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The Reverse Merger Between T-Mobile And MetroPCS

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On October 3rd, 2012, Deutsche Telecom AG (DT), a German based company announced a merger of its wholly-owned subsidiary T-Mobile USA with MetroPCS. The combined entity would be called T-Mobile and would be listed on the New York Stock Exchange. DT would hold a 74% ownership stake in the combined company, with MetroPCS (PCS) shareholders holding the rest. In exchange, DT was offering $1.5 billion, or $4.09 a share, in cash to shareholders of PCS. Paulson & Co. a large shareholder in PCS, believed that DT should offer a larger premium of $9.67 a share.

Paulson & Co., and Schoenfeld Asset management, who combined owned 11.7% of PCS, believed that the premium offered by DT undervalued the benefits of the merger. In addition, they objected to the interest rate, and the amount of debt offered by DT to finance the acquisition. The demands of the large shareholders had to be given careful consideration as they could undermine an upcoming shareholder vote on the merger. The Nextel-Sprint merger that was completed only three years earlier offered a sobering perspective on the difficulties of merging different wireless technologies. Yet, there was a possibility that the premium did not fully reflect the benefits to DT of a U.S. cross-listing offered by the merger with the U.S. listed MetroPCS. As a third party evaluator of the merger deal, do you believe that Paulson's demand for a higher premium was justified?

Background on the U.S. wireless industry

The structure of the U.S. Wireless industry in the third quarter of 2012 is best described as a duopoly with several smaller competitors. The salient characteristics of the industry and market shares of competitors at the end of the third quarter of 2012 are listed in Table 1. The two largest companies in the industry were AT&T and Verizon, which together controlled 65% of the market for wireless subscribers. There were several smaller competitors such as Sprint Nextel, T-Mobile, PCS, Leap Wireless, and US Cellular. Competition between these smaller firms for a share of the shrinking wireless market was intense. The post-paid wireless market was saturated with some estimates placing the penetration of U.S. households at 101%, or more than one wireless device per household! To remain competitive, and to hold on to their market share, smaller competitors in the industry were forced to spend large sums of capital to upgrade their wireless network technology to satisfy customers' demand for bandwidth. These large capital

expenditures, being financed by debt, had elevated operating risk in these companies. Conditions in the wireless industry in 2012 were thus ripe for consolidation.

Table 1
Salient Characteristics of the Wireless industry

Panel A: Characteristics of the industry from 2008-2012 (S&P's Netadvantage , 2012)

	2008	2009	2010	2011	2012
Subscriber growth in % (from prior year)	7.9	5.3	5.9	4.6	5.0
Total revenues ($ billion)	143.7	151.2	155.8	164.6	178.4
Cumulative capital expenditure ($ billions)	254.2	273.6	310.0	322.7	348.2

Panel B: Market shares and other characteristics of companies in the wireless industry at the end of the third quarter of 2012

	% market share	# of subscribers	Average revenue per user (ARPU) ($)	Capex ($ millions)
AT&T	34.0	105,871,000	47.1	2,709
Verizon	30.8	95,899,000	145.4	2,133
Sprint	18.0	55,963,000	61.2	1,376
T-mobile	10.7	33,327,000	42.8	717
MetroPCS	2.9	8,979,960	40.5	262
US cellular	1.9	5,808,000	59.6	199
Leap Wireless	1.8	5,633,819	41.9	106

Past M&A Activity

M&A activity in this sector took off when Sprint, the third largest wireless provider, paid $35 billion to buy Nextel in December 2004, to become the third largest wireless provider with over 44 million customers. There were good reasons for the Sprint-Nextel merger. Sprint was a leader in providing telephone service and was just starting to branch out into wireless service. Nextel had reached the limit of its network and stood to benefit from the network of Sprint subscribers**.** The deal was called a merger of equals as shareholders in each company would each own 50 percent of the new company. Sprint shares remained outstanding and each Nextel common share received 50 cents in cash and was converted into 1.28 shares in the new company. The deal was expected to produce operating cost and capital investment savings of between $1.2 billion and $1.5 billion in 2006, about $800 million to $900 million in 2007 and then about $1.8 billion to $2.2 billion a year starting in 2008. Analysts relied on these forecasts to value the

combined company at $70 billion. The reality post-merger did not meet the rosy expectations; Sprint struggled to integrate Nextel's technology into its own network.

In December 2006, Cingular Wireless, which had been a joint venture between AT&T and BellSouth, became wholly owned by AT&T and was re-named AT&T. In the years since 2006, AT&T and Verizon have consolidated their number 1 and 2 positions in the industry with a slew of acquisitions of smaller, regional wireless providers. Verizon Wireless added 12 million subscribers in the central, southern and western regions of the US by acquiring privately owned Alltel Corp for $28.1 billion in 2009. AT&T added to its coverage in the south-east, and mid-west US, by acquiring Centennial Communications in 2008.

In 2011, AT&T offered to pay $39 billion in stock and cash to acquire T-Mobile USA, the fourth largest company in this sector. The bid failed amid opposition by regulators who were concerned that a merger of the second and fourth largest providers would reduce competition in the wireless industry. T-Mobile received a break-up fee of $4 billion, some in cash, and the rest in spectrum for AT&T's failure to complete the acquisition. Spectrum is the frequency bandwidth over which wireless signals can be transmitted. The Federal Communications Commission assigned and granted companies licenses to use the spectrum. The spectrum was thus a valuable commodity for wireless companies.

T-Mobile's proposed merger with MetroPCS

It was in this environment of consolidation that Deutsche Telecom (DT), the parent company of T-Mobile USA, made a bid for PCS. DT is listed on XETRA, a German stock exchange. DT was being pressured by its shareholders to sell T-Mobile on the heels of an ongoing loss in customers, some 1,559,000 of them in the first three quarters of 2012 alone. T-Mobile had lagged behind competitors in upgrading to higher-speed long-term evolution (LTE) technology, or, the so-called 4G. The company was reluctant to undertake this upgrade in the face of eroding market share.

Dallas, Texas based PCS had carved out a niche in the pre-paid market. It provided low-cost no-contract pre-paid cellphone service to 9.3 million subscribers located mainly in the large metro areas on the east and west coasts of the United States. Pre-paid services had begun to see an increase in subscriber growth between 2008 and 2009 as the economy weakened, and consumers began moving away from costly post-paid services. PCS held a 12.6% market share in the pre-paid market ahead of Verizon, AT&T and T-Mobile. Further growth in PCS' market share was limited by a shortage of spectrum. The shortage had become acute ever since PCS began switching subscribers to higher speed LTE in January 2011. The company was on an urgent quest to acquire additional spectrum to provide the range of services that subscribers expected from their data plans.

T-Mobile and PCS were thus perfectly positioned to benefit from a merger: T-Mobile could provide the spectrum that PCS so desperately needed, in exchange for the LTE technology capability and market share in the pre-paid wireless market that the latter had. The decision to merge was announced on October 3rd, 2012. The merger was structured

as a recapitalization with PCS declaring a 2 for 1 reverse stock split and acquiring all of T-Mobile's capital stock by issuing to DT 74% of the combined company ('Newco'). In exchange, DT offered to make a cash payment of $1.5 billion to shareholders of PCS, and to convert its existing inter-company debt worth $15 billion into senior unsecured notes in the combined company. With approximately 366 million MetroPCS shares outstanding, the premium of $1.5 billion translated to approximately $4.09 per share. DT also agreed to provide a $500 million unsecured revolving credit facility and facilitate Newco's (the combined company) operations with a $5.5 billion backstop commitment for certain PCS third-party financial transactions. Newco to be renamed T-Mobile, would continue as an NYSE listed company. Details on the capital structure of Newco are in Table 2.

Table 2
Proposed Capital Structure of Newco.

Data is from "Creating the Value Leader in Wireless" (2012).

Security	Terms	Amount (in $ billions)
Short-term debt		
DT revolving credit facility for $0.5B	undrawn	0.00
Existing MetroPCS bank loan	variable rate with weighted average yield of 4.6% and maturity range of 2013-2018	2.50
Existing MetroPCS unsecured notes	7.875% notes due 2018 6.625% notes due 2020	2.00
MetroPCS Third party debt	terms not known	1.00
Long-term debt		
DT rollover permanent notes	average tenor of 8.5 years, yield of 8.16%	7.50
DT rollover reset notes	yield of 7.28%	7.50
Leases	T-Mobile tower leasing obligations and MetroPCS capital leasing obligations	2.80
Total Newco. debt		23.20
Less cash at closing	cash being paid to shareholders of MetroPCS for the merger	-1.50
Total Newco. net Debt	Total debt less cash	21.70
Total value of Newco.	as estimated by DT	32.78
Total shareholders' equity	'plug' figure	11.08

Cost savings from the Merger

Analysts believed the merger carried benefits for both entities. On the revenue side, DT was expected to gain pre-paid customers from PCS giving Newco approximately 42.5 million subscribers. In addition, Newco was expected to have 14.3 million subscribers in the market for pre-paid *no-contract* service which was expected to grow between 9-10% a year for the next five years. The larger customer base would make it attractive for Newco to offer business-to-business solutions, and a wider selection of wireless pricing plans to its customers.

On the cost side, Newco. was expected to realize considerable savings from the merger. Internal analysis conducted by T-mobile on projected savings in operating costs, savings in capital expenditures, and the costs expected to be incurred to integrate technologies and networks of the two companies are in Table 3. The analysis in Table 3 showed that Newco could realize cost savings by shutting down the existing PCS network and migrating LTE services entirely to the spectrum that T-Mobile acquired from AT&T. T-Mobile expected to complete the shut down of the PCS network by the second half of 2015. The cost of merging two different technologies cannot be ignored when calculating synergies created by the merger. Newco expected that elimination of the PCS network and migration of all customers to a common LTE platform would ease integration of the two networks.

Table 3
Estimates of Savings and Integration Costs

The table has the range of estimates of savings and costs for Newco. Costs are indicated within parentheses. The lower end of the range for savings is the minimum expected savings, and the higher end is the maximum expected savings. For costs, the lower end of the range is the minimum expected costs, and the higher end of the range is the maximum expected costs. Data is from "Creating the Value Leader in Wireless" (2012).

	Year 1	Year 2	Year 3	Year 4	Year 5
Network ($millions)					
operating expenditure savings (reduction in operating expenses related to tower, connections to the sub-network and roaming)	($0-$50)	($0-$50)	$0-$100	$300-$400	$600-$700
capital expenditure savings (savings in capacity and expansion capex)	$100-$200	$300-$400	$400-$500	$450-$550	$400-$450
one-time costs (for site upgrades and decommissioning)	($600-$700)	($0-$50)	($700-$800)	($800-$900)	-
Non-network ($millions)					
operating expenditure savings (shift to newer high speed packet access (HSPA) technology, G&A savings)	$0-$50	$100-$200	$150-$250	$150-$250	$200-$300
capital expenditure savings (common platform efficiencies)	-	$0-$50	$0-$50	$0-$50	$0-$50
one-time costs (customer transition and business integration)	($150-$250)	($0-$100)	($0-$100)	-	-

Access to U.S. Equity Markets

DT had pondered a divestiture of T-Mobile either through an IPO or through a direct sale. A listing on a U.S. stock exchange would have helped DT realize that eventual goal. In the meantime, DT would exercise considerable control over the combined company by retaining the right to nominate directors to the Board.

DT believed that in addition to providing a mechanism by which to divest T-Mobile, a U.S. listing would boost valuation of Newco. The academic finance literature offered empirical support to bolster DT's belief. Doidge, Karolyi and Stulz (2004) found that foreign firms listed on a U.S. stock exchange command an average 'cross-listing'

premium of 16% relative to the value of firms listed in the same foreign country that are not also listed in the U.S. The premium is attributed to the ease with which U.S. listed foreign firms are able to raise capital to finance growth opportunities. U.S. laws protect minority shareholders from expropriation by a controlling shareholder, thus reassuring shareholders that capital raised in the U.S. will not be wasted on private consumption. Since minority shareholders in firms not listed in the U.S. do not receive these same reassurances, they are reluctant to supply additional capital to controlling shareholders.

International cost of capital

In addition to the listing effect, valuations of foreign firms listing in the U.S. are affected by differences in cost of capital. The weighted average cost of capital (WACC) for a firm financed by debt and equity (Bruner (2004)) is:

$$\text{WACC} = \frac{D}{V} * K_D * (1 - T) + \frac{E}{V} * K_E \quad (1)$$

where D is the market value of outstanding debt, E is the market value of outstanding equity, and V, the market value of the firm is the sum of D and E. K_D is the pre-tax cost of debt, K_E is the cost of equity and T is the marginal corporate tax rate.

In a global capital market, the cost of equity depends on the extent of integration between capital markets around the world. On the one extreme is a fully segmented market. The cost of equity in such a market depends on the risk-free rate, and on the market risk premium prevalent in the country where equity is listed. On the other extreme is a fully integrated market where the cost of equity is determined by a global risk-free rate and by a global market risk premium. In between these two extremes, the cost of equity depends on the degree of integration of the local market with global capital markets.

The cost of debt was also expected to be different around the world, depending on credit conditions and regulations in the country where the borrowing occurred. In the case of DT's acquisition of PCS, the U.S. listing was not expected to lower borrowing costs for the combined company. Internal Revenue Service (IRS, 1989) rules prevent DT from using lower cost secured debt from third parties to finance the deal unless DT lowered its ownership stake in the combined company to below 49%. Since the terms of the merger called for DT to own 74% of Newco, the $15 billion of BB rated debt to be supplied by DT was expected to carry an above-market interest rate of 8%. By comparison, DT paid a yield of only 2.5% in its home market on its Baa1/BBB+ rated debt. The higher cost of borrowing for Newco was an additional incentive for DT to lower its ownership stake in Newco below the statutory limit of 49%. A U.S. listing would help DT divest eventually.

Conclusion

The Federal Communications Commission and the Justice Department approved the merger on March 21, 2013 stating they believed customers would benefit from the implementation of LTE wireless technology. The only issue that remained outstanding was the approval of PCS shareholders. They had to decide whether to accept a premium

of $4.09 a share in cash offered by DT, or to side with Paulson & Co. and Schoenfeld's demand for a higher premium of $9.67 a share.

Table 4
Select financial data for Deutsche Telekom and MetroPCS

Data is from S&P Capital IQ NetAdvantage Company Research.

	Deutsche Telekom (In Million DM)					
	2012	2011	2010	2009	2008	2007
Revenues	74,781	81,591	82,746	89,746	90,091	85,630
Interest expense	3,007	3,607	3,777	4,023	4,030	3,801
Effective tax rate	24%	78%	35%	67%	41%	56%
Net Income	-6,115	932	2,333	490	2,167	779
Long-term Debt	45,120	47,220	49,734	57,420	50,646	59,841
Common equity	34,170	45,819	51,010	52,157	55,768	61,582
% LT Debt to capital	46.7	42.5	40.5	46.9	6.3	42.8
	MetroPCS (in $ Millions)					
	2012	2011	2010	2009	2008	2007
Revenues	5,101	4,847	4,069	3,481	2,752	2,236
Interest expense	275	261	263	270	179	202
Effective tax rate	35%	37%	38%	33%	46%	55%
Net Income	394	301	193	177	149	100
Long-term Debt	4,724	4,711	3,757	3,626	3,058	2,986
Common equity	3,359	2,928	2,542	2,288	2,034	1,849
% LT debt to capital	56.6	60.1	59.4	61.1	59.8	58.2

Table 5
Interest rates and Credit Spreads in the U.S. and German markets

Panel A: Sovereign rates. Data is from Bloomberg.

U.S. government interest rates in Oct 2012		German government interest rates in Oct 2012	
Maturity	Rate	Maturity	Rate
1-year	0.0989	1	0.0068
10-year	1.784	10	1.296
30-year	2.982	30	2.186

Table 5 (continued)

Panel B: Corporate spreads

10-year maturity corporate bond spreads over 10-year U.S. government bonds in Oct 2012		Spreads over German government bonds in Oct 2012	
Rating	Rate	Rating	Rate
AA	2.497	AA	2.033
A	2.807	A	2.287
BBB	3.393	BBB	2.988
BB	4.628	BB	4.926

Panel C: Equity betas

The S&P 500 index is an index of stocks listed in the U.S., and the DAX is an index of stocks listed on the German stock exchange. The betas are from an estimation of an ordinary least squares regression of daily stock returns on daily index returns over the period from January 2008 to December 2012.

Levered Beta of pre-merger PCS with respect to the S&P 500	Levered Beta of pre-merger DT with respect to the DAX
0.728	0.616

Table 6
Historical Risk Premia across Equity Markets (1900-2011)

Data is from Damodaran Online (2014).

	stocks minus short term governments				stocks minus long term governments			
Country	Geometric	Arithmetic	Std.error	std.dev	Geometric	Arithmetic	Std.error	std.dev
Australia	6.50%	8.00%	1.70%	17.70%	5.60%	7.50%	1.90%	19.90%
Belgium	2.80%	5.40%	2.30%	24.60%	2.50%	4.70%	2.00%	21.40%
Canada	4.10%	5.50%	1.60%	17.10%	3.40%	5.00%	1.70%	117.50%
Denmark	2.60%	4.40%	1.90%	20.50%	1.60%	3.10%	1.60%	17.20%
Finland	5.50%	9.20%	2.90%	30.40%	5.20%	8.90%	2.90%	30.40%
France	5.90%	8.50%	2.30%	24.50%	3.00%	5.30%	2.20%	22.90%
Germany	5.70%	9.50%	3.00%	31.80%	5.10%	8.50%	2.70%	28.50%
Ireland	3.00%	5.30%	2.00%	21.40%	2.80%	4.80%	1.90%	19.80%
Italy	5.50%	9.50%	3.00%	32.00%	3.50%	6.90%	2.80%	29.60%
Japan	5.60%	8.80%	2.60%	27.70%	4.70%	8.80%	3.10%	32.80%
Netherlands	4.10%	6.40%	2.20%	22.80%	3.30%	5.60%	2.10%	22.30%
New Zealand	4.00%	5.60%	1.70%	18.30%	3.60%	5.20%	1.70%	18.20%
Norway	2.90%	5.70%	2.50%	26.40%	2.20%	5.20%	2.60%	28.00%
South Africa	6.20%	8.20%	2.10%	22.00%	5.30%	7.10%	1.80%	19.50%
Spain	3.10%	5.30%	2.10%	21.80%	2.10%	4.10%	2.00%	20.80%
Sweden	4.20%	6.50%	2.10%	22.1%	3.50%	5.80%	2.10%	22.40%
Switzerland	3.30%	5.00%	1.80%	18.90%	1.90%	3.40%	1.70%	17.60%
U.K.	4.20%	5.90%	1.90%	19.90%	3.60%	5.00%	1.60%	17.20%
U.S.	5.20%	7.20%	1.90%	19.70%	4.10%	6.20%	1.90%	20.50%
World-ex U.S.	3.90%	5.70%	1.90%	19.90%	3.50%	4.70%	1.50%	15.60%
World	4.40%	5.80%	1.50%	17.10%	3.50%	4.80%	1.50%	15

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