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SATELLITE RADIO (A): XM VERSUS SIRIUS

THE BIRTH OF A MARKET

More than anyone else, Canadian-born David Margolese was the key player in the creation of the satellite radio business. In 1978, at the age of 20, Margolese dropped out of college to create a Vancouver-based paging company. He soon turned his attention to the nascent cellular telephone business. When he tried to obtain funding to establish a cellular telephone business in Canada, he was initially rebuffed by venture capitalists who told him that the industry would never amount to much. At best, they said, cellular phones would only be used by a few CEOs and diplomats. Undeterred, Margolese persisted in his fundraising efforts. In 1980, when cellular was still little more than a dream, he convinced Ameritech to invest in his company, Cantel.

Using these funds he acquired licenses to cellular phone rights in Canada. Along the way, he joined forces with others, including Ted Rodgers of Rodgers Communications, to create what became Rogers Wireless, which by 2001 was Canada's largest cellular telephone company. In the late 1980s, while he was still just 31, Margolese sold his stake for $2 billion in cash and set himself up as a venture capitalist.

It was in that capacity that Margolese met Robert Briskman, a former NASA engineer and the operations chief at Geostar, a satellite messaging company that went bankrupt in 1991. Briskman had designed the core technology for satellite radio, called the unified S-band. He and other former Geostar employees had established a company named Satellite Radio CD to commercialize the technology, but they were without funding and needed to overcome numerous regulatory hurdles.

Initially, Margolese invested just $1 million in the business (its name was changed to CD Radio), but he soon decided that this was the best business he had ever seen. What attracted Margolese was the fact that radio programs beamed from satellite using the unified S-band technology and digital signals could deliver nationwide coverage and CD-quality sound. Established radio was local, the quality of the analog signal was often poor, and it faded quickly outside of its area. Moreover, the local markets served by established radio businesses were too small to support niche programming such as stations devoted to jazz, classical music, or reggae, but this might not be the case for a radio company that could serve a nationwide market.

However, numerous hurdles stood in the way of establishing a viable satellite radio business. It would be very expensive to put satellites into space, easily several hundred million dollars. The Federal Communication Commission (FCC) had to be persuaded to allocate radio spectrum to satellite radio. Receiving the radio signal from space would require special

radios, and how could potential customer be persuaded to purchase these when they already had radios in their cars and at home? Moreover, it would be difficult to get advertisers to support a service that initially had no listeners—it was a classic chicken-and-egg problem: without the advertisers, how would the service generate revenues?

By 1994, Margolese was estimating that satellite radio would be operational by 1997 and cost some $500 million, but CD Radio faced substantial roadblocks. Despite lobbying from Margolese, the FCC had not yet decided if it would license radio spectrum for satellite radio. Fierce opposition from the National Association of Broadcasters (NAB), which represented existing radio stations, was slowing things down. Among other things, NAB filings with the FCC argued that satellite radio would lead to the demise of local radio service, hundreds of which would close, to the detriment of local communities that relied on AM and FM radio for important local news.

It wasn't until 1997 that the FCC finally auctioned off the spectrum for satellite radio. There were four bidders for the spectrum. The FCC decided to license two providers, creating a duopoly. CD Radio and XM Radio won the auction, paying $83.3 million and $89.8 million, respectively. Established in 1992, XM Radio was a development-stage company backed by American Mobile Satellite Corp, which was owned by Hughes Electronics (then a subsidiary of General Motors) and McCaw Cellular. With spectrum in hand, CD Radio (which, in 1999, changed its name to Sirius) and XM Radio now had to deliver on their promise to establish a nationwide satellite radio service. If they did not, the FCC would not renew the licenses when they came up for review in 2007. If not renewed, the licenses would expire on February 14, 2010.

THE RADIO INDUSTRY

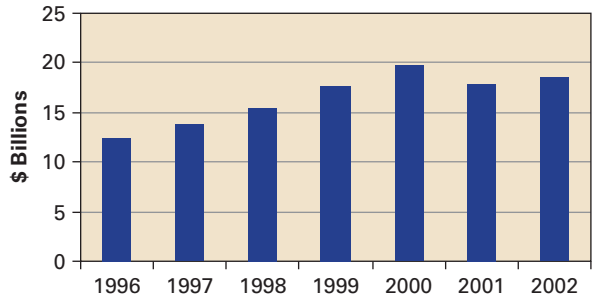
The radio industry dates back to 1921, when the first radio station was licensed. Radio involves the transmission of sound waves, which are sent from amplitude-modulated (AM) or frequency-modulated (FM) stations. AM radio operates on relatively low frequencies and was the earliest broadcast service. FM radio, which was first patented in 1933, operates at much higher frequencies but was very slow to catch on because of heavy investment by stations and listeners in AM equipment.

Radios are ubiquitous; they can be found in 99 out of 100 American households. The average number of radios per household is 5.6, including radios in cars (there are approximately 150 million radios in vehicles). Some 95.4% of radio owners listen to the radio during any given week. The typical adult listener tunes in for 3 hours and 12 minutes every weekday, and 5 hours 30 minutes on weekends. On a typical weekday, the average person of 12 years or older spends 41.7% of radio listening time in a car or truck, 37.3% while at home, and 21% at work or other places. On weekends, car listening jumps to 47.3%, home listening to 40.5%, and listening elsewhere falls to 12.1%. On average, some 13 to 17% of airtime every hour is devoted to advertising on FM/AM radio stations.[1]

Encouraged by broadcast deregulation, the number of radio stations in the United States increased from 10,500 in 1985 to roughly 13,000 by the end of 2001.[2] In 1996, the Telecommunications Act removed limits on the number of radio stations that a company could own in a given market (a "market" is generally defined as discrete geographical area such as a city or county). Prior to 1996, a company could only own two FM and two AM stations in any one market, no matter how populated that market. Under the new regulations, a company may own or operate up to eight stations in any one market, with up to five in one service (AM or FM). These new rules have facilitated consolidation in the industry and led to the growth of large radio broadcasting companies that own many stations. The leader among these, Clear Channel Communications, owned 1,182 U.S. radio stations at the end of 2003, reached an audience of 180 million, and generated $3.70 billion in revenues from radio advertising.[3] The next largest radio broadcasting company in terms of revenues, Infinity Broadcasting, owned 180 radio stations, which were concentrated in the most populated markets in the United States. By 2002, the 10 largest broadcasters owned about 17% of all U.S. stations and accounted for over 40% of radio industry advertising revenues (the largest broadcasters are focused on the largest markets where advertising revenues are greater). Most analysts believe that the industry will continue to consolidate over the next few years.

Due to the limited range of their signal, radio stations focus on the market in which they are located.

Figure 1 Radio Advertising Spending ($billion)



Source: Standard & Poor's Industry Survey, Broadcasting and Cable Industry, July 2002.

Radio stations earn their revenues from advertising. Advertising rates are a function of a station's ability to attract an audience that has certain demographic characteristics. Stations offer programs of a specific format in order to attract the demographic that advertisers are targeting. Popular formats include news/talk radio, rock, oldies, sports, country, and jazz. The ability of radio to offer different programs that target different demographics is a big selling point, attracting advertisers pursuing narrowly defined audiences. Also important are the number of other stations and advertising media competing in that market. Advertising rates are normally highest during morning and evening drive time hours.

In 2002, advertising revenues for radio stations was $18.6 billion, an increase from $12.41 billion in 1996 (see Figure 1). Advertising revenues dropped by almost $2 billion in 2001 compared to 2000 due to a week national economy and the impact of September 11, 2001. The cost structure of radio broadcasters is largely fixed, making the profitability of radio stations sensitive to the overall level of advertising revenues.

THE BUSINESS PLAN FOR SATELLITE RADIO

The Business Case

The business case for Sirius and XM was based on the argument that the number of radio stations in local markets is limited, most of these stations focus on the same five formats, and the geographic range of service is also limited with the signal fading outside of the market area. According to market data, over 48% of all commercial radio stations use one of only three general programming formats—country, news/talk/sports, and adult contemporary, and over 71% of all commercial radio stations use one of only five general formats—the same three, plus oldies and religion.[4] The small number of available programming choices means that artists representing other niche music formats are likely to receive little or no airtime in many markets. Radio stations prefer featuring artists they believe appeal to the broadest market. Meanwhile, according to the Recording Industry Association of America, recorded music sales of niche music formats such as classical, jazz, movie and Broadway soundtracks, religious programming, new age, children's programming, and others comprised up to 27% of total recorded music sales in 2001.

Both Sirius and XM planned to offer around 100 channels. Sirius planned to keep 50 channels of music commercial free, while selling advertising spots on the remaining news, sports, and information channels. XM planned to have 15 to 20 channels commercial free, while limiting advertising sports to just 7 minutes an hour on other channels. The channels would focus on a wide range of different music formats and news/information/talk formats. For example, XM planned to offer music channels focusing on each decade from the 1940s to the 1990s, plus contemporary music channels, several different country formats (e.g., bluegrass, Nashville), Christian rock channels, numerous news formats, information formats, and so on. Both Sirius and XM also planned to enter into agreements with established broadcasters to offer satellite radio formats of their services. These formats included MTV, VH1, CNN, the BBC, ESPN, Court TV, C-Span, and Playboy. XM also partnered with Clear Channel Communications, the largest owner of FM and AM stations in the nation, to offer Clear Channel program formats, such as the KISS pop music station, over XM Satellite radio.

To generate revenues, in addition to advertising fees both Sirius and XM decided to charge a subscription-based fee for their services that would run about $10 to $12 per month. When it was pointed out that existing radio is offered for free to consumers, executives at Sirius and XM noted that the same is true for traditional broadcast TV, but nevertheless consumers have been more than willing to pay a monthly subscription

fee for cable TV service and satellite TV service. Penetration data relating to cable, satellite television, and premium movie channels suggest that consumers are willing to pay for services that expand programming choice or enhance quality. There were more than 22.9 million digital cable subscribers and 22.3 million satellite television subscribers in early 2004. As of 2004, some 69% of TV households subscribed to basic cable television, and 20% of TV households subscribed to satellite television.[5]

Infrastructure

Although the technology used by Sirius and XM Radio differs in important ways, both companies followed the same basic business plan. Sirius and XM decided to place satellites in orbit to serve the United States. Sirius planned to put three satellites in elliptical orbits 23,000 miles above the earth, while XM planned to put a pair of more powerful satellites in geostationary orbits at 22,300 miles. The satellites were expected to have a useful life of up to 15 years. Both Sirius and XM planned to keep a spare satellite in storage that could be launched quickly in the event of failure of one of their satellites. If an orbiting satellite were to fail, it would take approximately 6 months to get a replacement into space. Service would be partially interrupted during this time. Initial plans called for Sirius to launch its satellites in 1999 and XM in 2000, with service starting soon thereafter.

The satellites broadcast a digital signal that can be converted into CD-quality sound by radios fitted with the appropriate chip set and receivers that decode, decompress, and output digital signals from a satellite. The S-band signal used by both companies can be picked up by moving vehicles and will not be "weathered out" by dense cloud cover. The radios were expected to cost between $200 and $400. The digital signal cannot be picked up by a standard radio, requiring customers to invest in new equipment.

At least initially, a radio with a Sirius receiver would not pick up XM Radio, and visa a versa. On February 16, 2000, XM and Sirius signed an agreement to develop a unified standard for satellite radios enabling consumers to purchase one radio capable of receiving both Sirius and XM services. The technology relating to this unified standard was jointly developed and funded by the two companies, who share ownership of it. The unified standard was mandated by the FCC, which required interoperability with both licensed satellite radio systems. Radios based on the unified standard became available late in 2004.

To offer truly seamless nationwide coverage, satellites alone would not be enough. To receive a satellite signal, a clear line of sight is needed. In tunnels, buildings, and the urban canyons of American cities a clear line of sight is not available. To solve this problem, both companies had plans to build a nationwide network of terrestrial repeaters. Sirius initially planned to put 105 repeaters in 42 cities, and XM some 1,700 repeaters in about 70 cities. Sirius could deploy fewer repeaters because the orbits of its satellites allowed for a better coverage of the United States—but it had to put three satellites in space, not two, placing them in figure-eight orbits that have two of the three satellites high in the sky over North America at any time during the day. In contrast, XM Radio's two satellites are in geostationary orbits. Consequently, the chip sets required to pick up Sirius signals are more expensive than those for XM Radio.

In addition to satellites and repeaters, the third infrastructure element required to offer the service is recording studios. XM established three recording studios, one in Washington D.C., one in New York City, and one in Nashville. Taken together, the three studios compromise an all-digital radio complex that is one of the largest in the world, with over 80 soundproof studios of different configurations. Sirius built a single studio complex in New York City.

By mid-2000, Sirius was expecting to spend $1.2 billion and XM Radio $1.1 billion to develop this infrastructure. These estimates had increased considerably from the initial estimates made in the mid-1990s, which were around $500 million. Given the infrastructure, operational, and advertising costs, the companies estimated that they each needed 2 to 3 million subscribers to make a profit. In 2000, forecasts by market research agencies and securities analysts suggested that, in total, satellite radio could have as many as 15 million subscribers by 2006, 36 million by 2010, and around 50 million by 2014.[6]

Distribution

Both Sirius and XM believed that installation in cars and trucks was likely to drive early growth for satellite radio. In the early 2000s, 17 to 18 million new cars and

light trucks were sold in the United States each year. Some 30 million car radios were sold, either installed in new cars or in the aftermarket. In total there were over 210 million vehicles on American roads. Both companies made deals with major automobile manufacturers to install satellite radios in new cars as optional—and ultimately standard—equipment. Plans called for satellite radio to be offered as an option on certain models, with the offering to be increased to more models over time. The price of the radio is folded into the price of the car, with the customer signing up for service at the time of purchase. XM has an exclusive deal with General Motors and Honda, and Sirius with Ford and Daimler Chrysler. Both companies have now entered into an agreement with the FCC under which they pledge to refrain from making further exclusive deals.

The exclusive deals with automobile companies do not come cheap. As part of its arrangement with Daimler Chrysler, Sirius reimburses the automaker for some advertising expenses and hardware costs, and has issued to DaimlerChrysler a warrant to purchase 4,000,000 shares of Sirius common stock at an exercise price of $3.00 per share. The deal with Ford was very similar. The deal between Sirius and Daimler Chrysler expires in October 2007, while the Ford deal expires May 2007.

The agreement between XM and General Motors requires XM to guarantee annual, fixed payment obligations to GM. However, the agreement is subject to renegotiation if General Motors does not achieve and maintain specified installation levels, starting with 1,240,000 by November 2005 and installations of 600,000 per year thereafter. The GM agreement expires September 2013. For its part, Honda has committed to shipping 400,000 cars with XM Radios in 2005.

The companies also lined up manufacturers of aftermarket car receivers and signed retail arrangements with the Best Buy and Circuit City chains to distribute them.

Capital Requirements and Investors

Financing these two ventures was not trivial. XM Radio raised some $2.6 billion in equity and debt proceeds through January 2004 from investors and strategic partners to fund its infrastructure build out and operations. Strategic investors in XM Radio included General Motors, Hughes Electronics/DIRECTV, Clear Channel Communications, American Honda, and Hearst Communications. Financial investors in XM included Columbia Capital, Madison Dearborn Partners, AEA Investors, BayStar Capital, and Eastbourne Capital. XM Radio went public in late 1999. Honda and General Motors are major investors in XM Radio, with stakes of 13% and 8.6%, respectively, in late 2004.[7] Similarly, Sirius, which went public in 1995, had raised around $2.5 billion by 2004.

Much of the financing went into building out the infrastructure. At the end of 2003, XM Radio reported that it had spent $470 million to put its two satellites in orbit and purchase a spare satellite, $267 million to set up a system of ground repeaters covering 60 cities, and $130 million on satellite control facilities and studios. Sirius is believed to have spent similar amounts.

Competition

Satellite radio faces competition from three main sources. Traditional AM/FM radio stations are obvious competitors. The big advantage of AM/FM radio is local content such as news, sports, and weather, which listeners do want. Although AM/FM radio is predominantly local, the emergence of consolidators such as Clear Channel Communications is beginning to change this. Clear Channel has made an effort to realize scale economies by developing a nationwide branded format for radio shows, most notably its pop format that goes under the KISS brand. KISS offers standard programming developed in a national studio. Local content such as news, weather, sports, and some dialog is spliced into KISS programming to make it seems as if the broadcast is local.[8] There are also signs that traditional AM/FM radio will ultimately move toward digital broadcasting, although doing so will require that consumers purchase radios capable of receiving a digital signal.

Internet radio is a second potential competitor. A number of FM and AM radio stations are now broadcasting digital signals over the Internet that can be accessed anywhere in the world for users with the appropriate equipment (a computer, an Internet connection, and a media player).

A third competitor comes in the form of satellite TV and cable TV systems. Both satellite and cable TV providers offering digital radio services as part of a

package of digital services, with the radio being bundled with TV service, typically at no additional cost to the consumer.

LAUNCHING THE SERVICES

Initially, Sirius was thought to have the lead over XM Radio, but this changed when technical problems with their chip sets delayed the launch of Sirius' service for 2 years (the receivers, which were built by Lucent, did a poor job of picking up the digital signal and had to be redesigned).

XM Radio had delays due to problems with the Boeing rockets that were to launch its satellites, but was able to launch its two satellites—named "Rock" and "Roll"—in early 2001, more than a year behind its initial schedule. XM started offering national service in November 2001 for a monthly fee of $9.95. XM Radio's launch was supported by an advertising campaign that cost in excess of $100 million.

Beset by technical problems, Sirius did not launch its final satellite until early 2002, and did not start offering service until July 2002. Sirius charged $12.95 a month, justifying its price premium over XM by the fact that all of Sirius' 60 music channels run without commercials. XM has limited commercials of about 2 minutes per hour on 35 of its 70 music channels (see Table 1 for a comparison between XM and Sirius).

Table 1 XM Versus Sirius in 2003

	XM Satellite	Sirius
Monthly cost	$9.99	$12.95
Radio cost	$325 factory installed radio, $400-$500 for dealer installed $200-$299 for home radio	$400-$500 for dealer installed radio No home radio
Programming	101 channels 70 music 30 talk, sports, news 1 premium channel (Playboy)	100 channels 60 music 40 sports, talk, news
Commercials	None on 35 music channels Limited commercials on rest (about 2 minutes per hour)	None on music channels
Key formats	Classical (3 channels) Pop (10 channels) Jazz/Blues (7 channels) Country (6 channels) Rock (12 channels) Latin (5 channels) Franks' Place The Joint (reggae) Broadway Old-Time Radio Classics	Classical (3 channels) Pop (9 channels) Jazz standards (5 channels) Hip Hop (5 channels) Country (5 channels) Dance (6 channels) R&B (4 channels) Rock (13 channels) Broadway Radio Classics
News	Fox, CNN, CNBC, ESPN, Others	Fox, CNN, CNBC, ESPN, Others
Automotive partners	GM, Honda	Ford, Daimler Chrysler, BMW
Subscribers as of mid-2003	692,253	105,186

Sirius has stated that it will depend upon subscriptions for about 85% of its revenues. XM initially expected to rely somewhat more on advertising revenues.

By the end of 2003, Sirius had 133 terrestrial repeaters in 92 urban markets where high buildings interfere with line of sight. XM had some 800 repeaters in 60 markets.

The 9-month lead that XM gained as a result of Sirius' problems proved to be invaluable. By the end of 2002, XM had 347,000 subscribers, while Sirius had just 30,000. XM passed the 500,000-subscriber milestone in April 2003, and was projecting that it would end 2003 with over 1 million subscribers. This rapid subscriber accrual helped XM Radio sell faster than CD and DVD players did in their first year on the market.[9] Sirius, meanwhile, was aiming to end 2003 with some 300,000 subscribers and had just over 100,000 by mid-year. Both companies were now estimating that they needed 2 to 3 million subscribers to break even, with XM predicting that it would be cash-flow positive by late 2004.

In addition to XM's 9-month lead in the market, analysts attribute much of the company's early gains to an aggressive push by General Motors. GM rolled out XM's satellite radio as optional, factory-installed equipment in 25 of its 57 car, light truck, and sports utility models, including the entire Cadillac line. GM planned to increase that figure to 44 models for the 2004 model year, and the company expected to sell some 800,000 cars autos with XM's radio installed during 2004, and 1.1 million during 2005. The GM installed radio, which is built by GM supplier Delphi, costs $325 and is bundled into the price of the vehicle. In addition to being a shareholder of XM, GM is believed to receive about $100 from XM for every radio it installs.

In early 2003, Honda stated that it planned to include XM radios as standard equipment in the 2004 Acura RL, and as a factory-installed option in the 2004 Accord. In September 2003, Honda announced that XM radios would be installed as standard equipment in certain Honda Accord models. An XM Satellite Radio spokesman said that between the Accord, Pilot, and S2000 models, Honda will release about 200,000 automobiles that have the XM radio as a factory-installed feature during the 2004 model year, and 400,000 during the 2005 model year.[10] In addition to GM and Honda, XM radios became available as dealer-installed options on certain offerings from Toyota, Volkswagen, and Audi, among others.

In contrast, Sirius' main partners were not as far along putting Sirius radios into their vehicles. Daimler and BMW offered Sirius radios as a dealer-installed option, as opposed to factory installed, meaning that a buyer had to request that the dealer install the equipment. In 2004, Daimler committed to factory-install 550,000 radios by mid-2007. Ford reportedly planned to offer factory-installed radios in select models for the 2004 model year, but that did not transpire. Ford announced that it would begin factory-installing Sirius Radios in the 2006 model year and would be factory-installing Sirius radios in 20 of its 21 car lines by 2007.[11]

The wild card in the industry, Toyota, had not aligned itself with either XM or Sirius by late 2004, although Toyota did offer XM Radio as a dealer-installed option on some models. Nor had Nissan aligned itself with either company; but it offered either XM or Sirius radios as a dealer-installed option.

Both XM and Sirius offered an array of satellite radios for home use. The bestselling of these in 2002 and 2003 was the Delphi XM SkyFi radio, which was made by Delphi for XM and sold through major consumer-electronics chains for between $199 and $230 a unit. By mid-2003, some 80,000 Delphi XM SkyFi units had been sold, and Wal-Mart, the nation's largest retailer, stocked the item. The SkyFi radio could be used at home, where it slotted into an audio player, and also be adapted for use in a car. In late 2004, XM Radio and Delphi announced that they would start selling a handheld portable radio, The Delphi MyFi, in December 2004.

Early surveys suggested high customer satisfaction with satellite radio. Surveys carried out by GM reportedly a 90% satisfaction rate among customers who chose satellite radio as an option, with 70 to 75% saying that they were likely to order satellite radio for their next vehicle.[12] Several consumer products reporters gave satellite strong reviews, although some complained that the sound quality was not quite CD quality.[13]

Sirius's late entry into the market and relatively low traction left it in a very shaky financial condition. In October 2001, CEO David Margolese abruptly resigned, presumably a casualty of the company's failure to launch its service on time. Margolese continued as nonexecutive chairman of Sirius. The delay in the launch of its service resulted in Sirius running down

its cash reserves, and by mid-2002 it looked almost certain that the company would default on debt payments and file for Chapter 11 bankruptcy protection. However, at the last minute, in October 2002, Sirius was able to pull of something of a coup, converting $700 million in debt and $525 million in preferred stock into common equity. In addition, three of the original investors in Sirius agreed to supply the company with another $200 million in cash. As a result of the recapitalization plan, the existing holders of the company's common stock ended up owning just 8% of the recapitalized company. It remained to be seen whether these funds would be sufficient to see the company through to profitability.

XM Radio also returned to the capital markets in early 2003, lining up an additional $475 million in funding. Of the $475 million, $225 million came from new investors, and the remainder from General Motors in the form of deferred payments and credit facilities. Critical to the deal's success was the agreement by more than 90% of the holders of $325 million in XM bonds to swap them for newly issued debt that pays no interest until 2006.

Although XM did launch on schedule, is too experienced technological problems that represented a potential cloud on the horizon. XM's two satellites, "Rock" and "Roll," are experiencing unexpected degradation of their solar-power panels. The degradation prompted XM to cut their useful life to 2008 from 2015. However, XM believed that it would be able to launch additional satellites by the time the degradation impacts signal strength. XM felt that its insurance policies covered this problem, and that it would be able to claim sufficient funds from insurance to be able to launch additional satellites.

By mid-2003, some analysts remained very bullish about the potential of XM Radio, although the future of Sirius was somewhat hazy. A May 2002 study by the Yankee Group projected satellite radio would achieve 15 million subscribers by 2006. Other market studies conducted for XM Radio projected that as many as 50 million people might subscribe to satellite radio by 2012. More conservative investment analysts were suggesting that satellite radio might garner 4 to 5 million subscribers by mid-decade, and that the ultimate total would be closer to 40 to 50 million. According to some projections made in early 2003, if XM hit 10 million subscribers in 2007, it could earn $500 million, or $1.50 a share. If XM Radio were ultimately to garner 30 million subscribers, it could earn $7 or more a share.[14]

SIGNIFICANT DEVELOPMENTS IN 2004

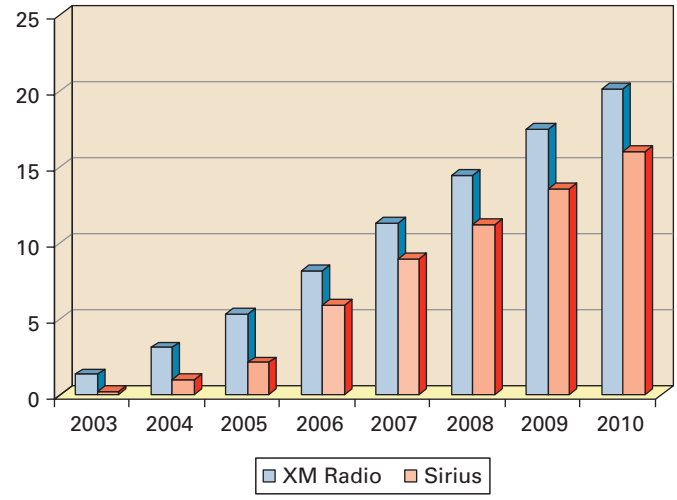
As 2004 drew to a close, subscription data suggested that XM Radio was continuing to capitalize on its early lead over Sirius in the industry. Analysts were now expecting XM to end 2004 with 3.11 million subscribers versus around 1 million for Sirius (see Figure 2). During 2004, XM Radio's net subscriber additions (gross additions less cancellations) were 1.75 million, versus 0.76 million for Sirius. XM was forecast to have 5.31 million subscribers in 2005, versus 2.14 million for Sirius.

Sirius tried to differentiate itself by aggressively signing valuable branded content. In December 2003, it signed a 7-year, exclusive deal with the NFL to broadcast football games, beginning with the 2005–2006 season. The deal cost Sirius $188 million in cash over the course of the contract, plus $32 million in warrants. In early October 2004, Sirius signed up "shock jock" Howard Stern to an exclusive, 5-year deal for $500 million, which would start to air on January 1, 2006. The branded content was used by Sirius to justify its premium subscription price.

XM Radio responded to these moves with deals of its own. In October 2004, XM signed an 11-year, $650 million deal with Major League Baseball (MBL), giving XM exclusive rights to the satellite broadcast of MLB games beginning 2005, including the World Series. Also in October 2004, XM launched a premium channel dedicated to shockjocks Opie and Anthony, who had previously been removed from the air due to profanity. The Opie and Anthony channel will cost subscribers an additional $1.99 a month.

By late 2004, the business models at XM Radio and Sirius were starting to crystallize. It was now clear that earlier statements regarding breakeven subscription levels were too low. A detailed research report on XM Radio by Salmon Smith Barney suggested that the company would not start to generate positive earnings before interest, tax, depreciation, and amortization (EBITDA) until 2007, when the subscriber base was forecast to be around 11 million (see Table 2).[15]

Figure 2 Forecasted Subscriber Growth (Millions)



Source: Salmon Smith Barney Estimates. 2003 Figures are actual figures.

On the same basis, Sirius was not expected to start generating a positive EBITDA until 2008.

The key variables in analysts' estimation of break-even volume were subscription revenues, fixed costs, variable costs, customer acquisition costs, and customer churn rates. For 2004, Smith Barney estimated that XM Radio would have revenues of $243 million, with only $6 million of those being attributed to advertising revenues. Fixed costs—which included costs related to equipment, broadcasting, programming and content, and customer support—were estimated to be around $175 million. Variable costs—including revenue sharing with partners such as GM, royalties paid for the right to broadcast songs, and customer care costs—amounted to $96.5 million. The average cost of acquiring a customer—including advertising, marketing, and subsidies given to equipment suppliers—was pegged at $130/customer, and forecast to hit $279.9 million in 2004. In its 2003 10K, XM Radio estimated that 1.3% of its paying customers left the service every month. However, if nonpaying customers who get the service on a trial basis through automobile companies are counted, the churn rate rises to 3.5% per month.

Sirius had a revenue and cost structure similar to that of XM Radio, although accounting differences make a direct comparison difficult (see Table 3). The

Table 2 Financial Performance and Forecasts for XM Radio

$(million)	2003	2004E	2005E	2006E	2007E
Revenue	$91.8	$243.5	$469.7	$790	$1,183.2
Variable costs	($52.4)	($96.5)	($150.9)	($231.5)	($324.3)
Fixed costs	($143.1)	($175.9)	($248.7)	($281.1)	($299.6)
Customer acquisition costs	($192.4)	($279.9)	($347.4)	($412.5)	($508.1)
EBITDA	($296.1)	($308.8)	($277.2)	($135.7)	$51.1

Source: Company Reports and Salmon Smith Barney.

Table 3 Financial Performance and Forecasts for Sirius

$(million)	2003	2004	2005	2006	2007
Revenue	$12.9	$68.2	$186.7	$520.7	$1383.4
Nonmarketing operating expenses	($160.9)	($224.7)	($258.3)	($469.6)	($614.4)
Marketing expenses	($194.1)	($294.4)	($339.8)	($542.5)	($489.5)
EBITDA	($342.2)	($450.9)	($411.3)	($513.7)	$154.2)

Source: Company reports and Salomon Smith Barney.

largest difference was that Sirius still charged a premium price for subscriptions, but was also committed to paying higher fees for content on an annualized basis. In 2006, for example, forecasts suggested that programming costs per subscriber would be $3.88 at Sirius, and $1.31 at XM Radio.[16] Sirius also had a larger customer churn rate than XM Radio in 2004, around 1.7% a month, and larger customer acquisitions cost, which were forecast to be around $247 per customer in 2005. The higher customer acquisition costs relative to XM Radio were because Sirius paid a larger subsidy to equipment manufacturers, and it had a small base over which to spread its marketing costs. In Table 3, customer acquisition costs are bundled in with marketing expenses.

NOTES

1. Standard & Poor's Industry Survey, Broadcasting and Cable, July 25, 2002.
2. Ibid.
3. Clear Channel Communications 2002 10K Form.
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SATELLITE RADIO (B): THE SIRIUS XM MERGER AND ITS AFTERMATH

INTRODUCTION

As 2005 unfolded, good times seemed to be just around the corner for the satellite radio business. XM Radio ended 2005 with almost 6 million subscribers, and Sirius with a shade over 3.3 million, both surpassing forecasts made a year earlier. Moreover, with churn rates only 1.5% a month—the lowest for any major subscription business—both companies could argue that their users clearly placed a high value on the product offering. Mel Karmazin, CEO of Sirius, argued this was because, "Our programming is so compelling, so strong, and so sticky."[1] Forecasts now called for the two companies to have a combined subscriber base of 44 million by 2010, divided more or less evenly between the two companies. For 2006, the subscriber base was expected to reach 15 million.

GROWTH RATES SLOW

Late 2005 proved to be the high point of expectations for satellite radio. As 2006 progressed, the growth rate started to decelerate. The two companies ended the year with 14 million subscribers, one million less than forecast (Sirius had 6 million and XM Radio 8 million subscribers). Moreover, both companies continued to lose money; Sirius lost $513 million in 2006, and XM Radio lost $719 million. As investors fretted about whether the companies would ever gain enough subscribers to cover their fixed costs, the stock prices of both fell sharply. Despite subscriber growth throughout 2007—XM ended the year with 9 million subscribers, and Sirius with 8.3 million—losses continued to mount. Sirius lost $327 million in 2007, and XM $682 million. The 44 million subscribers forecast for 2010 now seemed out of reach. One analyst forecast 32 million subscribers for the two companies by 2011.

Various reasons were offered to explain the slowing growth rate. One was competition from other formats for listening to music. By 2007, some 57 million Americans were listening to some form of Web radio every week, and analysts worried that in the near future, Web radio might be streamed to cars using WiMax technology. Of more immediate concern was that, increasingly, people were listening to music using iPods, over 200 million of which had been sold by 2007. Many cars were now fitting with racks for iPods

(about 40% of cars sold in 2007 came with sound systems that were compatible with iPods).

Another problem: The core demographic for satellite radio seemed to be middle aged. Many younger people would rather listen to their own playlists downloaded from iTunes and played on iPods. While satellite radio offered music programming, people with iPods preferred to program their own music. A study by Forrester Research estimated that only about 13% of the population actually wanted satellite radio, and that the percentage would shrink significantly if satellite radio channels started to run advertising.

Compounding matters, the auto business was facing a sharp downturn. Since auto dealers were the major distribution channel for satellite radio, as car sales shrank so did the number of new subscribers. What was a slowdown in sales became a major crisis in 2008, as tight credit in the United States led to a sharp contraction in auto sales. Auto sales for 2008 were expected to total only 13.5 million, down from 16.1 million in 2007.

MERGER PROPOSAL

In February 2007, Sirius and XM Radio announced plans to merge. Under the merger agreement, Sirius offered 4.6 of its shares for each XM share, leaving each side with 50% of the new venture. Sirius closed on the day before the announcement at $3.70 a share while XM was at $13.98. The merger valued the combined companies at $13 billion. The stock price of both companies dropped following the merger announcement, knocking $2 billion off the market capitalization of the combined entity.

The main benefit claimed for the merger was cost reduction, particularly marketing and programming costs. About 34% of XM's revenue in 2006 went to programming and marketing expenses, while 47% of Sirius' revenue was eaten up by these costs, many of which were fixed. The costly war for content between the two companies, exemplified by Sirius's $50-million deal with Howard Stern, would also come to an end. One analyst estimated that the combined company could save up to $4 billion through cost reductions over 6 years.

The merger would also enable the new company to offer a wider range of channels. Duplicate channels would be eliminated; no longer, for example, would the National Football League be exclusive to one provider, and Major League Baseball to another. This could help with subscriber retention and growth.

Implementation problems included making radio receivers that were compatible with both satellite systems—something that the companies had already been working on under a Federal Communications Commission (FCC) mandate—and in the long run, rationalizing the satellite system. From a practical point of view, many subscribers might balk at having to replace their radios with ones that can receive signals from both satellites, which could stretch out the implementation over years.

The proposed merger faced two regulatory hurdles. The Department of Justice had to agree to the merger, which created a monopoly in satellite radio, and the FCC also had to sign off. The FCC would have to reverse its mandate in 1995 (when it allocated satellite radio spectrum) that "one (satellite radio) licensee will not be permitted to acquire control of the other remaining" one.

Opposition to the merger quickly emerged from the National Association of Broadcasters (NAB), which represented conventional radio broadcasters. The NAB argued that a national satellite radio monopoly could overwhelm local broadcasters. They claimed that the new company might win additional business in the biggest markets by offering channels with local news, weather, and information.

In the end, the key issues centered on the definition of the "relevant market" for Sirius and XM Radio. If the relevant market was defined narrowly as the market for satellite radio, then the merger seemed doomed on antitrust grounds. Alternatively, the satellite radio companies argued that the relevant market was all broadcast radio, of which satellite radio was just a small segment. The satellite companies pointed out that 240 million people listened to conventional radio, and that satellite radio in total comprised less than 5% of the combined satellite and terrestrial broadcast market. They also argued that their service was competing with Internet radio and other ways of consuming music, such as the iPod.

In March 2008, the Justice Department gave the go-ahead to the merger, and the FCC followed with a green light in July 2008. Both government bodies agreed on a broad definition of the relevant market.

However, as part of the price for allowing the merger to proceed, the FCC required the new company to offer *a la carte* pricing schemes, with lower-priced subscriptions for access to limited content and higher priced subscriptions for access to premium content. This raised the possibility that many subscribers might opt for a less-expensive monthly subscription rate, which could materially impact the revenues of the new company. The FCC also mandated that there be no increase in the price of the base subscription plan, which stood at $12.95 a month, for 3 years.

The Immediate Aftermath

The merger was consummated on July 29, 2008. The new company was called Sirius XM. Mel Karmazin, CEO of Sirius, became CEO of the combined entity. In early September 2008, Sirius XM estimated that the net synergies from the merger would total $425 million, $25 million more than originally thought, and that the company would generate positive cash flow in 2009. Sirius forecast that it would end 2008 with 19.5 million subscribers, and 2009 with 21.5 million. However, rapid contraction in the U.S. automobile industry, a result of the 2008 U.S. financial crisis, raised questions about the attainability of those goals. Some 80% of all new subscriptions came though sales at auto dealers in 2007, and sales of new cars were imploding.

Having lost some $4 billion between 2005 and 2007, and with no prospect of becoming profitable soon, Sirius XM faced substantial funding issues. The company had $1.05 billion of debt that was due in 2009. Its cash on hand, which stood at $442 million in September 2008, was forecast to fall substantially in 2009 as it paid down debt and spent $100 million on new satellites. Karmazin pledged to not issue new equity to pay down debt, so a significant portion of the debt coming due in 2009 needed to be refinanced—not an easy prospect given the credit crunch in U.S. financial markets at that time.

By October 2008, the stock of the new company was trading at under $0.40 a share, down from a high $3.40. The market capitalization of the new company was down to $1.2 billion. If the stock traded at under $1 for 30 consecutive days, Sirius XM would face possible delisting from the NASDAQ stock exchange, which would have adverse consequences on its ability to raise capital. To avoid this possibility, in December 2008, following shareholder approval Sirius XM executed a 10-for-1 reverse stock split. At the same time, shareholders approved a proposal to increase the number of authorized shares by nearly 80%, giving the company some flexibility as it sought ways to refinance the $1 billion in debt that was due in 2009.

LIBERTY MEDIA INVESTS

On February 17, 2009, with bankruptcy looming, the media conglomerate built by John Malone, Liberty Media, stepped in with emergency financing. Liberty Media pledged to loan $530 million to Sirius XM, $280 million of it immediately, enabling Sirius XM to pay off $172 million in debt that had come due on February 16. The remaining $250 million would be paid later in the year to the XM subsidiary, enabling it to meet its short-term debt commitments. The loan from Liberty Media was set to mature in December 2012 and carried a 15% interest rate. Liberty Media also received 40% of Sirius XM's common stock and two seats on the company's board of directors.

While these loans would help keep Sirius XM afloat for the time being, analysts still saw significant risks of bankruptcy down the road. However, most also acknowledged that Liberty Media's John Malone was a shrewd dealmaker. Perhaps he saw value where others did not? In any event, the 15% interest rate attached to the Liberty Media loan to some extent mitigated the investment risks here, assuming Sirius XM could stay solvent until December 2012. It was also probably true that as the largest single shareholder, Liberty Media would have more protection than other shareholders should Sirius XM subsequently file for bankruptcy.

TURNAROUND

Early 2009 proved to be a low point for Sirius XM. With its short-term finances stabilized, the company was able to focus once more on building its subscriber base and improving its average revenue per subscriber, both keys to the long-term viability of the enterprise.

Sales of new cars and light trucks in the United States bottomed out in 2009 at 10.4 million, down from 16.1 million in 2007. Despite this sales implosion in its major distribution channel, Sirius XM ended 2009 with 18.8 million subscribers. Between 2010 and 2014, sales of new cars and light trucks improved every year, reaching 16.5 million units in 2014, the best number since 2007.

Subscriber numbers at Sirius XM followed the recovery in auto sales, growing from 20.2 million at the end of 2010 to 27.31 million at the end of 2014 (see Table 1). Moreover, Sirius XM was able to increase its average revenue per subscriber from a low of $11.58 per month in 2011 to $12.38 per month in 2014. Meanwhile, the monthly churn rate (the number of subscribers who leave the service every month) remained relatively stable at around 1.9%. The growth in average revenue per unit (ARPU) reflected both the introduction of more pricing plans and programming choices, and the ability of Sirius XM to initiate increases in annual subscription prices. For example, Sirius XM was able to increase its base subscription rate from $12.95 a month in 2011 to $14.49 a month in 2012, and the company still witnessed a steady rise in the number of subscribers.

These improved operating metrics drove a financial recovery in the company. Sirius XM recorded a small net income before tax in 2010 of $43 million on revenues of $2.8 billion. By 2014, the company was generating $830.8 million in net income before tax on revenues of $4,181 billion. Moreover, free cash flow had increased from $210 million in 2010 to $1.157 billion in 2014, improving the financial position of the enterprise. The improvement in Sirius XM's financial performance was also helped by reductions in operating costs and improved efficiency. For example, when Sirius XM renewed its contract with Howard Stern in 2010 for another 5 years, Stern took a $400-million fee, as opposed to $500 million the first time around.

CURRENT STRATEGY

The bullish case for Sirius XM going forward is that the company still has only 27 million subscribers, and there are 260 million cars and light trucks in America. Sirius estimates that, by 2018, over 100 million cars will have radios capable of receiving Sirius XM signals, up from 50 million in 2012. The key is to get owners to activate those radios through subscriptions. If the company can grow its penetration rate from the current 10 to 15%, that would represent another 13 to 14 million subscribers. To do this, Sirius XM has been pursuing a number of strategies.

First, the company continues to expand its relationship with major carmakers, which preinstall Sirius XM radios in new vehicles. By 2014, Sirius XM claimed that it had relationships with every major company selling cars in the United States. Second, since the merger Sirius XM has gone aggressively after the used car market, seeking to get customers to activate the Sirius XM radio in their preowned vehicles. The company has been targeting used car

Table 1 Key Statistics

Year	2010	2011	2012	2013	2014
Revenues ($millions)	2,816	3,015	3,402	3,799	4,181
Net income before tax ($millions)	43	441	474	637	831
Free cash flow ($ millions)	210	416	709	928	1,157
Subscribers (millions)	20.2	21.9	23.9	25.6	27.3
ARPU/month	$12	$11.5	$12	$12.23	$12.38
Monthly churn	1.9%	1.9%	1.9%	1.8%	1.9%

buyers with a 2-week free subscription and low introductory prices. It also has a program that authorizes dealers to offer Sirius XM subscriptions to used car buyers. In 2010, there were only 100 dealers enrolled in the program. By mid-2014 this number had swelled to 12,500.

Third, Sirius XM continues to distinguish itself from free radio and streaming Internet radio alternatives by the lack of advertising on many of its channels, including music and news (Sirius XM does now have advertising on some non-music and news channels). Fourth, Sirius XM's key selling point remains its diverse, unique content spread over numerous channels including music, sports, talk shows, and news stations. While Internet radio offerings such as Pandora, Beats Music, Google Play, and iHeartRadio do offer free streaming music customized to a listener's tastes, they do not offer the broad range of content that can be found on Sirius XM. Moreover, some of this content, such as the Howard Stern show, is exclusive to Sirius XM. The company has also made efforts to target customer segments that are not well served by established AM/FM radio, or Internet radio, creating channels targeted at Hispanics and women among others. In 2014, it added shows from Ellen DeGeneres, Jenny McCarthy, and Hoda Koth is an effort to woo female car buyers. Also, Sirius has developed apps that enable subscribers to listen to Sirius XM content on smartphones, tablets, laptops, and desktop computers.

Challenges

On the other hand, Sirius XM continues to have challenges. Internet radio offerings such as Pandora are gaining traction and are potentially potent competitors. Pandora has 250 million registered users worldwide, 76 million of which are active each month. Many carmakers are now integrating Pandora's app into their in vehicle entertainment systems, allowing drivers to listen to Pandora radio as long as they can get a wireless signal. Since 2009, Pandora has partnered with 26 auto brands. By 2015, at least 145 vehicle models had Pandora software accessible their dashboards. Some 7 million Pandora users have now listened to music though an integrated app in their car—and that doesn't count the users who simply plug in their smartphone to listen to streaming music. In 2015, only about 8% of vehicles of U.S. roads have any Internet capability, but that projected to grow to 22% by 2020, making Pandora and its ilk stronger competitors to Sirius XM, at least for music listening.

Recent Events

By 2014, Liberty Media had increased its ownership stake in Sirius XM from 40% it gained in 2009 to 53%, effectively giving the company a controlling interest and making Sirius XM a subsidiary of Liberty. The Liberty Media investment had been a major success. Liberty's stake was initially worth less than $1 billion; by 2014, it was worth more than $10 billion.

In January 2014, Liberty announced an all-stock deal valued at more than $10 billion to purchase the remaining shares in Sirius that it did not own. The idea was to facilitate the creation of two tracking stocks for Liberty Media, one of which, the "Liberty Media Group," would include Sirius XM as well as various other entertainment businesses owned by Liberty Media. Liberty Media stated that the deal would simplify Liberty's capital structure, clear up questions about its commitment to Sirius XM, and increase the financial flexibility of both companies.

In March 2014, Liberty Media dropped its bid to acquire Sirius XM's remaining outstanding shares after a lukewarm reception from investors and analysts who questioned whether this was the best use of Liberty's stock. Many questioned the long-term viability of Sirius XM, despite recent successes, given the growing threat from in-vehicle Internet radio in connected vehicles. The market reacted positively to the March announcement, sending Liberty Media's stock up 7%.

For its part, Sirius XM claims it is fully aware of the threat posed by Internet-enabled cars and claims it is already positioning itself for a future where all cars will be fully Internet connected. In 2013, Sirius paid $530 million to purchase the connected-vehicle division of automotive services company Agero, which makes software that constantly updates drivers on roadside assistance or tracks stolen vehicles, for example. The motivation behind the acquisition is for Sirius XM to build the required capabilities to stream its content wirelessly to Internet-enabled cars.

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