performance:

$$TECH\_PERF_{it} = \gamma_0 + \sum_{s=1}^{2} \gamma_{1s} f(TECH\_PERF_{it-s}) + \gamma_2 MergerDummy + \gamma_3 FIN\_PERF_{it-1} + \gamma_4 OPR\_PERF_{it-1} + \gamma_i^c \, CONTROLS + \varepsilon$$

In these equations *FIN_PERF*, *OPR_PERF*, and *TECH_PERF* refer to financial, operational, and technological performance variables groups respectively. FIN_PERF_{it} refers to the financial performance of the i^{th} company in period *t*. FIN_PERF_{it-1} refers to the financial performance of the i^{th} company in period *t-1*. The indexes for the other

performance measures are used in the same manner. *CONTROLS* refer to seven control variable groups used for the analysis. The *MergerDummy* variable represents the set of dummy variables corresponding to the merger event that a company has experienced over time. Testable hypotheses emerge from the evaluation of these merger dummies. Failure to capture significant results upholding all three hypotheses will result into our acceptance of the market power theory and negate the reasons espoused by the companies in support of the mergers.

We use a complete panel of US telephone companies from the Statistics of Communications Common Carriers (SCCC) for the period 1988 to 2001. We compile the firm level operational and financial data for 41 main local operating companies between the years 1988 to 2001. These companies account for over 90 percent of the telephone lines installed in the US. Data for this analysis were obtained from:

[1] FCC Statistics of Common Communications Carriers (SCCC),
[2] Federal-State Joint Board Monitoring Reports,
[3] FCC reports on Competition in Telecommunications Industry,
[4] National Regulatory Research Institute (NRRI) reports, and
[5] the US Census Bureau.

Several rounds of data checks were made to ensure reliability and consistency of the firm-specific data used in our model variables. All performance measures and most controls variables are computed using the financial and operational items in the SCCC data. We overcome deflating dollar figures by using ratios as constructs in our analysis.

The information on holding company information for the operating companies and the states in which the operating companies operate are also extracted from FCC and CCC Statistics. Some of these items are used later with loop data in constructing weights for regulation measures and other state-specific metrics like urban population ratios.

Loop data are collected from monitoring reports to construct control variables. For example, in the construction of regulation and urban population variables, weighted average of loops is used. The urban population data are collected from the US Census Bureau. The Census Bureau reports the population census by state, including every partition into urban and rural, for each decade. In order to avoid adding variation to the analysis by the use of statistics for 1990 and 2000, only the population for 2000 is used for the whole sample. The urban population variable is used only for control purposes and as the population demonstrates only insignificant change over the two decades studied, the use of the 2000 urban population data is justified.

5. Controlling for other salient facets that impact performance:

Performance, as measured, can be affected by a variety of factors. These we control for in our analyses. Our list of control variables is very comprehensive.

[1] In order to control for industry level factors, two variables are used. These are industry mean cash flow over assets and competition. Industry mean cash flow over assets is the mean of cash flow over assets ratio for all operating companies that are used for this study. This control is used to account for effects impacting the whole industry. Competition

is the number of possible competitors who have been given a license to operate in the various states. This control represents the possible intensity of market competition in each state. The competition data are collected from the FCC Competition in Telecommunications Industry reports. For each incumbent local exchange carrier, the competition variable is computed as the sum of the number of competitive local exchange carriers operating in the same states as the incumbent.

[2] Regulation variables control for state level and national regulatory changes. During the time period studied several state-level regulatory changes took place. In this period, state-level incentive regulation schemes, which usually take the form of a price caps, were initiated. Various states altered their regulation scheme from rate-of-return to price-caps at various times during the time span examined. In addition to this, some states implemented different regimes for different local exchange companies operating inside their borders. This both cross-sectional and time-series variation of regulatory regimes encountered by local exchange companies requires a thorough examination of different regulatory regime changes for each state and each company.

In order to control for regulation effects in the analysis, following Jung et al. (2005), we have constructed five different types of regulatory schemes: Regulation 1, Regulation 2, Regulation 3, Regulation 4, and Regulation 5 corresponding respectively to rate of return, other incentive regulations, earnings share, hybrid price caps, and pure price caps. Regulation 1 and Regulation 3 include only rate of return and pure earning share regimes respectively. Price-caps with earnings sharing or revenue sharing are classified under Regulation 4. Regulation 5 covers price caps and price caps with flexibility regimes. All the other forms of regulation including banded rate of return, rate freezes, and all other hybrid forms of incentive regulation are grouped under Regulation 2. As many companies operate in multiple states that vary in regulatory regimes, a weighted average is computed for each operating company by weighing the regulation observation by the proportion of lines that each state contributes to the total access lines operated by the operating company.

[3] We also control for the nature of interconnection regimes. Access cost is computed as the ratio of access costs to total operating revenues. The relative level of access costs paid by the local exchange carriers for interconnection also influences them in their own attempt to generate greater access revenues. Access costs and access prices are greatly correlated in nature. For this reason, in the analyses, when the control variables are used, only one of these interconnectivity control variables is used.

[4] We use market share constructs as a proxy for market power of the local exchange carriers. Even though in regulated industries a high market share does not necessarily imply monopolization behavior, inclusion of all the products and geographic markets a firm is involved with in market share calculations gives a good sense of market power of that firm in the industry. One advantage of using market share as a measure of competitive performance within telecommunications industry is that these conditions are held constant for the model and the findings can be interpreted with respect to the industry context. In other words, the findings can be further examined based on additional evidence of whether market share is a relevant measure of competitive performance in the industry.

The first market share variable measures the ratio of firm total number of billed access minutes across the states it operates to the total number of billed access minutes in all of the states in which it operates. The second market share variable is constructed by taking the ratio of firm total number of loops across the states it operates to the total number of loops in all of the states in which it operates. The two variables are greatly correlated. When conducting the analyses, these constructs are not used together in order to eliminate any potential multi-collinearity problems their simultaneous use would develop.

[5] The key environmental factors within the US telecommunications industry are the urban population and business lines ratios. The urban population ratio is the weighted average ratio of urban population to total population. This ratio is weighted by fraction of lines the firm has the operating rights to in the specific state or states. The business lines construct is measured by the ratio of total business lines to total access lines for each company. A larger share promises a more profitable customer base, encouraging the installation of new technology.

[6] We control for firm specific effects for these local carriers. There are six variables: size, compensation, debt, advertisement, customer costs, and corporate costs. We have used three measures for size: the log of book value of total assets, the log of sales, and the log of operating revenues. All measures lead to similar results, therefore and in order to be consistent with previous studies, we use log of total operating revenues as a measure of size.

Compensation helps capture differences in the firm level quality of human capital. There are two possible ways to measure the quality of firm level human capital in the literature. One is by type of educational qualifications, which is not publicly released; the other is the publicly released data, which would be used as a proxy of human capital quality. In this line, compensation is measured as the average dollar value of compensation cost per employee. When local carriers incur higher compensation expenses, they tend to increase access charges in order to generate more cash for reimbursing these emerged extra expenses. Alternative explanation of high compensation would be excessive compensation of managers which may reduce the performance of company.

The debt variable measures the leverage characteristics of a firm. It is computed by long term debt per total assets (Amihud, 1990; Cornett, et. al., 1992). The advertisement variable is constructed by taking the ratio of advertising expenses to total operating expenses. Advertisement variable captures the US local telecommunications operators' strategic behavior. Where a previously monopolistic market becomes competitive, the spill-over effects of advertising will benefit both incumbents and entrants. In mature markets on the other hand, advertising of one firm will diminish the sales of the other (Roberts et al. 1988). Advertising is a costly option for local exchange carriers to enhance profit. Therefore, its sign may be negative in the cases where cash is limited.

Customer cost is computed as the ratio of the customer operations expenses to total operating revenues. The customer costs variable measures how marketing oriented each carrier is. For the U.S. telecommunications industry, with a given infrastructure of resources, greater demand towards obtaining higher call volumes can be achieved through denser marketing efforts. The corporate costs variable is used as a proxy for measuring how much importance is given by the firms to advance long term business capabilities through the

planning and human resource development type of activities. It is computed as the ratio of corporate operations expenses total operating revenues.

6. Statistical details of our analysis:

Our analysis has to be extremely complex. We evaluate the performance of all of the principal local exchange carriers over the course of almost a decade and a half. Also, the nature of the telecommunications industry and the ways that mergers impact firm performance impose the need to consider the interdependency effects among the three performance variable groups used, and between them and merger activity. We have to use suitable powerful statistical techniques. We, therefore, use a dynamic panel data approach, elaborated by Arellano and Bond (1991), to test the economic and statistical significance of the average performance shocks due to merger activities over time and across various operating companies. Each periodical performance is then regressed over prior performance and other controls.

This complex longitudinal approach to estimation is necessary given the inherently lagged nature of the phenomena, as a cross sectional study may be unable to distinguish the direction of causality even if it finds a relationship between the variables of interest. Moreover, this approach addresses the unobservable heterogeneity and the omitted variables concerns that have been addressed in previous literature. The use of such a dynamic panel data approach is particularly useful to tease out the merger effects, controlling for not only exogenous factors but also firms' past history and the results obtained for the merger variables reflect the impact of just that merger shock on performance (Greene, 2003).

The relationships between different performance measures are dynamic in nature. Each performance variable is impacted by the prior values of other performance variables, and not by the contemporaneous values. This dynamic nature prevents the use of cross sectional data to estimate a dynamic model since its use would not provide sufficient information about earlier time periods for dynamic relationships to be investigated. Also, use of only aggregate time series would overlook the underlying microeconomic dynamics due to bias aggregation. Consequently, use of dynamic panel data in the analysis of merger impacts on the US telecommunications industry carriers would be the best choice as it offers an opportunity to investigate heterogeneity in adjustment dynamics between different carriers.

There is substantial evidence in the literature on the interdependency between mergers and several measures of performance (Martin and McConnell, 1991; Palepu, 1986; McGuckin and Nguyen, 1995; Lichtenberg, 1992). Moreover, performance lags in the right hand side of the equations are necessary to control for other factors that has been documented to influence performance (Denis and Sarin, 1997) and other unobserved firm specific heterogeneity, and the lagged dependent variables act as instruments that control for these unobserved firm specific effects. In addition, Arellano (1989) provides evidence that it is preferable to use the levels of past performance as instruments.

In order to control for potential endogeneity between mergers and various performance measures, we employ the Arellano and Bond (1991) instrumental variable estimation methodology for unbalanced panel data using GMM estimators. This approach is elaborated in a capital accumulation and firm value framework in the dynamic investment

model of Bond and Meghir (1994). Prior studies in economics and finance literature stress the importance of Arellano and Bond (1991) dynamic panels in addressing endogeneity, unobserved effects, and direction of causality. Blundell, Griffith and van Reenen (1999) examined the relation between market value and innovation and have justified the use of dynamic panel data model as appropriate in the presence of firm specific unobservable and the feedback mechanisms that are implied in the model.

Conyon and Peck (1998) use dynamic panel data to properly model the interdependencies between corporate governance and performance. They also justify dynamic panel data specification as necessary to better account for unobservable idiosyncratic company effects and to reduce the bias induced by omitted variables (Baltagi, 1995). In a similar context, Gima et al (2006) employ the dynamic panel data approach by using lagged performance indicators as instruments and allow mergers to be endogenous to their variable of interest.

Other studies employ the dynamic panel data specification to examine the impact of mergers and acquisition on corporate profitability (Dickerson et al. 1997), on R&D investment (Bertrand and Zuniga, 2004), on corporate employment, (Gugler and Yurtoglu, 2004) and on total factor productivity (Harris and Robinson, 2002). Beck, Levine and Loayza (2000) also use the GMM dynamic panel estimator of Arellano and Bover (1995) and Blundell and Bond (1997) to extract consistent and efficient estimates of the impact of financial intermediary development on growth and the sources of growth. They argue that such specification exploits the time series variation in the data, accounts for unobserved country specific effects, allows for the inclusion of lagged dependent variables as regressors, and controls for endogeneity and simultaneity of all the explanatory variables, including the financial development variables.

The Arellano and Bond (1991) dynamic panel data analysis technique derives GMM estimates using prior performance measure and other predetermined performance levels in addition to differences of the strictly exogenous controls. Arellano and Bond (1991) have built upon Anderson and Hsiao (1981; 1982) work on using further lags of the level or of the difference of the dependent variable to instrument the lagged dependent variables that are included in a dynamic panel data model after the random effects have removed after first differencing. They have used Monte Carlo studies to evaluate a generalized method of moments (GMM) estimator that is very similar to the Holtz-Eakin et al. (1988) recommendation in estimating a vector auto-regression with time varying parameters. The lagged dependent variables in the model account for the dynamic effects. The correlation of the lagged endogenous variables may spoil the analysis even if no auto-correlation is assumed. The use of instruments, therefore, bypasses the error correlation issues when GMM with instruments, lagged dependent variables in this case, are used. The use of GMM estimators increases the computational efficiency without impairing effectiveness through the use of lagged values of instruments (Yaffee, 2003).

The use of dynamic models is especially favorable for panels that have a large number of cross-sectional units with a small number of time periods, as their estimation methods do not require larger time periods to obtain consistent parameter estimates. This property is not an important concern for this study as the panel data used spans almost a decade and a half of observations for the local exchange carriers in the US

telecommunications industry. In addition, use of panel data in estimating common relationships across firms is particularly appropriate because it allows the identification of firm-specific effects that control for missing or unobserved variables (Judson et al, 1996).

The Arellano and Bond (1991) specification therefore acknowledges the dynamic relationships and interdependencies among various performance factors; financial, operational and technological, and merger activities. Also, we employ various necessary exogenous controls, mainly for critical periods that constitute structural shifts in telecommunications merger and acquisitions activity. Arellano and Bond (1991) estimation employs error adjustment technique that properly models the influence of past performance and absorbs any structural distortions that might have occurred in the telecom industry and affect operating companies over the sample period. The merger dummies, which account for successive mergers, would therefore capture only the unexplained remaining variation in subsequent performance of merged operating companies.

The Arellano and Bond (1991) estimator offers substantial efficiency gains in saving more degrees of freedom and lowers the impact of bias in the estimators due to small sample size (Blundell and Bond, 1998). Also, we can control for omitted variable bias and reduce the problem of multi-collinearity, hence improving the accuracy of parameter estimates (Hsiao, 2003). Among its other advantages, pooling data across years causes various estimation issues regarding individual heterogeneity. Evidence in prior literature suggests that random effects or fixed effects estimators are not sufficient to generate consistent estimates in the presence of lagged dependent variables, and do not solve the endogeneity issue with exogenous variable. Therefore, prior studies argue that the appropriate solution is to use first differences of the dependent variable as instruments in a dynamic panel framework (Scheve and Slaughter, 2004; Garin-Munoz, 2006).

Consistency of the Arellano and Bond (1991) estimators requires serially uncorrected errors. All first difference errors in our regressions were tested for second order autocorrelation, which satisfies an important assumption for the consistency of the GMM estimator. Additional instrument validity was based on standard tests of higher order auto-regressions and over identification via the Sargan test (Arellano and Bond, 1991). For most of the cases, one lag instruments are sufficient. Also, the Sargan test from the one step homoskedastic estimator rejects the null hypothesis that over identifying restrictions are valid. We also use Hausman specification test for further checks on the validity of the Arellano and Bond (1991) model to our data and model specification. Our reported estimators are robust due to heteroskedastity consistent asymptotic standard errors which is an option available in the statistical package that we have used. As a robustness check, each model is also estimated using different variations of predetermined and control variables.

7. Details of the results from our analysis:

We have carried out a battery of tests on the data, but we report just the main findings of our analysis in which we have controlled for all exogenous factors plus we have accounted for the endogeneity problems that we highlight necessitate the use of a estimator such as the dynamic panel data model of Arellano and Bond (1991).

The details of these results are provided in tables 1 to 3. Table 1 summarizes the results from several regressions in which all or some of the variables were either included pr excluded, so as to validate the robustness of the impact of the mergers variable on performance. We have used two merger variables: a merger dummy 1 if the local exchange company was taken over once, and a merger dummy 2 in case the local exchange company experienced a consolidation transaction or event for a second time. For example, Pacific Bell and Nevada Bell, part of Pacific Telesis, were initially merged with Southwestern Bell, the local operating companies of SBC. A few years later, SBC acquired the operating companies, and other assets, of Ameritech, and the entire local operating company operations, including that of Pacific Bell and Nevada Bell, were consolidated within SBC. Thus, Pacific Bell and Nevada Bell went through two merger events.

The summary results for the cash flow over assets variable show that if the first merger event leads to a significant decline in firms' ability to generate revenues relative to total assets, perhaps because of an inability to generate synergies, the second merger event provides a boost. The cash flow over assets variable is significant and positive in all of our specifications, suggesting that the acquisition of a large market territory leads to enhanced revenue generation proclivities.

These results, however, have to be tempered with a review of the results for the growth in sales variables. In all of our specifications, the merger variables are insignificant. If, indeed, the firms were pooling complementary assets, such as a sales force to manage a bigger customer base, and achieve synergy, then the impact of the merger variables would be positive and significant. They are not, suggesting that synergies have not been achieved. Thus, relatively greater amounts of additional call volumes have not been achieved. On the other hand, the enhanced revenue generation proclivities can arise due to an ability to raise prices within a larger market that is now controlled.

Table 2 summarizes our results evaluating operating efficiency. Recollect that a negative and significant impact of the merger variables denotes that efficiencies have been attained in the post merger period. We find that as far as management of telecommunications plant is concerned, once we control for all other relevant effects the plant expense ratio is positive and significant, reflecting an increase in relative plant expenses in the post merger period. This is just after the first merger event. Thus, the expectation that mergers will lead to significant operational efficiency gains, are vitiated.

For the plant expense ratio variable, once controls are included the decline in the ratio in the post merger period is significant immediately after the first merger event across all our specifications. For the operator systems expenses ratio, the decline in the ratio occurs after the second merger event and is noted to be significant across almost all of our specifications. For the facility expenses ratio, the decline in the ratio occurs after the first merger event itself and is noted to be significant across all of our specifications. The plant expense ratio and the facility expense ratio are the two key operating performance measures. Their post merger declines are high, and significantly so, across all of our models that we have designed so as to test the robustness of the results to alternative specifications. No significant results are noted for the information transfer expenses ratio, which however does decline, and nor for the central office transmission expenses ratio. Nevertheless, these two

categories of expenditures are of far less consequence than plant expenses and facility expenses.

In table 3 we list the results of the impact of mergers on technological progressiveness of the carriers and their deployment of new technologies. We look at the deployment of broadband, captured as the ratio of total kilometers of fiber to total access lines and the ratio of total fiber kilometers to total cable kilometers, and the digitalization of the network, captured as the ratio of total digital lines to total analog lines. Across the board, either after the first merger event or after the second merger event, there has been a significant decline in these ratios. If the next important espoused reason for the approval of mergers has been that the quality of the US telecommunications will have been upgraded, these expectations have been totally vitiated. Where there has been an occurrence of mergers there has been a relative decline in broadband deployment, and the digitalization of the network.

8. Conclusions and recommendations:

In the last hundred years, the US telecommunications industry has gone through cycles of competition to consolidation of the industry in the hands of just a few companies and then creative destruction as the monopolists have been challenged by new upstarts. In the 21st century the process of consolidation is repeating itself.

The consolidation has taken the form of mega-mergers and as we watch there is one more waiting to happen, that between the new AT&T, formerly SBC, and Bell South, which are two of the largest regional holding companies controlling the communications markets in California, the mid-Western and the Plains states, the Southwestern states and all of the Southern United States. If this merger is approved, the combined company will control the communications market in much of the United States.

What we have witnessed in the last decade is the re-consolidation of the local exchange sector, as the local exchange companies have merged. Pacific Telesis and Ameritech were absorbed into SBC. NYNEX was absorbed into Bell Atlantic which absorbed GTE, renamed itself Verizon and then acquired MCI, and smaller companies such as Continental and Central Telephones were absorbed either into GTE or United Telephones, which itself was then acquired by Sprint.

The current local communications markets in the US are controlled by five companies: Verizon, AT&T, Bell South, Qwest, which acquired US West, and Sprint. Very soon, if the AT&T and Bell South merger goes through, there will be just four companies doing so, a far cry from the dozen plus local exchange company groups that were in existence less than two decades ago.

An espoused reason behind the support of mergers is that efficiencies will be enhanced, the combined companies will have more resources to upgrade the technological infrastructure, that customers will gain and competitors will not be hurt. The hidden agenda behind mergers is to acquire market power. If this, indeed, were to be the case, then consumer welfare would be seriously affected as oligopolies and monopolies were to be formed.

We have evaluated whether telecommunications mergers among the local exchange companies have worked. Using comprehensive data, we have evaluated the impact of all of the mergers of the local exchange companies that took place between 1988 and 2001. We just leave out the mergers of MCI with Verizon and the old AT&T with SBC. Since the fundamental connectivity infrastructure in the US is the local exchange sector, we evaluated the impact of mergers on the most critical component of the US communications sector.

We have started with the expectation that if market power acquisition was, indeed, not the motivation for the mergers we would see no changes in relative cash flows that were generated by revenues. On the other hand, we would observe significant cost declines and significant improvements in measures of technological progressiveness. If market power was the true motivation, then we would observe enhancements in relative cash flows that were generated by revenues reflecting the exercise of market power due possibly to price increases. We would also observe no efficiency gains. Neither would we observe any improvements in measures of technological progressiveness.

Our comprehensive analysis, which is the only empirical evidence on the question that we are aware of, in which we have used several performance measures and stringent statistical procedures, has revealed that mergers have not created the expected synergy effects. Mergers have led to possibly increased market power. What has increased for the firms have been their ability to generate relatively higher revenues. No sales volume growth is noted; hence the revenue increases are due to likely price increases. No cost efficiency gains are noted at all. In fact, the most important measures of operational performance have deteriorated in the post merger period. Under investment of technology, especially broadband, is observed following merger activities. Expectations that mergers will lead to increased investments and up gradation of the communications infrastructure, and for technological progressiveness of the US telecommunications infrastructure, have been vitiated.

We find that the approval of the mergers in the past have clearly led to welfare losses for the American consumer. The approval of the ATT&T and SBC merger will lead to further substantial negative economic consequences for hundreds of millions of American consumers. Approval of the merger is not in the public interest. The local exchange sector has been re-consolidated and re-monopolized a generation after the divestiture of the original AT&T in 1984. Today's lack of productive efficiency and technological progressiveness, particularly with respect to the deployment of broadband and network digitalization, of the merged US companies means that the welfare of the US consumer has been significantly compromised in perpetuity. To ensure that no further compromises are engendered, and overall compromises exacerbated, the AT&T and SBC merger should not be approved by the FCC.

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Table 1: Summary of the Impacts of Telecommunications Mergers on Financial Performance Measures

		Cash Flow over Assets		Growth in Sales	
		Coefficient (SE)	t-statistic	Coefficient (SE)	t-statistic
DPD estimates with the inclusion of all control variables	Merger 1	-0.016 0.009	-1.86*	0.004 0.014	0.250
	Merger 2	0.095 0.023	4.17***	0.114 0.121	0.940
DPD estimates with the inclusion of control variables other than the firm specific ones	Merger 1	-0.018 (0.007)	-2.29**	0.011 (0.02)	0.41
	Merger 2	0.072 (0.02)	3.47***	-0.080 (0.05)	-1.35
DPD estimates with the inclusion of all control variables excluding those for interconnectivity	Merger 1	-0.013 (0.008)	-1.53	0.004 (0.01)	0.27
	Merger 2	0.090 (0.02)	4.14***	0.113 (0.1)	0.97
DPD estimates with the inclusion of all control variables excluding those for regulation	Merger 1	-0.014 (0.008)	-1.69*	0.003 (0.01)	0.22
	Merger 2	0.085 (0.02)	3.44***	0.105 (0.1)	0.99
DPD estimates with the inclusion of all control variables excluding those for interconnectivity and regulation	Merger 1	-0.016 (0.007)	-1.99**	-0.002 (0.01)	-0.15
	Merger 2	0.080 (0.02)	3.18***	0.112 (0.1)	0.97
DPD estimates with the inclusion of firm specific control variables and those for interconnectivity and regulation	Merger 1	-0.019 (0.008)	-2.14**	0.007 (0.01)	0.45
	Merger 2	0.089 (0.02)	3.54***	0.114 (0.1)	0.93

Table 2: Summary of the Impacts of Telecommunications Mergers on Efficiency Measures

		Plant expenses ratio		Operator systems expenses ratio		Facility expenses ratio		Information transfer expenses ratio		Central office transmission expenses ratio	
		Coefficient (SE)	t-stat	Coefficient (SE)	t-stat	Coefficient (SE)	t-stat	Coefficient (SE)	t-stat	Coefficient (SE)	t-stat
DPD estimates with the inclusion of all control variables	Merger 1	0.005 0.001	3.39***	0.064 0.066	0.970	0.005 0.001	3.42***	0.009 0.043	0.210	0.000 0.001	-0.030
	Merger 2	0.001 0.014	0.040	0.480 0.220	2.18**	0.010 0.014	0.690	0.382 0.282	1.360	-0.008 0.008	-0.930
DPD estimates with the inclusion of control variables other than the firm specific ones	Merger 1	0.005 (0.001)	3.29***	0.101 (0.08)	1.23	0.005 (0.001)	3.54***	0.019 (0.04)	0.39	0.000 (0.001)	0.08
	Merger 2	-0.003 (0.01)	-0.14	0.520 (0.3)	1.38	0.007 (0.01)	0.44	0.305 (0.3)	0.97	-0.011 (0.007)	-1.46
DPD estimates with the inclusion of all control variables excluding those for interconnectivity	Merger 1	0.005 (0.001)	3.46***	0.046 (0.05)	0.88	0.005 (0.001)	3.41***	0.013 (0.04)	0.28	0.001 (0.0008)	0.06
	Merger 2	0.000 (0.013)	-0.001	0.556 (0.2)	2.17**	0.009 (0.01)	0.71	0.387 (0.2)	1.39	-0.008 (0.008)	-0.94
DPD estimates with the inclusion of all control variables excluding those for regulation	Merger 1	0.004 (0.001)	3.03***	0.037 (0.05)	0.73	0.005 (0.001)	3.43***	0.009 (0.04)	0.21	0.000 (0.0008)	-0.09
	Merger 2	-0.005 (0.01)	-0.32	0.560 (0.2)	2.13**	0.004 (0.01)	0.28	0.230 (0.3)	0.64	-0.011 (0.009)	-1.18
DPD estimates with the inclusion of all control variables excluding those for interconnectivity and regulation	Merger 1	0.004 (0.001)	3.14***	0.041 (0.05)	0.76	0.005 (0.001)	3.42***	0.002 (0.04)	0.04	0.000 (0.0009)	-0.09
	Merger 2	-0.005 (0.01)	-0.34	0.558 (0.2)	2.09**	0.005 (0.01)	0.31	0.254 (0.3)	0.70	-0.011 (0.009)	-1.20
DPD estimates with the inclusion of firm specific control variables and those for interconnectivity and regulation	Merger 1	0.004 (0.001)	2.70***	0.076 (0.06)	1.16	0.004 (0.001)	2.75***	-0.015 (0.04)	-0.34	0.000 (0.0008)	0.58
	Merger 2	-0.001 (0.01)	-0.06	0.533 (0.2)	2.25**	0.009 (0.01)	0.63	0.364 (0.2)	1.30	-0.007 (0.008)	-0.84

Table 3: Summary of the Impacts of Telecommunications Mergers on Technological Progressiveness

		Cable to Lines Ratio		Fiber to Cable Ratio		Digital to Analog Ratio	
		Coefficient (SE)	t-statistic	Coefficient (SE)	t-statistic	Coefficient (SE)	t-statistic
DPD estimates with the inclusion of all control variables	Merger 1	-0.001 0.001	-0.980	-0.289 0.107	-2.7***	0.001 0.003	0.470
	Merger 2	-0.021 0.010	-2.04**	-1.401 0.720	-1.95*	-0.031 0.013	-2.39**
DPD estimates with the inclusion of control variables other than the firm specific ones	Merger 1	-0.001 (0.0007)	-0.98	-0.229 (0.08)	-2.85***	-0.001 (0.002)	-0.56
	Merger 2	-0.020 (0.01)	-1.77*	0.822 (0.5)	-1.53*	-0.027 (0.009)	-2.98***
DPD estimates with the inclusion of all control variables excluding those for interconnectivity	Merger 1	-0.001 (0.0008)	-0.79	-0.292 (0.1)	-2.65***	0.001 (0.002)	0.35
	Merger 2	-0.023 (0.01)	-2.19**	-1.434 (0.7)	-1.92**	-0.031 (0.01)	-2.44**
DPD estimates with the inclusion of all control variables excluding those for regulation	Merger 1	-0.001 (0.0008)	-0.74	-0.282 (0.1)	-2.71***	0.001 (0.002)	0.29
	Merger 2	-0.022 (0.01)	-2.01**	-1.142 (0.6)	-1.81*	-0.033 (0.01)	-2.16**
DPD estimates with the inclusion of all control variables excluding those for interconnectivity and regulation	Merger 1	-0.001 (0.0009)	-0.59	-0.273 (0.1)	-2.54**	0.000 (0.002)	-0.01
	Merger 2	-0.023 (0.01)	-2.01**	-1.135 (0.6)	-1.81*	-0.033 (0.01)	-2.18**
DPD estimates with the inclusion of firm specific control variables and those for interconnectivity and regulation	Merger 1	0.000 (0.0008)	-0.58	-0.227 (0.09)	-2.37**	0.000 (0.002)	-0.16
	Merger 2	-0.021 (0.01)	-2.02**	-1.334 (0.7)	-1.87*	-0.036 (0.01)	-2.56***