JOHNSON
Cornell University

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SPREADTRUM COMMUNICATIONS, 2011:
SPREADING INTO MOBILE TELECOMMUNICATIONS IN CHINA[1]

It was the evening of February 27, 2011 and Dominic Singh found himself at a crossroads in his preparation for his weekly meeting with the portfolio managers at DW Associates, a small-cap emerging markets hedge fund specializing in growth opportunities in the Asia-Pacific region. Singh joined the fund two years ago as a senior equity analyst and had quickly developed a reputation for making aggressive and successful stock recommendations. One of these recommendations was related to a Chinese company: Spreadtrum Communications (NASDAQ: SPRD). In March 2010, Singh assessed Spreadtrum as a strong buy at $6.76 per share. Based on this recommendation, the portfolio managers took an aggressive position in Spreadtrum whose share price subsequently appreciated by 215% over the following year (see **Exhibit 1**), earning Singh widespread recognition across the fund.

Ironically, it was this widespread recognition that troubled Singh the most this evening. Not even his strong buy recommendation a year ago predicted such a rapid ascent in Spreadtrum's share price, and recent research suggested that the company might now be overvalued. More importantly, the portfolio managers openly expressed their eager anticipation of Singh's updated guidance on Spreadtrum at tomorrow's internal meeting. Spreadtrum was scheduled to release its 2010 fiscal year earnings on March 3, 2011, and the fund wanted to critically assess its one-year position in the company. Some portfolio managers were bullish on China and Spreadtrum's tremendous growth, while others were looking for an excuse for the fund to lock in its gains and report some positive news to its institutional clients during an otherwise uneventful quarter. In this context, Singh felt even more pressure to ensure an accurate assessment. Spreading into mobile telecommunications in China seemed to be a popular move for investors as of late, but did concerns regarding Spreadtrum, the mobile telecommunications industry, and China as a whole warrant a more cautious approach moving forward?

Spreadtrum Communications

Headquartered in Shanghai, Spreadtrum Communications was a *fabless* semiconductor company, outsourcing the fabrication process to other firms, that designed and developed radio processing chips capable of transmitting and receiving wireless signals, baseband processor, RF transceiver, and turnkey solutions for the wireless communications and mobile television market in China. These solutions supported a broad range of wireless communications standards, including GSM,[2] GPRS,[3] and TD-

[1] This case was prepared by Dominic Bow, Dingding Feng, Winston Lin, Aloka Singh, and Elisabeth Cai under the supervision of Professor Andrew Karolyi as a basis for class discussion rather than to illustrate the effective of ineffective handling of an administrative situation. Original version is dated June 22, 2010; current version is dated March 23, 2015.

[2] Global System for Mobile Communications (GSM) is a set of standards which describe second generation digital cell networks and their accompanying technologies.

SCDMA,[4] and offered a wide array of multimedia capabilities on platforms such as TV-out,[5] MP3 digital-audio playback and touch-screen devices. Spreadtrum's products were sold directly to brand manufacturers, independent design houses, and original design manufacturers located primarily in China, Hong Kong, and Macau.

Corporate and Ownership Structure

Founded on April 11, 2001 by Dr. Ping Wu,[6] Dr. Datong Chen (currently on the Board of Directors), Dr. Renyong Fan,[7] and others, Spreadtrum was incorporated as an exempted company under the laws of the Cayman Islands. Spreadtrum Communications is a holding company which initially operated through two main indirect wholly-owned subsidiaries: Spreadtrum Shanghai, through which products reach their customers, and Spreadtrum Technology, which takes responsibility for administrative and sales functions. Spreadtrum Shanghai fully owns Spreadtrum Beijing, a wholly domestic company intended for R&D and acquiring research grants from the People's Republic of China (PRC). In 2007 and 2008, the firm also established two Hong Kong subsidiaries and another two wholly-owned subsidiaries in the United States: SPRD LLC, a Delaware limited liability company, and the San Diego-based Spreadtrum Communications USA Inc. (Spreadtrum USA).

On January 15, 2008, Spreadtrum acquired Quorum Systems, now renamed Spreadtrum USA, a fabless semiconductor company that specialized in the design of highly integrated CMOS RF transceivers,[8] in a part-cash, part-stock merger. Following this acquisition, in September 2008, Spreadtrum Technology established a wholly-owned subsidiary in China, Shanghai Han & Qin Investment Co., Ltd., through which the company made an investment in Xi'an Chuang Xin Science and Technology Co., Ltd. ("Xi'an Chuang Xin"). The main activities of Xi'an Chuang Xin are R&D, marketing, and sales of chips for multimedia products like cell phones and televisions.[9] In the same month, Spreadtrum established Han & Qin International (BVI) Limited, a wholly-owned subsidiary in the British Virgin Islands.[10]

Currently, Spreadtrum Shanghai owns approximately 37.9% of the equity interest in Spreadtrum Beijing, and each of the three Chinese national nominee shareholders, family members of the co-founders, owns approximately 20.7% of the equity interest in Spreadtrum Beijing (see **Exhibit 2**). Due to contractual agreements, the relationship between these national nominee shareholders, and the fact that one of Spreadtrum Communications' management team serves as its legal representative, Spreadtrum Communications controls Spreadtrum Beijing. Furthermore, over the past two years, Spreadtrum had undergone a series of internal changes. The company's previous CEO and co-founder Ping Wu, was ousted by the Board of Directors due to poor performance results in 2009. The current CEO, Dr. Leo Li,

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[3] General Packet Radio Service (GPRS) is a mobile data service which charges fees based on the volume of data being transferred.

[4] Time Division Synchronous Code Division Multiple Access (TD-SCDMA) is a radio-based communication link between a mobile device and an active base station (an "air interface") used in Chinese telecommunications networks as an alternative to the analogous Japanese Wideband Code Division Multiple Access (W-CDMA).

[5] TV-out is used to describe the electrical connector of equipment which joins an analog video signal with a television AV input. However, it can only transmit video.

[6] Spreadtrum Communications. Google.

[7] Source: Capital IQ.

[8] Complementary metal–oxide–semiconductors (C-MOS) is a technology used in constructing integrated circuits, such as for RF Transceivers (hence CMOS RF transceiver), which are devices capable of receiving and transmitting radio signals for high speed data transfers.

[9] Spreadtrum Communications, 2009 Annual Report, Form 20-F.

[10] Spreadtrum Communications, 2009 Annual Report, Form 20-F.

subsequently enacted aggressive layoffs as part of his efforts in turning around the company.[11] Prior to joining Spreadtrum in 2008, Dr. Li spent 23 years at Magicomm Tech. Inc., Broadcom, Moblink Telecom, Rockwell Semiconductors and Ericsson. Spreadtrum's CFO Shannon Gao has been with the company since 2001. Spreadtrum's management team includes Brian Chen as VP Operations, Qiang Cho as VP Products, and Scott Sandell as Independent Lead Director, acting as a liaison between the board of directors and Spreadtrum's senior management.[12] Spreadtrum's co-founders and most of its upper management are Chinese-born but American-educated, making them well suited for the international market.[13]

Major individual shareholders Dr. Datong Chen, Dr. Ping Wu, and Dr. Leo Li together own 4.16% of Spreadtrum Communications, with 2.4%, 1.6%, and 0.6%, respectively. Institutions hold 38.5% of total outstanding shares, of which New Enterprise Associates and Silver Lake Partners comprise 14.2% and 5.8%, respectively. Venture capital/private equity firms and the public make up the rest with 20% and 32.6%.[13]

Spreadtrum's Business Model

With revenues increasing from $12.9 million in 2004 to $105.1 million in 2009 (see **Exhibit 3**), Spreadtrum attributed its success to two features of its business model. First, Spreadtrum did not own or operate any wafer fabrication or assembly and testing facilities (hence "fabless"). Instead, the company designed chips and outsourced wafer processing to foundries for manufacturing to Taiwan Semiconductor Company, the world's largest foundry and Spreadtrum's main foundry service provider.[14] Other suppliers included Advanced Semiconductor Engineering Inc. and its own subsidiary, Beijing Spreadtrum Hi-Tech Communications Technology. Since Spreadtrum relied heavily on R&D, it also made use of technological innovations marketed by other tech firms like CEVA Technologies Inc. Spreadtrum's customers included Samsung and Spreadtrum's other subsidiaries.[15] This model enabled Spreadtrum to focus on designing products while avoiding significant capital expenditures related to building and maintaining fabrication, test, and assembly facilities.

Second, the company enjoyed a first-mover advantage and significant government ties in the Chinese mobile telecommunications market. The company targeted GSM/GPRS mobile handset baseband starting in 2004 and has since invested heavily, ahead of its competitors, in developing products for TD-SCDMA, China's homegrown 3G mobile telecommunications standard.[16] Ties to the Chinese government provided Spreadtrum with various incentives in the form of reduced tax rates, exemption from certain taxes, favorable lending policies, and research grants. For example, having encountered liquidity problems in 2007, the company received local government guarantees in Shanghai to secure a substantial loan as well as a tax break on value-added taxes. Additionally, Spreadtrum's research and development expenses were partially offset by subsidies, bolstering the company's competitive advantage over its peers, which include other baseband processor solutions providers like Infineon, MediaTek and ST Ericsson.[17,18]

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[11] Spreadtrum and lower fourth quarter revenue is expected to lay off 15% (July 30, 2010), Source: Capital IQ.
[12] http://www.reuters.com/finance/stocks.
[13] Spreadtrum vs. MediaTek in Mobile Basebands (Sept. 4, 2007) http://www.glgroup.com/News/Spreadtrum-vs-MediaTek-in-Mobile-Basebands-15910.html.
[13] Spreadtrum Communications Inc. Source: Capital IQ.
[14] Spreadtrum Communications Inc. 2009 20-F SEC Filing (May 7, 2010).
[15] Spreadtrum Communications Inc. Source: Capital IQ.
[16] Baseband refers to signals and systems which use frequencies ranging from 0 Hz to the maximum frequency of efficient signal transmission.
[17] Spreadtrum Communications, Morgan Stanley, Lu (November 18, 2010).

However, these two key aspects of Spreadtrum's business model also brought up a number of risks, namely a highly competitive environment and uncertainties in intellectual property protections. While the TD-SCDMA standard was poised for significant growth in the future, the baseband processor market in China was highly competitive and prone to product obsolescence arising from rapid changes in technology. The threat of an evolving technological environment forced Spreadtrum to constantly invest in research and development, subjecting the company to significant external pressures and high costs.

The risk associated with a heavy reliance on research and development was also exacerbated by a historically ineffective intellectual property system in China. As of 2010, Spreadtrum owned 65 patents and had 402 pending patent applications in China, 33 patents and 37 pending patent applications in the United States, 6 pending patent applications in Europe, and 3 pending patent application under the Patent Cooperation Treaty.[19] However, ambiguities in Chinese laws and difficulties in intellectual property enforcement afforded Spreadtrum significantly less protection than their counterparts in the United States. According to the World Bank World Governance Indicators as of 2009, China ranked in the 46.2% percentile in terms of regulatory quality and 45.3% in terms of rule of law; both were well below average. As a result, policing unauthorized use of Spreadtrum's intellectual property was difficult, while reverse engineering, unauthorized copying or other misappropriations of technologies continued to remain a substantial threat to the company.

Mobile Telecommunications in China

With the largest mobile subscriber base in the world, China experienced an increase in mobile user count with over 795 million users in 2010, owing to a growing middle class and rapidly rising disposable income. Revenue for the mobile telecommunications sector amounted to approximately $84 billion (see **Exhibit 4**), and mobile phones continued to be the most popular "must-have" electronic product in China, even amongst the most financially constrained consumers. In 2009, 132 million mobile phones were sold in the market with an average price increase of 8% primarily in the high-end smart phone segment (see **Exhibit 5**).

Industry Overview

Prior to 1995, China Telecom acted as the operational arm of the Ministry of Posts and Telecommunications of China (MTP) and sole telecom services provider in China. However, in response to increasing pressure from other ministries and discontented subscribers, the Chinese government initiated telecom industry reforms in 1995 to (1) create a new competitor, China Unicom and (2) build a nationwide mobile telecommunications network using GSM technology. While China Unicom lacked the muscle to successfully compete, these reforms marked the beginning of China's modern mobile telecommunications industry.[20]

The industry again underwent significant changes in 1998 when the Ministry of Information Industry (MII) replaced the MTP as part of a ministerial reorganization and took drastic steps to reduce the inefficient state-monopoly. China Telecom was restructured and split into three separate businesses: fixed-line (China Telecom), mobile (China Mobile) and satellite (China Satcom). Essentially, China's

[18] Spreadtrum CEO Leo Li named chairman of the board; Scott Sandell becomes lead director, Minneapolis Star-Tribune (July 10, 2010). http://www.startribune.com/templates/sid=100546299.
[19] Spreadtrum Communications, 2009 Annual Report, Form 20-F.
[20] China's Telecoms Industry: Reform and Prospects (Dec. 2004).

telecom industry transitioned from a state-run monopoly to a state-run oligopoly.[21] Since the second round of reforms in 2003, the quality of telecom service has improved, prices have dropped – competition has enhanced technological advancement, and the Chinese telecom industry has maintained higher growth rates while the global telecom industry experienced a recession.

Based on this structure, China's mobile telecommunications services were provided by three companies until 2008: China Mobile (GSM), China Unicom (GSM and CDMA), and China Telecom (PHS, "Personal Handy-phone System"). However, in May 2008, China announced the launch of new 3G licenses as part of a third industry restructuring proposal aimed at tackling challenges in rapid growth of mobile phone usage and over-competition. China Mobile received the license for China's domestically developed 3G standard TD-SCDMA, China Telecom received the U.S.-developed CDMA2000 license, and China Unicom obtained the rights to the 3G GSM standards, also known as the European WCDMA standard.

TD-SCDMA (Time Division Synchronous CDMA) 3G Standard

The TD-SCDMA 3G standard originated as a "development" by the Chinese Academy of Telecommunications Technology and Siemens. The standard used a Time Division Duplex mode, a type of digital multiplexing of outward and return signals, which transmitted uplink traffic and downlink traffic within the same frame in different time slots. [22,23] China's pursuit of TD-SCDMA was driven by a desire to eliminate reliance on 3G wireless networks that demanded payments of fees to patent holders in other countries. Proponents of TD-SCDMA claimed that the standard was better suited for dense population areas. However, critics pointed to a lack of confidence in the TD-SCDMA market as well as the difficulties that many international mobile manufacturers experienced in providing a suitable terminal device.[24]

In order to accelerate the development of the TD-SCDMA standard, China Mobile provided an incentive fund of $95.2 million in 2009 and initiated a number of bidding invitations and procurements for TD-SCDMA terminals. By 2010, active TD-SCDMA subscribers amounted to 4.3 million users. Overall, 3G mobile phones accounted for 26% of the mobile phone market in China and volume share growth of 3G mobile phones had increased significantly with subsidies incentives and improvements in 3G network access.[25] Total mobile units sold were forecasted to equal 223 million units and $32 billion in revenue (see **Exhibit 6**), with mobile phone penetration rate at 55 units per 100 people. And while the number of mobile phone subscribers grew to over 800 million in 2010, this growth was expected to slow down in the coming years. As a result, analysts believed that the industry revenue would only grow at 5.9% annually, which would likely compel providers to develop more value-added services.[26]

China

Having seen its economy grow more than tenfold from the start of its market-oriented reforms in 1978, China had long since established itself as a global power and an attractive target for foreign

[21] See extensive discussion in the report entitled, China Telecommunications Panorama (2005) available at http://chinese-school.netfirms.com/articles/Telecommunications-China.html.

[22] An uplink is the portion of a telecommunications link responsible for the transmission of signals from a ground station to a satellite.

[23] A downlink is the link from a satellite to a ground station.

[24] http://www.umtsworld.com/technology/tdscdma.htm .

[25] Spreadtrum Communications, 2009 Annual Report, Form 20-F. From 2005 to 2009, the growth rate of 3G sales has been steadily increasing from 3.5% to 25.7%.

[26] Compound Annual Growth Rate of Wireless Communication Equipment Markets in China Will Hit 5.9% During the Years 2004-2009 (July 16, 2007). Source: Business Wire, http://www.asia.xorte.com.

investors. While most other major countries continued to experience lingering effects from the recent financial crisis, China forged ahead in 2010 and posted unexpected GDP growth of 10.3% (see **Exhibit 7**) en route to becoming the second largest economy in the world. The fuel to this remarkable rate of economic growth was the continued modernization of the Chinese economy. China's positive net trade balance reflected the country's vital position in global markets (see **Exhibit 8**), and increasing industrial and services outputs suggested that the country would continue to evolve into an important global power (see **Exhibit 9**).

On an individual level, per capita income, disposable income, and real wages each rose nearly 10% in 2010 (see **Exhibit 10**), spurred by a series of gradual wage reforms implemented throughout the country. Earlier this year, Beijing raised its minimum wage by almost 21% while Guangdong announced a similar increase effective later this month.[27] This shift corresponded with the continued urbanization of the Chinese population. Almost half of the 1.3 billion Chinese resided in urban areas in 2010, and an estimated annual urbanization rate of 2.7% meant that even more people in China would be incorporating mobile telecommunications in their daily routines.[28]

Naturally, the accolades related to a growing and prosperous Chinese economy were tempered by a number of challenges facing foreign investors in China, including fears of inflation as well as uncertainty over the Renminbi and future government controls. Inflationary pressures remained a constant danger, especially given the perceived undervaluation of the Renminbi.[29] Seeking to preempt consumer price inflation, the Chinese government shifted to a "prudent" monetary policy in December 2010. At the same time, the People's Bank of China raised the benchmark for one-year lending to 5.81% (see **Exhibit 11**), and general consensus was that interest rates would continue to rise while further government restrictions, such as higher bank reserve requirements, would be implemented to contain inflation. If the fears of an overheated Chinese economy became a reality, mobile telecommunications would certainly be an area that would be impacted by a subsequent general business cycle contraction.

Another, albeit traditional, challenge facing foreign investors was the uncertainty over future government controls in the industry. After the government-led restructuring of the industry in 2008, there still remained large uncertainties over the future of Chinese mobile telecommunications. On a broader scale, unemployment, wage disparity, and poor working conditions continued to fuel social tensions in a country already well documented for its political risk (see **Exhibit 12**). Moreover, with a scheduled reconfiguration of the Chinese Communist Party leadership in 2013, factional struggles in the current government could lead to unexpected policies, which could bode unfavorably for a mobile telecommunications industry that would remain open to further government regulations.[30]

Valuation

Spreadtrum Communications had some strong industry catalysts extending its stellar growth in the near future. Ramping TD-SCDMA handset sales and Spreadtrum's increasing market share (at the expense of competitors like MediaTek and Infineon) within this growing market combined with the company's share gains in the larger GSM market were two main factors towards potential strong earnings in the next few years. In addition, the firm had an improving mix of higher-end feature phones in China, which was pushing growth in chip-set content. However, the TD-SCDMA handset market had been ramping up slower than expected. Although the government mandated this technology as the de-facto data transmission method, the existence of other technologies had definitely pulled out TD-SCDMA's

[27] The Economist Intelligence Unit, China: Country Report (February 2011).
[28] CIA, The World Factbook: China (January 24, 2011).
[29] The Economist, The yuan-dollar exchange rate: Nominally cheap or really dear? (November 4, 2010).
[30] The Economist Intelligence Unit, China: Country Report (February 2011).

traction in subscriber growth. There was also a potential risk of a loss of market shares as larger competitors undercut them; pricing pressure was the norm in the telecommunication semiconductor industry.

Financial Statement Analysis

Spreadtrum has seen healthy improvements on profitability in the past five quarters. After seeing operating losses up until Q2 of 2009, the firm has since experienced steady increases up to a 15.7% Return on Assets (ROA). By the same token, the Return on Capital (RoC) and Return on Equity (ROE) has improved to 26.5% and 51.6% (see **Exhibit 13**), respectively. Furthermore, Spreadtrum has experienced improving margins due to the ramp-up of higher priced products sold to the emerging markets. As such, Gross Margin and EBITDA Margin have climbed to 44.1% and 23.6%, respectively. There remained a concern about the sustainability of margins as competitors were likely to respond by enabling price cuts on similar products, which could put a dent on Spreadtrum's future margin performance.

Based on the financials, Spreadtrum has also been operating efficiently, as evidenced from the improving turnover ratios. The firm's assets have been used effectively to generate revenues, as shown by the total asset turnover and fixed asset turnover ratios. Moreover, Spreadtrum has been able to process more effectively, with the accounts receivable turnover ratio increasing to 125.1 times.

Even though Spreadtrum showed stellar performance throughout the past quarters, a few wrinkles posed causes for concern. The Average Cash Conversion Cycle has increased by 58% during the past five quarters, primarily due to an increase in the Days Sales of Inventory figure. [31,32] Also, the firm could be vulnerable to short-term liquidity crises, as the declining Current and Quick Ratios seemed to suggest.

DCF and Multiples

Spreadtrum's valuation could be examined through two techniques: Discounted Cash Flow (DCF) and a Multiples approach. For this firm in its growth phase, the Discounted Cash Flow valuation was a risky technique as it relied heavily on assumptions of growth, margins and capital usage well into the future. Spreadtrum was exposed to the Chinese mobile telecommunications industry and any regulatory changes could adversely affect the overall firm valuation. For example, on the 2010 Q3 earnings call, CEO Leo Li mentioned that Spreadtrum experienced a 3% quarterly sales decline in TD-SCDMA units due to a key management change at China Mobile. Such internal policy changes led to a near-term pause in TD-SCDMA unit orders. However, to alleviate this risk, adding a premium on the discount rate could account for the additional risks that investing in China would entail.

On the other hand, the DCF model could be used to find out what growth assumptions were imputed into the current price of the stock. Adjusting assumptions in the model indicated the current share price implied a 60% sales growth and a 36% gross margin in the next twelve months. Were these unusually high growth projections sustainable in the near future? Furthermore, there was concern over the discount rate used to value the firm, which was currently at 13%. Was the discount rate too low given the country and industry risks that Spreadtrum was subject to? As the discount rate assumption deviated, the

[31] The Average Cash Conversion Cycle (ACCC) is a measure of management effectiveness; it measures the speed with which a firm can convert cash to inventory and accounts payable to sales and accounts receivable back to more cash. In general, it describes how efficiently management uses short term assets and liabilities to generate new capital.

[32] Days Sales of Inventory (DSI) is a measure of a company's performance that depicts the number of days required for a company to turn its inventory into sales. An increasing DSI suggests inventory inefficiency, and vice versa.

price of Spreadtrum stock changed drastically (see **Exhibit 14**). Therefore, determining a suitable discount rate was vital for valuing this firm.

A multiples approach could also be used as a sanity test to the valuation model. This could be done either by comparing a company's current multiple with its own historical range or by comparing the multiple with those of similar companies in the industry. Unfortunately, Spreadtrum has only operated for 3 years as a public company, so there was not enough data for such an analysis. Thus, Singh turned to the semiconductor industry as a whole to conduct a peer analysis. In this analysis, Spreadtrum seemed to be undervalued based on NTM TEV/Total Revenue and NTM Forward Price/Earnings (see **Exhibit 15**).[33] The cheap valuation of Spreadtrum suggested that purchasing more stock was the prudent choice to take advantage of the company's future potential.

As a final check, there were analysts on the sell-side that made forecasts about how Spreadtrum's stock would perform in the near term. Over the past three months, five different analysts issued Buy recommendations with a price range from $22.70 to $30.00 (see **Exhibit 16**):

- "Our checks indicate that MediaTek will likely introduce its second generation single 2G baseband solutions soon after the Chinese New Year holiday, while SPRD is also readying its counter strike, the 6610K."[34]
- "MStar, the newcomer in handset baseband, should take at least another year to move the curve in terms of software stability and its business model, which is currently not scalable. We think both SPRD and MStar will gain share at the expense of MediaTek."[35]
- "We reiterate our Hold rating on SPRD as we await a competitive response from larger competitors that may slow the company's rapid growth and pressure margins."[36]

Living Up to its Expectations?

Spreadtrum's stock price had appreciated threefold from when Singh pitched the stock as a buy to the portfolio managers at DW Associates. The firm had historically sold its chips primarily for Chinese domestic consumption, as compared to MediaTek which sold chips in other emerging economies. The recent successful launch of its 40nm TDS-CDMA product could help maintain steady growth on Spreadtrum's top line and steal market share from its competitors. However, there was a sizeable chance that Spreadtrum's 40nm product would not sell as expected.[37] Given its growth potential, Spreadtrum was pitted against MediaTek who had a competitive edge if a price war ensued. Spreadtrum's progress within the emerging markets could also experience a downturn if unforeseen factors (i.e. political events) affected the market. Finally, competition within China's TD-SCDMA semiconductor market was likely to increase as more players saw opportunity within this sector.

Inundated with information to assess, Singh paused to look at one final piece of data. In the most recent month, the stock price of Spreadtrum has been hovering between $19 and $24. At the same time, there was an increase in short interest of the stock, pushing the short interest ratio to nearly 2% of

[33] NTM stands for Next Twelve Months. It is also known as Forward Multiple. NTM comparables are generally used to analyse how the market prices future earnings potential.
[34] Spreadtrum Communications, Auriga USA, Liu (February 3, 2011).
[35] Spreadtrum Communications, HSBC Global Research, Wang (January 18, 2011).
[36] Spreadtrum Communications, Needham & Company, Bolton (January 10, 2011).
[37] This refers to the new 40 nanometer (nm) LP chip (a TD-SCDMA broadband processor) which Spreadtrum has developed using Cadence Silicon Realization technology. Its innovative design uses low power yet achieves high levels of performance, lowering costs. See January 21, 2011 news release, http://www.eetimes.com/electronics-news/4212388/Spreadtrum-tapes-out-40nm-LP-chip-using-Cadence-Silicon-Realization.

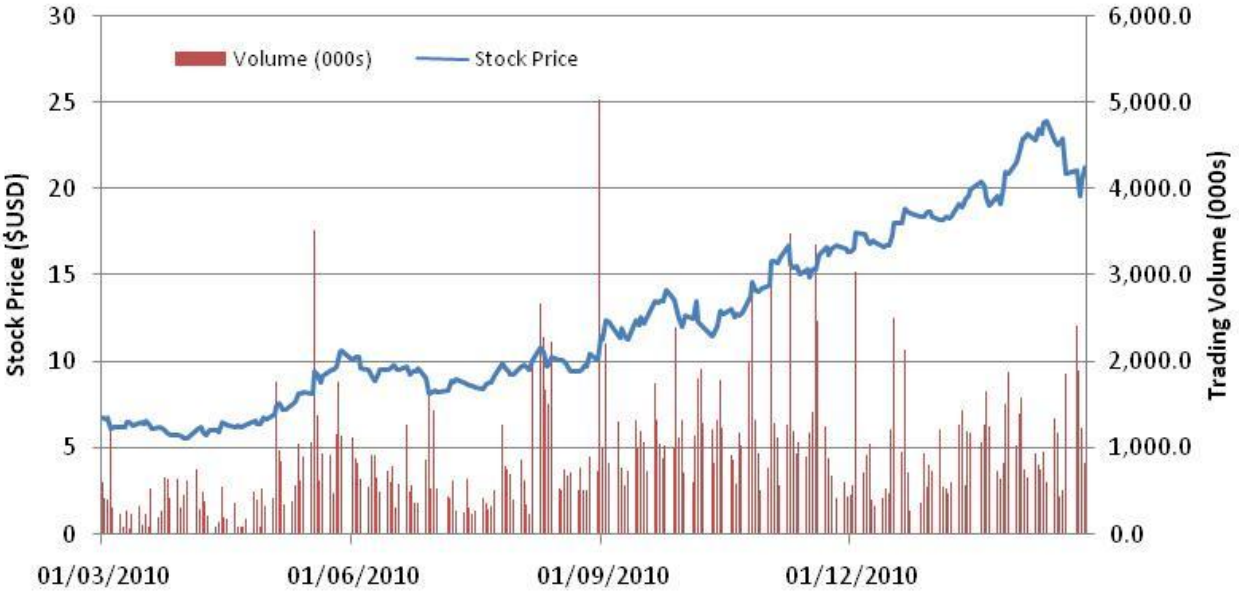
outstanding shares (see **Exhibit 17**).[38] The 52-week price range of the stock was between $5.54 and $24.20, and the stock has been trading at a moving average of $21.62 over the past 50 days and $16.70 over the past 200 days. Furthermore, the stock had traded on a 10-day and 3-month average volume of 1.22 million and 1.12 million, respectively. With the stock trading at increased volumes and declining prices in the last few days, it was essential to revisit the fundamentals and see if the growth story was still plausible. Ultimately, would this TD-SCDMA technology continue to experience exceptional growth in the Chinese mobile telecommunications market? Or was Spreadtrum overpriced in this niche sector?

[38] The short interest ratio is the proportion of the total number of shares of a security that have been sold short to the average daily trading volume of the stock. It can be used as an indicator of market sentiment with respect to the stock; a high ratio indicates a transition from investor optimism to pessimism.

Exhibit 1

SPREADTRUM COMMUNICATIONS, 2011

Spreadtrum Communications Share Price from March 1, 2010 to February 25, 2011



Source: Capital IQ.

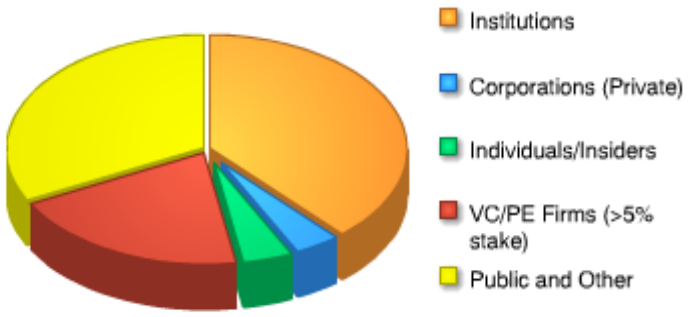
Exhibit 2

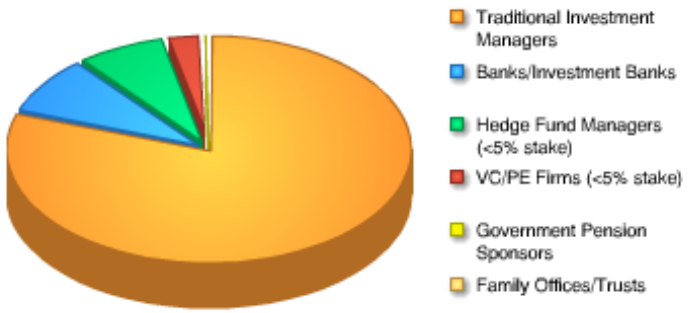
SPREADTRUM COMMUNICATIONS, 2011

Company Ownership Structure

Ownership Summary [1]			
Type	Common Stock Equivalent Held	% of Total Shares Outstanding	Market Value (USD in mm) [2]
Institutions*	16,402,972	35.11	329.2
Corporations (Private)	2,828,110	6.05	56.8
Individuals/Insiders	1,945,395	4.16	39.0
VC/PE Firms (>5% stake)	9,727,766	20.82	195.2
Public and Other*	15,817,877	33.86	317.5
Total	46,722,120	100.00	937.7

Top Holders [1]				
Holder	Common Stock Equivalent Held	% of Total Shares Outstanding	Market Value (USD in mm) [2]	Position Date
New Enterprise Associates	6,899,656	14.77	148.0	Dec-31-2010
SLP Cathay Holdings Ltd	2,828,110	6.05	60.7	Nov-09-2010
Silver Lake Partners	2,828,110	6.05	60.7	Dec-31-2010
Fidelity Investments	2,557,940	5.47	54.9	Dec-31-2010
BNY Mellon Asset Management	2,548,415	5.45	54.7	Mar-31-2010





Source: Capital IQ

Exhibit 3

SPREADTRUM COMMUNICATIONS, 2011

Spreadtrum Communications Financial Statements (in millions)

Balance Sheet		
	Dec-31-2008	Dec-31-2009
Currency	*USD*	*USD*
ASSETS		
Cash And Equivalents	57.8	37.8
Short Term Investments	5.2	20.5
Total Cash & ST Investments	**63.0**	**58.3**
Accounts Receivable	10.1	8.4
Other Receivables	2.0	3.6
Total Receivables	**12.2**	**12.0**
Inventory	13.8	25.5
Prepaid Exp.	4.6	1.9
Deferred Tax Assets, Curr.	1.4	1.3
Restricted Cash	-	11.5
Total Current Assets	**94.9**	**110.7**
Gross Property, Plant & Equipment	34.7	39.0
Accumulated Depreciation	(8.9)	(11.9)
Net Property, Plant & Equipment	**25.8**	**27.1**
Long-term Investments	0.7	44.9
Goodwill	-	2.0
Other Intangibles	21.1	26.6
Deferred Tax Assets, LT	0.7	0.6
Other Long-Term Assets	9.6	7.2
Total Assets	**152.9**	**219.1**
LIABILITIES		
Accounts Payable	10.8	19.5
Accrued Exp.	7.2	6.5
Curr. Port. of LT Debt	3.7	-
Curr. Income Taxes Payable	2.9	3.1
Unearned Revenue, Current	1.0	2.6
Def. Tax Liability, Curr.	0.1	-
Other Current Liabilities	4.8	23.4
Total Current Liabilities	**30.4**	**55.1**
Long-Term Debt	-	43.9
Other Non-Current Liabilities	1.0	5.5
Total Liabilities	**31.5**	**104.5**
Additional Paid In Capital	201.6	214.1
Retained Earnings	(82.9)	(102.2)
Comprehensive Inc. and Other	2.7	2.7
Total Common Equity	**121.4**	**114.6**
Total Equity	**121.4**	**114.6**
Total Liabilities And Equity	**152.9**	**219.1**

Exhibit 3 (continued)

SPREADTRUM COMMUNICATIONS, 2011

Spreadtrum Communications Financial Statements (in millions)

Income Statement			
	Dec-31-2007	Dec-31-2008	12 months
Currency	*USD*	*USD*	*USD*
Revenue	145.5	109.9	105.1
Cost Of Goods Sold	80.0	68.0	66.9
Gross Profit	**65.5**	**41.9**	**38.2**
Selling General & Admin Exp.	16.3	22.0	16.5
R & D Exp.	32.3	42.9	37.0
Other Operating Expense/(Income)	-	3.0	-
Other Operating Exp., Total	**48.6**	**67.9**	**53.6**
Operating Income	**16.9**	**(26.0)**	**(15.4)**
Interest Expense	(0.1)	(0.2)	(1.2)
Interest and Invest. Income	3.9	2.3	1.6
Net Interest Exp.	**3.8**	**2.1**	**0.4**
Currency Exchange Gains (Loss)	-	-	0.7
Other Non-Operating Inc. (Exp.)	1.4	2.3	0.0
EBT Excl. Unusual Items	**22.1**	**(21.5)**	**(14.3)**
Impairment of Goodwill	-	(32.3)	-
Asset Writedown	-	(18.0)	-
In Process R & D Exp.	-	(6.6)	-
Other Unusual Items	-	-	(4.0)
EBT Incl. Unusual Items	**22.1**	**(78.5)**	**(18.3)**
Income Tax Expense	1.0	0.2	1.0
Net Income	**21.1**	**(78.7)**	**(19.3)**
Per Share Items			
Basic EPS	$0.87	($1.79)	($0.43)
Diluted EPS	$0.48	($1.8)	($0.43)

Exhibit 3 (continued)

SPREADTRUM COMMUNICATIONS, 2011

Spreadtrum Communications Financial Statements (in millions)

Cash Flow			
	Dec-31-2007	Dec-31-2008	Dec-31-2009
Currency	*USD*	*USD*	*USD*
Net Income	**21.1**	**(78.7)**	**(19.3)**
Depreciation & Amort.	2.5	3.6	3.7
Amort. of Goodwill and Intangibles	3.4	6.3	4.2
Depreciation & Amort., Total	**5.8**	**9.9**	**7.9**
(Gain) Loss From Sale Of Assets	-	0.1	0.3
Asset Writedown & Restructuring Costs	-	56.9	-
(Income) Loss on Equity Invest.	-	0.0	0.0
Stock-Based Compensation	5.8	8.3	9.7
Provision & Write-off of Bad debts	-	2.8	-
Other Operating Activities	(0.3)	11.7	5.5
Change in Acc. Receivable	9.8	(9.1)	1.8
Change In Inventories	(11.3)	2.4	(17.2)
Change in Acc. Payable	9.3	(14.2)	6.0
Change in Unearned Rev.	(2.2)	(0.9)	14.4
Change in Inc. Taxes	1.2	(0.2)	0.2
Change in Other Net Operating Assets	(4.9)	(8.1)	10.4
Cash from Ops.	**34.4**	**(19.0)**	**19.7**
Capital Expenditure	(14.1)	(6.8)	(4.0)
Cash Acquisitions	-	(53.7)	(2.0)
Sale (Purchase) of Intangible assets	(8.5)	(3.2)	(5.7)
Invest. in Marketable & Equity Securt.	1.4	(5.9)	(59.5)
Other Investing Activities	(6.4)	-	(11.5)
Cash from Investing	**(27.6)**	**(69.7)**	**(82.7)**
Long-Term Debt Issued	-	-	43.9
Total Debt Issued	**-**	**-**	**43.9**
Long-Term Debt Repaid	(0.6)	(0.7)	(3.7)
Total Debt Repaid	**(0.6)**	**(0.7)**	**(3.7)**
Issuance of Common Stock	101.4	4.2	2.8
Repurchase of Common Stock	-	(14.9)	-
Cash from Financing	**100.8**	**(11.4)**	**43.0**
Foreign Exchange Rate Adj.	2.2	0.8	0.0
Net Change in Cash	**109.8**	**(99.3)**	**(20.0)**

Source: Capital IQ

Exhibit 4

SPREADTRUM COMMUNICATIONS, 2011

Mobile Telecommunications Financial Snapshot

	2005	2006	2007	2008	2009	2010
Consumer Expenditure on Telecommunications Equipment (RMB Millions)	59,159	69,485	79,189	76,326	106,976	125,132
Consumer Expenditure on Telecommunications Services (RMB Millions)	302,404	335,638	370,075	400,532	483,707	547,284
GDP from Post and Telecommunications (RMB Millions)	790,779	987,563	1,260,342	1,419,144	1,634,548	1,881,458
Capital Investment in Telecommunications (RMB Millions)	209,787	221,410	237,006	254,962	257,038	271,070
Total Telecommunications Revenues (RMB Millions)	584,035	649,216	739,860	809,535	842,430	912,291
Mobile Telecommunication Revenues (%of Telecom Revenue)	50	54	57	58	60	61

Source: Euromonitor

Exhibit 5

SPREADTRUM COMMUNICATIONS, 2011

Historical Mobile Phone Sales 2004-2009

	2004	2005	2006	2007	2008	2009
Mobile Phone Units Sold (in Millions)	73,301	78,960	87,979	102,668	123,220	132,267
Sales of Mobile Phones by Type (% Units)						
2G	100%	97%	94%	91%	82%	74%
3G	0%	4%	6%	9%	18%	26%

	2004-2009 CAGR	2008-2009	2004-2009
Sales of Mobile Phones (% Volume Growth)	13%	7%	80%
Sales of Mobile Phones (% Value Growth)	13%	16%	84%

Source: Official statistics, trade associations, trade press, company research, store checks, trade interviews, Euromonitor International estimate

Exhibit 6

SPREADTRUM COMMUNICATIONS, 2011

Forecasted Mobile Phone Sales Projections 2011-2014

	2011	2012	2013	2014
Mobile Phone Units Sold (in Millions)	163,982	179,560	194,284	222,650
Value of Mobile Phones Sold (in RMB Millions)	141,196	156,643	178,132	211,488

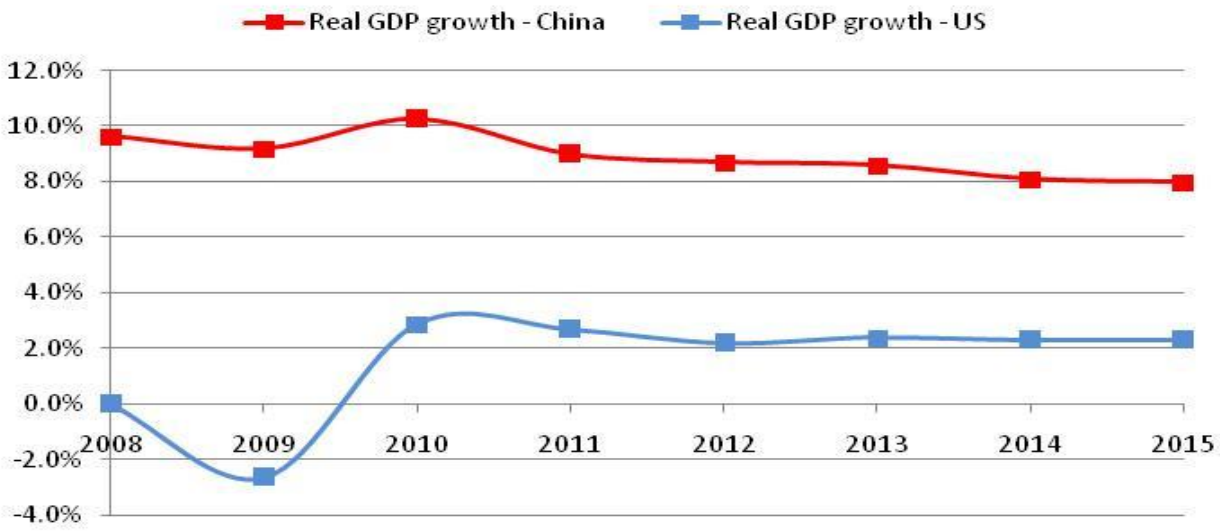
	2009-2014 CAGR	2013-2014	2009-2014 Total
Sales of Mobile Phones (% Volume Growth)	11%	15%	68%
Sales of Mobile Phones (% Value Growth)	16%		111%

Source: Official statistics, trade associations, trade press, company research, store checks, trade interviews, Euromonitor International estimate

Exhibit 7

SPREADTRUM COMMUNICATIONS, 2011

China and US Real GDP Growth (2008-2015E)

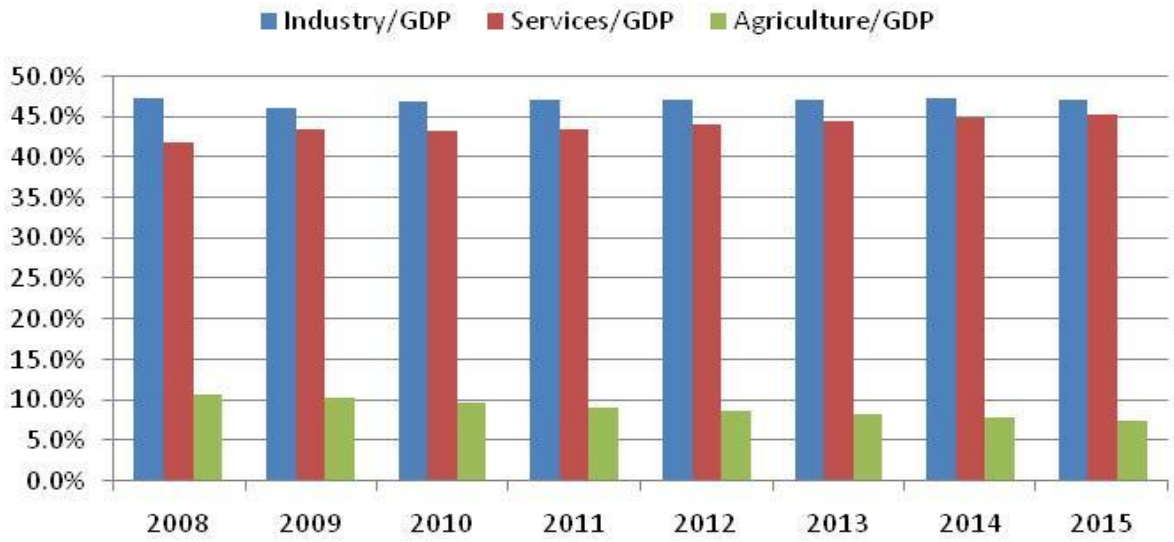


Source: The Economist Intelligence Unit

Exhibit 8

SPREADTRUM COMMUNICATIONS, 2011

Decomposition of China Real GDP

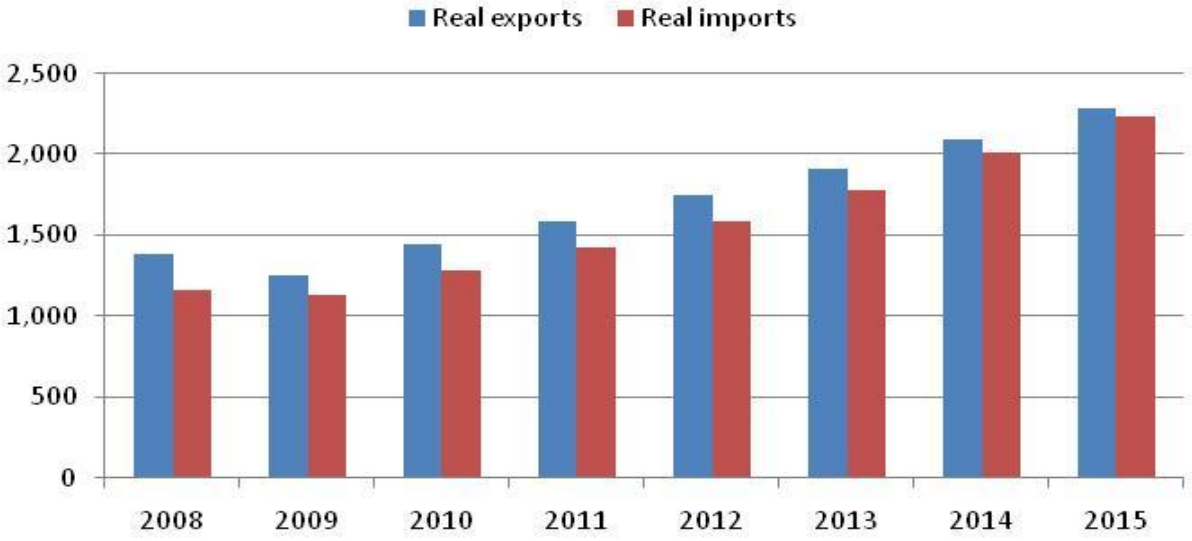


Source: The Economist Intelligence Unit

Exhibit 9

SPREADTRUM COMMUNICATIONS, 2011

Real Exports and Imports (in USD at 2005 prices)

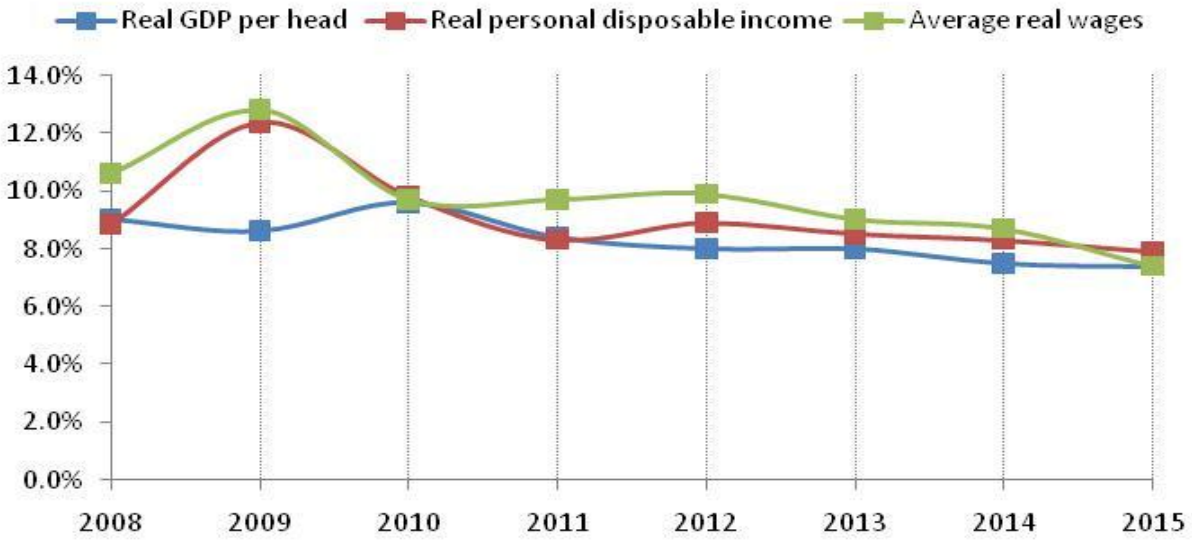


Source: The Economist Intelligence Unit

Exhibit 10

SPREADTRUM COMMUNICATIONS, 2011

Individual Income-Related Growth

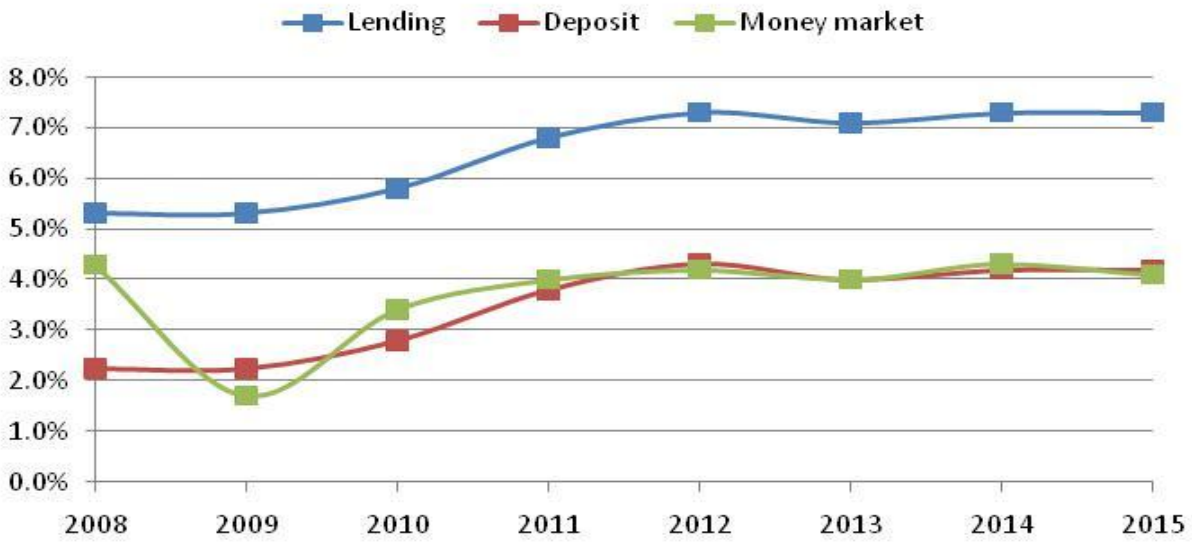


Source: The Economist Intelligence Unit

Exhibit 11

SPREADTRUM COMMUNICATIONS, 2011

Interest Rates in China



Source: The Economist Intelligence Unit

Exhibit 12

SPREADTRUM COMMUNICATIONS, 2011

China Governance Indicators

CHINA

Governance Indicator	Sources	Year	Percentile Rank (0-100)	Governance Score (-2.5 to +2.5)	Standard Error
Voice and Accountability	14	2009	5.2	-1.65	0.12
	11	2004	7.2	-1.46	0.16
	6	1998	9.6	-1.38	0.23
Political Stability	9	2009	29.7	-0.44	0.21
	8	2004	38.9	-0.21	0.24
	5	1998	38.5	-0.16	0.25
Government Effectiveness	11	2009	58.1	+0.12	0.17
	9	2004	54.9	-0.05	0.17
	7	1998	44.7	-0.33	0.15
Regulatory Quality	11	2009	46.2	-0.20	0.17
	10	2004	46.3	-0.24	0.18
	8	1998	39.0	-0.26	0.23
Rule of Law	16	2009	45.3	-0.35	0.14
	13	2004	41.4	-0.35	0.15
	9	1998	40.0	-0.37	0.18
Control of Corruption	13	2009	36.2	-0.53	0.14
	11	2004	31.1	-0.62	0.14
	8	1998	47.1	-0.26	0.18

90th-100th Percentile | 50th-75th Percentile | 10th-25th Percentile
75th-90th Percentile | 25th-50th Percentile | 0th-10th Percentile

Source: The World Bank Group's World Governance Indicators.

Exhibit 13

SPREADTRUM COMMUNICATIONS, 2011

Spreadtrum Financial Ratios

	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
Return on Assets %	(21.7%)	2.0%	2.9%	8.0%	16.0%	15.7%
Return on Capital %	(25.8%)	2.6%	4.0%	11.4%	24.3%	26.5%
Return on Equity %	(47.4%)	2.3%	5.2%	22.0%	33.7%	51.6%
Gross Margin %	23.6%	39.0%	42.2%	45.5%	44.6%	44.1%
SG&A Margin %	59.3%	9.6%	9.1%	8.2%	6.0%	5.3%
EBITDA Margin %	(70.3%)	10.6%	10.6%	18.1%	26.7%	23.6%
Total Asset Turnover	0.4x	0.8x	0.8x	0.9x	1.1x	1.2x
Fixed Asset Turnover	2.2x	5.5x	6.2x	7.8x	10.7x	13.9x
Accounts Receivable Turnover	12.2x	19.8x	20.4x	39.4x	105.8x	125.1x
Inventory Turnover	4.6x	6.2x	4.2x	3.6x	3.7x	3.7x
Current Ratio	5.1x	2.0x	2.0x	1.9x	1.9x	1.7x
Quick Ratio	4.4x	1.3x	1.2x	1.0x	1.1x	1.1x
Avg. Days Sales Out.	29.8	18.6	18.1	9.1	3.4	2.9
Avg. Days Inventory Out.	79.1	59.2	86.8	99.1	99.5	98.3
Avg. Days Payable Out.	59.5	39.4	65.0	45.4	34.5	40.4
Avg. Cash Conversion Cycle	49.4	38.3	39.8	62.9	68.5	60.8
Total Debt/Equity	41.9%	40.1%	38.3%	35.1%	31.8%	27.4%
Total Debt/Capital	29.5%	28.6%	27.7%	26.0%	24.1%	21.5%
LT Debt/Equity	41.2%	40.1%	38.3%	35.1%	31.8%	27.4%
LT Debt/Capital	29.0%	28.6%	27.7%	26.0%	24.1%	21.5%
Total Liabilities/Total Assets	40.8%	47.7%	47.7%	49.4%	51.5%	56.5%
EBIT / Interest Exp.	NM	4.5x	3.5x	10.7x	27.1x	33.4x
EBITDA / Interest Exp.	NM	11.6x	6.3x	13.6x	30.2x	36.6x

Source: Capital IQ

Exhibit 14

SPREADTRUM COMMUNICATIONS, 2011

Discounted Cash Flow Model Sensitivity Analysis

Discount Rate \ Terminal Growth Rate	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%
11%	$25.54	$26.60	$27.78	$29.11	$30.62	$32.35	$34.34	$36.67
12%	$22.03	$22.82	$23.70	$24.68	$25.77	$27.00	$28.40	$29.99
13%	$19.20	$19.81	$20.47	$21.21	$22.02	$22.93	$23.93	$25.07
14%	$16.88	$17.35	$17.87	$18.43	$19.05	$19.73	$20.48	$21.31
15%	$14.95	$15.32	$15.73	$16.17	$16.65	$17.17	$17.74	$18.37
16%	$13.33	$13.63	$13.95	$14.30	$14.67	$15.08	$15.52	$16.00
17%	$11.95	$12.19	$12.45	$12.73	$13.03	$13.35	$13.70	$14.08

Source: Casewriters' estimates.

Exhibit 15

SPREADTRUM COMMUNICATIONS, 2011

Comparables within the Semiconductor Industry

	Last-Twelve-Months			Next-Twelve-Months		
	TEV/Revenue	TEV/EBITDA	Price/Earnings	TEV/Revenue	TEV/EBITDA	Price/Earnings
MediaTek Inc. (TSEC:2454)	2.51x	8.38x	12.06x	2.7x	10.6x	16.5x
Cavium Networks, Inc. (NasdaqGS:CAVM)	10.91x	120.07x	NM	6.7x	28.0x	35.8x
Hangzhou Silan Microelectronics Co Ltd (SHSE:600460)	6.26x	25.81x	36.92x	5.0x	21.9x	29.6x
Infineon Technologies (XTRA:FIX)	2.07x	8.64x	17.21x	1.9x	6.5x	11.3x
Datang Telecom Technology (SHSE: 600198)	2.53x	46.34x	175.04x	2.2x	N/A	94.6x
MStar Semiconductor, Inc. (TSEC:3697)	N/A	N/A	N/A	N/A	N/A	16.3x
Cogo Group, Inc. (NasdaqGS:COGO)	0.71x	11.82x	20.47x	0.6x	5.8x	17.7x
High	10.91x	120.07x	175.04x	6.70x	28.00x	94.60x
Low	0.71x	8.38x	12.06x	0.60x	5.80x	11.30x
Mean	4.17x	36.84x	52.34x	3.18x	14.56x	31.69x
Median	2.52x	18.82x	20.47x	2.45x	10.60x	17.70x
Spreadtrum Communications Inc. (NasdaqGS:SPRD)	3.61x	19.08x	28.84x	2.0x	9.2x	13.6x

Source: Capital IQ

Exhibit 16

SPREADTRUM COMMUNICATIONS, 2011

Recent Analyst Recommendations

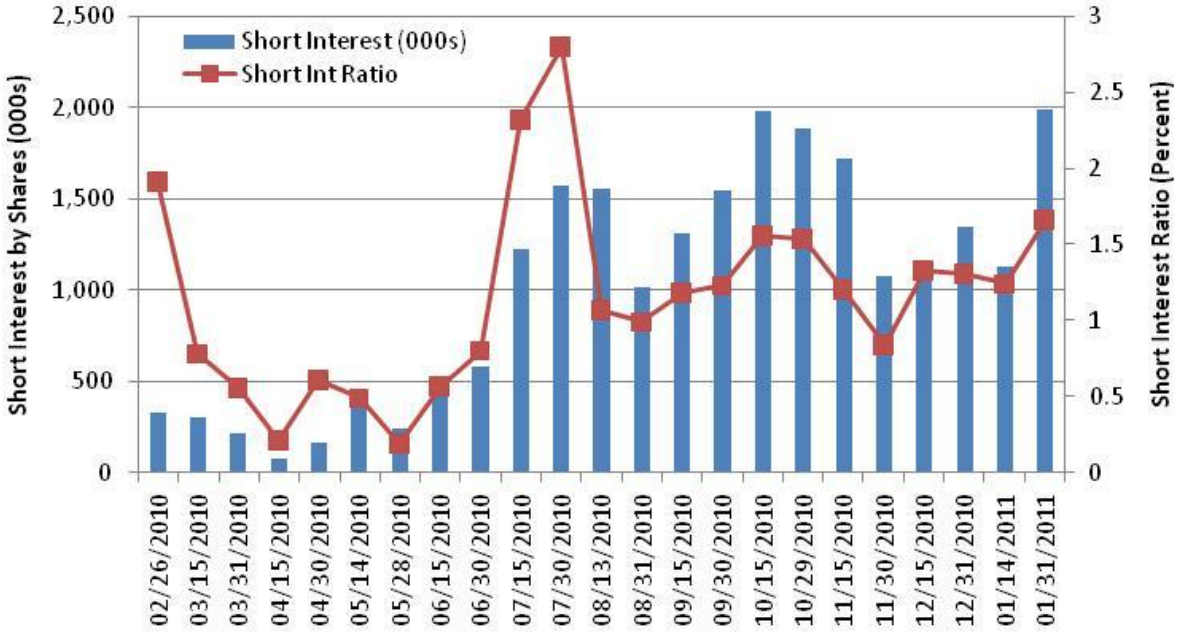
Firm Name	Analyst	Recommendation	Target Price	Period	Date
Chardan Capital Markets	Srivatsa	Buy	$ 26.00	12 month	03/01/11
Needham & Co	Bolton	Buy	$ 30.00	12 month	02/22/11
AURIGA	Liu	Buy	$ 26.50	12 month	02/14/11
China International Capital Corp	Chen	Buy	$ 22.70	12 month	01/23/11
HSBC	Wang	Overweight	$ 25.00		01/18/11
Daiwa Securities Capital Markets Co.	Chen	Hold	$ 17.10		12/01/10
Canaccord Genuity Corp	Walkley	Hold	$ 17.00	12 month	11/18/10

Source: Bloomberg

Exhibit 17

SPREADTRUM COMMUNICATIONS, 2011

Recent Short Interest in Spreadtrum Communications



Source: Bloomberg