Arun Balakrishnan, Jin Mok,
and Emerald Pan

Telecommunications Sector Report

Industry

The Telecommunications Sector contains two sub sectors, wireline and wireless. The wireline market is further divided into long distance and telephone (local). Over the past year, the Telecom sector was extremely volatile. During the first half of 2001, the industry declined with the economy as a whole. The "New Economy" effect that we had seen for several years finally burst, and most companies with little or no profit but high growth potential felt the effects through rapidly decreasing stock prices and valuations. The wireless market was particularly affected by this. The wireless market is in a high growth stage, in which high capital costs of increasing customers and scope lead to operating losses. The events of September 11, 2001 had negative effects for the economy as a whole, but the wireless market was actually view favorably as high profile conversations were made possible because of wireless technology. Investors began to expect great gains in the market, and saw tremendous growth opportunities for the industry during the end of year holidays. The industry fell short of these expectations, and recent fourth quarter reports have sent investors running away from negative profits. The wireline long distance companies will continue to be challenged due to customers opting for wireless to handle their long distance calls. In addition, increased competition from the Regional Bell Operating Companies will hamper the recovery in the long distance market. The wireline local companies' revenue have declined in the past year but they have been profitable. With the capability to offer long distance and bundling a line of services, the margins should improve as compared to the long distance companies.

Investment Conclusions

Long Distance: This market should not improve as we see more and more consumers using the free long distance option with wireless phones. We recommend an underweight position in this market.

Telephone: The local wireline market with its size and stable earnings should provide a safe haven for jittery investors. With the option of providing long distance as well as bundling of services, margins should improve. We recommend an overweight position for the local wireline market.

Wireless: While in the short term we should expect investors to continue to be skeptical, the wireless market should continue to mature and become profitable as management sets profitability as a high priority. In the long term, this market should see high growth in stock prices. We believe that the Wright Fund should be neutral in the wireless market at the present time, and become overweight as the economy improves.

Arun Balakrishnan, Jin Mok,
and Emerald Pan

Wireline Market

Background:
Prior to 1984, the telecom market was a monopoly owned by AT&T. An antitrust suit by the US Department of Justice broke up AT&T ultimately into seven new regional holding companies. These seven regional holding companies or Baby Bells are now a part of four companies: Verizon (Bell Atlantic, NYNEX), BellSouth, SBC (American Information Technologies, Pacific Telesis Group, Southwestern Bell), and Qwest (US West). These four companies are also known as the Regional Bell Operating Companies (RBOCs). AT&T retained the long distance business.

There are various types of wireline carriers, markets, and services in the United States. Local exchange carriers are local or regional telephone companies that own and operate lines connecting customer locations and central office switches. There are two types: incumbent local exchange carriers (ILEC) who are the existing players and competitive local exchange carriers (CLEC) who are newcomers to the market.

Long distance carriers provide long distance service between local exchange carriers and any of the 150 plus local access and transport areas. Today, approximately 700 companies offer long distance services in the United States, although a select few dominate.

Overview:
Providers of long distance services in United States have been exposed for years to heavy competition, which has relentlessly driven down prices. The market has become even more competitive as the RBOCs, the long time local service provider, continually gain approval to add long distance service to their portfolios. One rate nationwide pricing plans introduced by the wireless services in the late 90's have made wireless services far more convenient and affordable. Over time, wireless networks will garner an increasing share of the long distance minutes, a trend already seen in European markets. In addition, competition from newer communications media such as email, instant messaging, and chat room has affected the overall volume of long distance calls. Now, the pricing for long distance wireline voice traffic has become commoditized with razor thin margins.

In response to this competition, the market leaders – AT&T, WorldCom, and Sprint – all announced strategic changes that deemphasized the long distance and focused on more enticing growth areas such as data and wireless.

AT&T divided into four new companies – AT&T Wireless, AT&T Broadband, AT&T Business Services, and AT&T Consumer Services. Since then, AT&T Wireless went public (symbol AWE) and AT&T Broadband is close to being sold to Comcast. WorldCom split itself into two companies – WorldCom and MCI. WorldCom shares will track the performance of the higher margin data, Internet, and international business. MCI shares will track the more mature long distance voice business. Sprint has also divided into two companies. Sprint FON Group (symbol FON) will track the long distance and some local service. Sprint PCS (PCS) will track its wireless and data operations.

Projections:
The S&P Telecom Long Distance Index increased 8.2% in year 2001 compared to the dismal return of 69.3% decline in year 2000. During the same year 2001, S&P 1500 declined 11.8%. Pricing pressures from product substitutions (from wireless, email, and messaging services) and increased competition continue to plague long distance voice services. Stock prices seem to have somewhat stabilized. Perhaps it is because of the speculations that surfaced late last year that the reduced prices of the major long distance carriers would prompt stable companies, particularly the RBOCs, to submit buyout offers. Though this hasn't happened yet, it's still an option in the next few years. Another is the growth prospects for broadband, internet, and data that look relatively attractive. The large companies are also cutting costs and being selective in their corporate spending. Even though the valuations for the long distance majors are modest, our investment outlook for the long distance telecommunications industry is an underweight position.

The S&P Telephone Index fell 18.9% in year 2001 compared to a decline of 12.9% in year 2000. Although some of the long distance carriers have tried to break into the local markets, these attempts have largely been a failure thus far. The difficulties experienced by the CLECs have helped local exchange carriers (both ILECs and RBOCs) maintain their market shares. The ILECs have generally been able to support the investment demands of higher growth subsidiaries and successfully bundle services for existing clients. This should ultimately translate into improved margin performance relative to the integrated telecom competitors. Having said this, we recommend an overweight position for the local telephone group.

Prospective Major Companies:
SBC Communications Inc. (symbol SBC) provides a comprehensive offering of communications services and products – wireline, wireless telecommunications services and equipment, directory advertising, and cable television services. In the recent quarter ended 12/31/2001, revenues were 11.903B and net income was 1.245B.

BellSouth Corporation (symbol BLS) provides voice and data services to more than 37 million customers in 20 countries. The array of services includes wireline for voice, advertising, data, cable and digital TV, internet access, and wireless communications. In recent quarter ended 12/31/2001, revenues were 6.213B and net income was 0.784B.

Wireless Market

Overview:
The Wireless market is entering a period of widespread consumer acceptance. The total U.S. customer base for wireless carriers grew by 27% to 101.2 million in the year 2000, which brings the total U.S. wireless penetration to 39% of the population. The growth of

the industry is expected to continue in the short term, and slowly decrease as wireless phone penetration approaches saturation levels—which can be estimated to be approximately 70% of the total population.

The wireless services business is already approaching the point of being a mature industry. The industry is restructuring through consolidation and alliances to expand service territory, increase brand awareness, and share the cost of technology upgrades. National flat-rate pricing plans are being offered by six carriers, and the service is becoming more of a commodity. Marketing programs like branding campaigns and more focused consumer marketing are being implemented to increase the number of subscribers.

Investors are evaluating wireless carriers much more carefully. The wireless business has been growing at a furious rate in the past few years, so negative income has been the norm as companies are incurring the costs of expansion. As the market matures, positive cash flows and income will be expected by investors. Because of this, the S&P index for cellular/wireless companies decreased by 52.5% in 2000, and dropped another 24.7% through September 28, 2001 (the S&P 500 dropped 10.1% and 21.2% in the same periods).

After the September 11 events, the wireless industry performed well as America saw the usefulness of cell phones. Investors were expecting continued increases in subscribers during the fourth quarter of 2001, as the fourth quarter is usually a time of higher subscription additions due to the holidays. However, the wireless industry has indicated that subscription increases will fall short of expectations for the fourth quarter. In the past couple of weeks, the wireless industry has taken a hit from investors who invested amid the optimist of the industry.

Technology

The increase in technology should improve the profitability of wireless companies. The U.S. wireless industry is in the process of moving it infrastructure to third generation (3G) wireless technology. The 3G technology uses spectrum capacity much more efficiently, dramatically reducing variable unit costs. There will be significant costs to switch to the 3G infrastructure, however. The 3G technology will have 2 standards: WCDMA and CDMA2000. These standards are incompatible with each other. WCDMA is more globally accepted and it offers greater traffic efficiency, but requires a wider spectrum path. CDMA2000 is a strong option for existing CDMA carriers. The cost of switching from CDMA to CDMA2000 is expected to be much smaller that the switching costs of companies moving to WCDMA, and the switch occur much more quickly. Many companies are moving to an intermediate technology to decrease the present cost of the switch to 3G.

The introduction of advanced wireless applications will lead to increased revenues for carriers. The cost of offering consumers different options should decrease as the industry matures. Digital technology is dominating Analog technology in the wireless market. Digital technology offers numerous advantages. Digital signals have greater clarity, and

Arun Balakrishnan, Jin Mok,
and Emerald Pan

is less likely to fade, have static, or have noise interference. Digital service enables many users to use channels at the same time, which leads to increase capacity.

Sprint PCS Overview

The Sprint PCS Group is a Sprint Corporation unit with its own tracking stock. Sprint PCS provides nationwide service through operating its own digital network in major United States metropolitan areas; affiliating with other companies, mainly in and around smaller United States metropolitan areas; roaming on other providers' analog cellular networks using dual-band / dual-mode handsets; and roaming on other providers' digital PCS networks that use the same technology that Sprint uses: code division multiple access (CDMA).

Sprint PCS provides wholesale PCS services to independent regional affiliates such as Airgate PCS and Alamosa PCS that extend the reach of the Sprint PCS brand and add to the group's subscriber count. The Sprint PCS Wireless Web service offers wireless Internet access and content through partners such as AOL Time Warner, EarthLink, and eBay.

Sprint PCS is the fourth largest Wireless Carrier in terms of number of subscribers, with Verizon, Cingular and AT&T leading the way. Sprint PCS is adding new customers at a faster rate than any of its competitors.

Sprint PCS Strategy & Segment Information

Sprint PCS is the fourth largest U.S. wireless provider, with 11.2% of the market. It has the highest quarterly net additions with 20.3% of new subscribers. Its churn percentage (the amount of its customers that it loses, either because the consumer discontinuous service on purpose or because the consumer doesn't keep up with payments) is the lowest of its major competitors.

Sprint PCS uses an all digital network, and uses CDMA technology. As the third generation of infrastructure come into effect, Sprint will migrate to the CDMA2000 technology. This gives it a great advantage over those carriers who are positioned to switch to the WCDMA technology, as the CDMA2000 platform will be far less expensive to transfer to.

Sprint PCS has excellent brand recognition among consumers, and markets itself very successfully in television commercials, radio commercials, and print advertisements. This has led to its leading position in quarterly net additions. Sprint has recently initiated a Clear Pay plan to take advantage of customers who are averse to long term contracts.

Sprint PCS Investment Risks

Sprint PCS has a very high beta (2.54), which is expected for a technology stock. This has resulted in a large decrease in stock price coinciding with the downturn in the economy. As we expect the economy to increase in the coming year, we should expect Sprint PCS to increase as well.

Sprint PCS is still a rapidly growing company, and as such has high expansion costs. To date, Sprint PCS still has a negative operating income. Investors are beginning to be much more critical of companies that promise large profits in future years. The wireless industry is starting to be viewed as a more mature industry, and profitability is starting to be expected.

Sprint PCS reported that it would fall short of expectations for the fourth quarter of 2001, for earnings and for new subscriptions. Sprint PCS fell more this week as their earnings were announced. In the short term, pressure is on the wireless companies to show continued high growth in subscriptions and positive profitability.

Verizon Overview and Segment Information

Verizon, formed by the merger of Bell Atlantic and GTE, is one of the world's leading provider of high-growth communication services. The Company has four reportable segments as strategic business units which are Domestic wireline communication services, Domestic wireless services, International wireline and wireless services and Information services segments.

The Company's Domestic Telecom segment includes 16 operating telephone subsidiaries which provided 68% of 2000 total operating revenue. This segment also includes the data solutions and systems integration, billing and collection, and Internet access services, as well as CPE sales and long distance services. In the last year, EBITDA was $4,531M (43% Margin) versus $4,634M (42.4% Margin). Due to the cost control and merger savings, the operations and support costs were down $292M (4.6%). The last year job cut plus the use of contractors produced a total of 29,243 headcount reduction. Depreciation and amortization was up $94M (4.1%), to 2,372M. This increased cost was caused by the growth in plant. The long distance revenue was up nearly $100M due to strength in interLATA service. Verizon enlisted approximately 2.3 M long distance subscribers in New York, 600,000 in Massachusetts, and 250,000 in Pennsylvania. The residential market penetration for those states is 31%, 23% and 6%, respectively. The operating margin was decreased from 21.5% to 20.5%. The company achieved $1.4B in merger-related expense savings in last year, surpassing the goal of $800M.

Domestic Wireless segment primarily represents the operations of Verizon Wireless. In the third quarter 2000, the total subscribers rose 9.8% to 29.4M. Net additions were 715K for the period and the penetration of POPs was 13.3% compared with the 12.5% last year. But the monthly churn rate was up 0.5% from the last quarter's 2.2%. The service revenue increased from $301M (8.1%) to 4,031M.

Arun Balakrishnan, Jin Mok,
and Emerald Pan

International wireline and wireless services showed a strong growth from the last quarter result. Wireline increased $55M (25.6%) and wireless services grew $20M (6.2%). EBITDA advanced to $603M (38.9%) compared with the last year's $573M.

Information Services revenue increased to $1,428M compared with the last year's 1,339M. EBITDA grew to $821M (57.5% Margin) versus $695M (51.9% Margin).

Verizon Strategy

Verizon Communications, formed when Bell Atlantic bought GTE in 2000, is the largest local company and the #2 telecommunication carrier in the US (behind AT&T). Verizon felt severe effects from the terrorist attack on lower Manhattan, where it operates 500,000 phone lines and 6 million dedicated circuits. Verizon also provides phone services to the Pentagon and suffered damage in that attack as well.

Verizon Wireless, the company's joint venture with Vodafone, is the #1 wireless telecommunication company in the US, serving about 28.7 million customers. Outside the US, Verizon affiliates operate 13 million access lines and serve 36 million wireless customers in 40 countries in the Americas, Europe, and the Asia/Pacific region. The company is also one of the world's leading publisher of directory information. Verizon also plans to build a multinational network to carry data, Internet, and voice traffic.

In last year, the Company teamed up with FLAG Telecom to develop a European backbone network. Verizon was also got approved from FCC to offer long-distance services in Massachusetts, Connecticut, and Pennsylvania.

Verizon Investment Risks

Since 2000, the weak economy, severe competition and technology displacement dampened the revenue growth industry wide. For the company's mainstream wireline segment, the Company needs to aggressively cut costs and create merge synergies. The Wireless part reported disappointing operation results. The weak subscriber adds, higher than expected churn rate and a lower revenue per unit caused a flat operating margin and lower than expected growth rate. With the economic recovery, strong DSL and long distance growth, the Company should have a comparatively robust rebound starting from the third quarter.

Arun Balakrishnan, Jin Mok,
and Emerald Pan

References:

1. Yahoo Finance Website, Sprint PCS - Quote and Profile, February 5, 2002
2. Standard and Poors Industry Reports - Telecom: Wireless, November 1, 2001
3. Standard and Poors Industry Reports - Telecom: Wireline, May 31, 2001
4. Bear, Stearns & Co. Inc. Equity Research - Sprint PCS Buy, January 9, 2002
5. Credit Lyonnais Securities (USA) Inc. - Company Update Sprint PCS, January 8, 2002
6. Bloomberg Terminal
7. Sprint Annual Report 2000
8. S&P Monthly Investment Review – Telecom: Wireless, January 2002.
9. S&P Monthly Investment Review – Telecom: Long Distance, January 2002.
10. S&P Monthly Investment Review – Telecom: Telephone, January 2002.
11. Yahoo Finance Website, BLS, SBC and VZ- Profile, February 5, 2002.
12. Value Line Investment Survey – Telecom Services Industry, January 2002
13. Lehman Brothers – Wireline Services: Industry Capex Cuts, September 4, 2002
14. Salomon Smith Barney – Industry Overview: 2002 Another Tough Year in Wireless Equipment, January 22, 2002
15. Bloomberg Terminal, Verizon, Hoover Review
16. Bear Stearn – Verizon Review Buy
17. Bear Stearn – Wireless Sector Report, Sensitivity Analysis