

***Teaching Note***  
**Sprint Nextel 2007**  
**Fair Value and Impairment**

This case allows students to explore various issues associated with asset valuation, impairment analysis, and fair value disclosure. The case is structured in a semi-modular format (as discussed below) so that an instructor can cover selected portions of the case or the whole thing.

There are 6 questions that accompany the case. These questions address the following general areas.

- Impairment analysis and asset valuation (Questions 1 and 2)
- Fair value disclosures (Question 3)
- Valuation sensitivity analysis (Questions 4, 5, and 6)

Instructors should not feel a need to include or cover all of the questions. Depending on the course and on the desired emphasis, a subset of the questions can be given to the students. Examples of how the case can be used are given below.

- Intermediate financial accounting I – Questions 1 and 2 are especially appropriate for an intermediate financial accounting I course. These questions address issues of asset valuation and impairment. Question 1 is a fairly straightforward PPE impairment question; this can be used on a standalone basis. Question 2 seems deceptively straightforward. However, in order to do the goodwill impairment analysis, a series of intangible asset valuations also need to be done. Question 2 could be a great capstone question in covering tangible asset, intangible asset, and goodwill impairment.
- Financial statement analysis (lots of structure) – In a financial statement analysis course where it is desired to provide the students with lots of structure, the case can be assigned with all of the questions. Students can then prepare for the discussion in a systematic way, very much like a large homework assignment. Classroom discussion of the asset valuation questions should illustrate the solution embodying the assigned parameters and then show sensitivity analysis.
- Financial statement analysis (little structure) – In a financial statement analysis course where it is desired to have the students wrestle with an unstructured setting, the instructor can give the students just one question – Question 2 which asks students to compute the amount of goodwill impairment. Students must work their way through all of the valuation issues in order to compute this one quantity.

## Questions

- 1. Before any impairment writedown, the net recorded amount of Sprint Nextel's Wireless segment property, plant, and equipment as of December 31, 2007 is \$22,882. Is the Wireless segment's property, plant, and equipment impaired? If so, what is the amount of any necessary impairment writedown?**

The key assumption that must be made is the average total estimated life for the asset group. This is given to be eight years for the network equipment, the primary asset in the group. The total estimated annual lease payment for the group of assets is \$4,250, computed as follows.

	<b>Estimated Annual <u>Lease Payment</u></b>
Land	\$ 30
Network equipment	2,840
Buildings and improvements	299
Non-network software, office equipment	437
Construction in progress*	<u>644</u>
Total	<u>\$ 4,250</u>

\*60% of the lease payment for the completed assets.

The impairment test for a tangible asset group such as this involves comparing the book value of the assets of \$22,882 to the undiscounted future cash flows expected to be generated by the group. The undiscounted cash flow amount is  $\$34,000 = 8 \text{ years} \times \$4,250 \text{ per year}$ .

Because the undiscounted cash flow total of \$34,000 exceeds the book value of \$22,882, the Wireless segment's property, plant, and equipment is NOT impaired and no impairment writedown is necessary.

- 2. Before any impairment writedown, the net recorded amount of Sprint Nextel's goodwill as of December 31, 2007 is \$30,664. Is Sprint Nextel's goodwill impaired? If so, what is the amount of any necessary impairment writedown?**

The first step in determining whether Sprint Nextel's goodwill is impaired is comparing the book value of the Wireless segment, to which all of the goodwill relates, to the fair value of the Wireless segment. As explained in the case, Sprint Nextel uses two different techniques for estimating the fair value of the Wireless segment: (1) indirect valuation by estimating the fair value of the Wireline segment, subtracting that from total Sprint Nextel market capitalization, and then adding a control premium and (2) directly estimating the fair value of the Wireless segment with discounted cash flow analysis.

### Indirect Valuation of Wireless Segment

Using the wireline industry data given in the case, price multiples based on revenue and EBITDA are as follows.

	<b>Price-to Revenue Multiple</b>	<b>Price-to EBITDA Multiple</b>
Qwest	0.60	1.80
Level 3	1.15	6.53
Embarq	1.07	2.54
Windstream	1.84	3.59
Centurytel	1.41	2.77
Average	<u>1.21</u>	<u>3.45</u>

Using the averages for both multiples, the estimated price of Sprint Nextel's Wireline segment is as follows.

Price-to-revenue multiple:  $1.21 \times 6.46 = \$7.8$  billion

Price-to-EBITDA multiple:  $3.45 \times 1.07 = \$3.7$  billion

The average of these two estimates is \$5.8 billion.

Making the (perhaps unreasonable estimate) that the fair value of the Wireline segment was constant throughout 2007, and also considering the "control premium" mentioned by Sprint Nextel, the quarter-by-quarter estimate of the fair value of the Wireless segment is as follows.

	<b>Sprint Nextel Market Capitalization (in billions)</b>	<b>Wireless Segment Only</b>	<b>Plus 5% Control Premium</b>	<b>Plus 10% Control Premium</b>
January 1, 2007	\$54.2	\$48.4	\$50.8	\$53.2
March 31, 2007	53.8	48.0	50.4	52.8
June 30, 2007	58.8	53.0	55.7	58.3
September 30, 2007	54.1	48.3	50.7	53.1
December 31, 2007	37.4	31.6	33.2	34.8

As seen in the case, the book value of the Wireless segment at December 31, 2007 was \$52.8 billion. Accordingly, it appears that Sprint Nextel could justify a conclusion that goodwill was NOT impaired for the first three quarters of 2007, but the estimated fair value of the Wireless segment of about \$34 billion on December 31, 2007 indicates that goodwill may be impaired on that date.

### Direct Valuation of Wireless Segment

Given the data in the case, the weighted average cost of capital of 9.3% can be computed as follows.

Risk-free rate on 31 Dec 2007	4.0%
Historical equity premium	7.0%
Average industry Beta	1.55
Equity cost of capital	14.9%

	<b>Amounts of Debt and Equity</b>	
After-tax debt cost of capital	42.1	4.3%
Equity cost of capital	<u>37.4</u>	<u>14.9%</u>
	79.5	9.3%

Using this discount rate and the other parameters given in the case, a discounted cash flow analysis of the Wireless segments indicates a value of \$33.6 billion, as shown below.

Discount rate	9.3%			<b>FORECAST</b>					
	<b>HISTORICAL</b>								
	<u>2005</u>	<u>2006</u>	<u>2007</u>	<b>OIBDA Growth</b>		13.0%		<b>Growth</b>	
				<b>Capex Growth</b>		10.0%		6.0%	
				<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<b>Terminal</b>
Segment earnings	6,932	11,678	9,914	11,203	12,659	14,305	16,165	18,266	
Taxes (38%)	<u>2,634</u>	<u>4,438</u>	<u>3,767</u>	<u>4,257</u>	<u>4,810</u>	<u>5,436</u>	<u>6,143</u>	<u>6,941</u>	
OIBDA	4,298	7,240	6,147	6,946	7,849	8,869	10,022	11,325	
Capital expenditures	<u>3,545</u>	<u>5,944</u>	<u>5,067</u>	<u>5,574</u>	<u>6,131</u>	<u>6,744</u>	<u>7,419</u>	<u>8,160</u>	
Free cash flow	<u>753</u>	<u>1,296</u>	<u>1,080</u>	<u>1,372</u>	<u>1,718</u>	<u>2,125</u>	<u>2,603</u>	<u>3,164</u>	<u>95,891</u>
Discounted cash flow				1,255	1,438	1,627	1,824	2,029	61,472
Sum of discounted cash flow	8,173								
PV of Terminal value	<u>61,472</u>								
Total present value of cash flows	69,645								
Less liabilities	<u>36,046</u>								
Value of equity	<b><u>33,599</u></b>								

As with the indirect valuation, this direct valuation also confirms that there is a possible goodwill impairment as of December 31, 2007.

Because it has been established that goodwill may be impaired as of December 31, 2007, a more extensive valuation analysis of Sprint Nextel's assets is required in order to compute the correct amount of goodwill. The fair value of both the FCC licenses and the customer relationships must be estimated.

#### Valuation of FCC Licenses

The fair value of Sprint Nextel's FCC licenses can be estimated using the "relief from royalty" approach. This method uses market royalty rates charged for the use of licenses similar to those owned by Sprint Nextel. Using this approach, the fair value of the licenses is the present value of the after-tax royalties that Sprint Nextel is avoiding by owning the licenses. The structure of this valuation analysis is very similar to the direct valuation of the Wireless segment shown previously.

Using the parameters given in the case, along with the 9.3% discount rate computed earlier, the fair value of the FCC licenses is computed to be \$29.1 billion as follows.

						Growth 6.0%
	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>Terminal</u>
Discount rate	9.3%					
Number of customers (in millions)	46,049	52,035	58,799	66,443	75,081	
Monthly ARPU	\$57	\$57	\$56	\$56	\$55	
Total annual revenue (in millions)	31,729	35,496	39,709	44,422	49,695	
Pre-tax royalty (4.2%)	1,333	1,491	1,668	1,866	2,087	
Taxes (38%)	<u>506</u>	<u>567</u>	<u>634</u>	<u>709</u>	<u>793</u>	
After-tax royalty	<u>826</u>	<u>924</u>	<u>1,034</u>	<u>1,157</u>	<u>1,294</u>	1,294
Discounted cash flow	756	774	792	811	830	39,214
Sum of discounted cash flow	3,962					
PV of Terminal value	<u>25,139</u>					
Total present value of cash flows	<b><u>29,100</u></b>					

#### Valuation of Customer Relationships

The value of the existing customer relationships that Sprint Nextel has with its wireless customers is done using an excess cash flow analysis. As explained in the case, the value of these relationships is computed assuming that Sprint Nextel's other assets earn a normal return. Using the data in the case, with the discount rate of 9.3%, the fair value of the customer relationships is estimated to be \$7.5 billion, as shown below.

Assets Employed	
Wireless reported assets (less \$30,664 goodwill)	\$58,190
Extra license value (above book value \$21,123)	<u>7,977</u>
Fair value of non-goodwill assets employed	<u>\$66,167</u>

	<u>Average # of Customers</u>	<u>Monthly ARPU</u>	<u>Annual Contribution Margin</u>	<u>Capital Charge (Assets x 0.093)</u>	<u>After-tax Excess</u>	<u>Present Value (on 12/31/07)</u>
For the year 2008	35,144	\$57.42	\$13,997	\$6,154	\$4,863	\$4,449
For the year 2009	26,582	56.85	10,481	6,154	2,683	2,246
For the year 2010	20,106	56.28	7,848	6,154	1,051	805
For the year 2011 (ignored because negative)	15,207	55.71	5,877	6,154	(172)	(120)

Fair value of Customer Relationships **\$7,499**

An assumption made here, and in the computation of goodwill, is that the book value of property, plant, and equipment of \$22,882 approximates the fair value. Using the data given above, it is possible to get an estimate of the fair value of the PPE. With the annual lease payment of \$4,250, estimated life of eight years, and discount rate of 9.3%, the present value of the future lease payments is \$23,263 which exceeds the book value by \$381 million. If this is taken as a reliable estimate, the value of the customer relationships is lower (because the capital charge is higher); the computation of goodwill would also be impacted.

### Computation of Goodwill

Computation of the goodwill amount requires estimation of the fair value of ALL identifiable assets and liabilities, whether those items have been previously recognized or not. The computations above have yielded estimates of the fair value of the FCC licenses and the customer relationships. In addition, it was shown in the preceding section that the fair value of the property, plant, and equipment is closely approximated by the book value. In the computation of goodwill shown here, it will be assumed that the fair values of current assets, other intangibles, and liabilities are approximated by their book values. With that assumption, goodwill is computed to be \$914 indicating that Sprint Nextel's goodwill impairment loss is \$29.75 billion.

Note: The amounts below do NOT represent a new balance sheet with an increased reported amount for licenses and with the inclusion of the previously-unrecognized customer relationships. This fair value computation is used only in computing the new amount of goodwill.

Current assets	\$7,414
PPE	22,882
Licenses	29,100
Customer relationships	7,499
Other intangibles	1,835
Less liabilities	<u>(36,046)</u>
Fair value of net identifiable assets	<u>\$32,685</u>
Estimated equity value (direct valuation)	\$33,599
Less fair value of net identifiable assets	<u>32,685</u>
Implied goodwill value	<u>\$914</u>
Recorded goodwill	\$30,664
Revised goodwill	<u>914</u>
Goodwill impairment loss	<b><u>\$29,750</u></b>

Subsequent questions will address the sensitivity of this computation to the assumptions made.

**3. With respect to the Wireless segment's long-lived assets (tangible and intangible) described in the data given above, what SFAS No. 157 fair value disclosures are necessary for the year ended December 31, 2007?**

Note: The goodwill asset in question here is reported at fair value on a nonrecurring basis. This disclosure is different from what is required for assets reported at fair value on a recurring basis (such as investment securities).

<u>Description</u>	<u>Total</u>	<u>Fair Value Measurements at Reporting Date Using</u>			<u>Total</u>
		<u>Quoted Prices</u> <u>in Active</u> <u>Markets for</u> <u>Identical</u> <u>Assets</u> <u>(Level 1)</u>	<u>Significant</u> <u>Other</u> <u>Observable</u> <u>Inputs</u> <u>(Level 2)</u>	<u>Significant</u> <u>Unobservable</u> <u>Inputs</u> <u>(Level 3)</u>	
Goodwill	\$914			\$914	(\$29,750)

Note that property, plant, and equipment is not included here because it was determined that the PPE was NOT impaired, so it is not recorded at fair value. This is also true (by assumption) of the other asset categories as well as the liabilities. Finally, note that no amounts are reported for the FCC licenses and the customer relationships even though their fair values were computed and used in the computation of the fair value of goodwill. The recorded amounts of these intangibles are not changed even though they are computed and used as part of the goodwill impairment computation.

**4. Refer to Question 1. How will your answer change if the discount rate you use is increased by 0.5% (50 basis points)? Decreased by 0.5%? Comment.**

Because the undiscounted cash flow total of \$34,000 from the PPE exceeds the book value of \$22,882, the Wireless segment's property, plant, and equipment is NOT impaired, the fair value of the PPE is not estimated, and no impairment writedown is recognized. Because the PPE is not impaired and no fair value is computed, the discount rate assumption has no impact on the recorded amount of PPE in this case.

5. Refer to Question 2. How will your answer change if the discount rate you use is increased by 0.5% (50 basis points.)? Decreased by 0.5%? Comment.

As seen in Question 2, the fair value of both the FCC license and the customer relationships depends on the discount rate. Because both of these fair values enter into the computation of goodwill, changing the discount rate used will change the computed amount of goodwill. The impacts of increasing the 9.3% discount rate to 9.8% and decreasing it to 8.8% are shown below.

**Goodwill Sensitivity Analysis (assets only)**

	<b><u>8.8%</u></b>	<b><u>9.3%</u></b>	<b><u>9.8%</u></b>
Current assets	\$7,414	\$7,414	\$7,414
PPE	22,882	22,882	22,882
Licenses	34,332	29,100	25,245
Customer relationships	7,348	7,499	7,520
Other intangibles	1,835	1,835	1,835
Less liabilities	<u>(36,046)</u>	<u>(36,046)</u>	<u>(36,046)</u>
Fair value of net identifiable assets	<u>\$37,765</u>	<u>\$32,685</u>	<u>\$28,851</u>
Estimated equity value (direct valuation)	\$46,379	\$33,599	\$24,187
Less fair value of net identifiable assets	<u>37,765</u>	<u>32,685</u>	<u>28,851</u>
Implied goodwill value	<u>\$8,614</u>	<u>\$914</u>	<u>(\$4,664)</u>
Recorded goodwill	\$30,664	\$30,664	\$30,664
Revised goodwill	<u>8,614</u>	<u>914</u>	<u>0</u>
Goodwill impairment loss	<b><u>\$22,050</u></b>	<b><u>\$29,750</u></b>	<b><u>\$30,664</u></b>

Note that the amount of the goodwill impairment loss drops by more than \$7 billion with a decrease of just 50 basis points (0.5%) in the discount rate used. Looking more closely at the numbers in each scenario, you can see that the items that change the most are the estimated equity value and the estimated fair value of the FCC licenses. It is interesting to note that the customer relationship intangible is relatively unaffected by the discount rate assumption.

This sensitivity analysis has at least two limitations. First, the estimated value that is by far the most sensitive to the discount rate assumption is the estimated equity value of the Wireless segment. Recall that Sprint Nextel also uses a market multiple approach to estimate this equity value. Previous computations, in connection with Question 2, suggest a Wireless segment value of \$34.0 billion. This is probably a more reasonable number to use in this sensitivity analysis, not least because the total market capitalization of Sprint Nextel was \$37.4 billion as of December 31, 2007, indicating that the \$46.4 billion estimate for the Wireless segment value using a discount rate of 8.8% is not feasible.

The second limitation is that we have ignored the impact of the discount rate on the fair value of the liabilities. To get a very rough idea of this impact, the \$36,046 million liability amount is assumed to represent the present value of an annuity 10 years in length. With a discount rate of 9.3%, this implies that the annuity payment is \$5,691 million. With this assumption, the size of the impact of the discount rate on the fair value of the liabilities can be estimated.

Both these limitations are addressed in the numbers shown below.

**Goodwill Sensitivity Analysis (assets AND liabilities AND indirect valuation)**

	<b><u>8.8%</u></b>	<b><u>9.3%</u></b>	<b><u>9.8%</u></b>
Current assets	\$7,414	\$7,414	\$7,414
PPE	22,882	22,882	22,882
Licenses	34,332	29,100	25,245
Customer relationships	7,348	7,499	7,520
Other intangibles	1,835	1,835	1,835
Less liabilities	<u>(36,847)</u>	<u>(36,046)</u>	<u>(35,271)</u>
Fair value of net identifiable assets	<u>\$36,964</u>	<u>\$32,685</u>	<u>\$29,626</u>
Estimated equity value (direct valuation)	\$33,970	\$33,970	\$33,970
Less fair value of net identifiable assets	<u>36,964</u>	<u>32,685</u>	<u>29,626</u>
Implied goodwill value	<u>(\$2,994)</u>	<u>\$1,285</u>	<u>\$4,344</u>
Recorded goodwill	\$30,664	\$30,664	\$30,664
Revised goodwill	0	1,285	4,344
Goodwill impairment loss	<b><u>\$30,664</u></b>	<b><u>\$29,379</u></b>	<b><u>\$26,320</u></b>

The sensitivity of the goodwill impairment loss amount to the assumption about the discount rate is much less pronounced in this expanded analysis. These two sensitivity calculations illustrate the importance of conducting a comprehensive valuation analysis wherever possible. Isolating the impact of variable factors such as interest rates on single items in a vacuum can yield extremely misleading results.

- 6. In conducting the goodwill impairment analysis, you used several different valuation techniques.**
- **Wireless segment valuation using price-to-sales and price-to-EBITDA data for the Wireline segment**
  - **Wireless segment valuation using discounted cash flow analysis**
  - **FCC license valuation using a “relief from royalty” approach**
  - **Customer relationship valuation using discounted cash flow analysis**

**Which one of these valuation techniques seems most reliable to you? Explain.**

In the sensitivity analysis conducted in Question 5, it was seen that the Wireless segment valuation using discounted cash flow analysis was extremely sensitive to the assumption about the discount rate.

The FCC license valuation is sensitive not only to the discount rate assumption but also to the choice of royalty rate.

Tinkering with the customer relationship valuation spreadsheet shows that this valuation is less sensitive to changes in the value of the discount rate, the monthly churn rate, and the ARPU annual growth rate which are the key assumptions. Estimated values cluster in the \$6.5 billion to \$8.5 billion range for reasonable values of the valuation parameters.

The valuation of the Wireless segment indirectly using market multiples for the Wireline segment is impacted by the choice of which company or companies to use to in generating the multiples. However, because the Wireline segment provides a relatively small portion of the overall market value of Sprint Nextel, the value of the Wireless segment is fairly close to the value of the entire company. And this company value is reliable because it comes from independently-observed market data.

As explained in *SFAS No. 157*, observable inputs to valuation models are preferable to unobservable inputs. And the most reliable observable inputs are those from quoted market prices. In this circumstance, the most reliable valuation technique appears to be the Wireless segment valuation using market multiples for the Wireline segment.