



# HYNIX SEMICONDUCTOR, INC.

## *A Case Study on Global Depositary Receipts*

“Paul” Moon Sub Choi<sup>†</sup> and Steven J. Jordan<sup>‡</sup>

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## 1 Background

In early April 2001, Paul and his boss Mason, stock analysts covering Korean technology and electronics shares at Deutsche Bank Securities, received a confidential e-mail regarding the “Chinese Wall.” The e-mail notice was from the joint book-running syndicate (Deutsche, Salomon Smith Barney, Barings and Nomura - why together?) for a GDR (Global Depositary Receipts) issuance of Hynix Semiconductor Inc. (Reuters code: 000660.KS; Bloomberg code: 000660 KS), which now is the number two DRAM semiconductor maker after Samsung Electronics (Reuters code: 005930.KS; Bloomberg code: 005930 KS).

“Crossing over the Chinese Wall” refers to switching roles within different divisions at an investment bank. At a typical investment or universal bank, there are separate divisions such as research, equity capital markets, debt capital markets, derivatives structuring, derivatives sales and trading, equity sales and trading, fixed income sales and trading, property trading, real estate financing etc. Paul and Mason were equity research analysts and they were prevented, by securities exchange regulation, from accessing confidential company data that were intended for equity or debt capital markets teams.<sup>1</sup> When they were told to “cross the Chinese Wall” it meant to switch their roles to equity capital market analysts or investment bankers.

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<sup>†</sup>Department of Economics, and Department of Finance, Accounting, and Real Estate (FARE), Cornell University, Ithaca, NY 14853. E-mail: [mschoi@post.harvard.edu](mailto:mschoi@post.harvard.edu). Choi has been supported by Kwanjeong Educational Foundation grants 03112BUS044 and 0422USD012.

<sup>‡</sup>Department of Finance, Accounting and Real Estate (FARE), Cornell University, Ithaca, NY 14853; and Yale School of Management, New Haven, CT 06520. E-mail: [steven.jordan@yale.edu](mailto:steven.jordan@yale.edu).

<sup>1</sup>Information pooling and conflict of interest issues are like taboos. An investment bank with multiple divisions can issue an equity research report that strongly recommends investment in a specific stock while its equity trading and sales team can be leaking the information to the institutional investors before the report is actually published officially (conflict of interests). Should the equity research report labeled as a “strong buy call” be informative and written by influential analysts the descriptive share will gain as a result of “self-fulfilling-prophecy.” Informed investors then can purchase the shares before the news arrives in the market or opportune from the optimal exit strategy by selling the shares at a higher price.

GDRs are SEOs (seasoned-equity offerings) offered overseas other than the geographical location where the original shares are traded. GDRs listed on U.S. markets are called ADRs (American DRs). GDRs can be seen being traded in Luxembourg. For instance, a typical Korean GDR is a bundle of two original shares (as in the case of Hynix GDR listing). GDRs do not always perform in line with the original shares. However the discrepancies are corrected in a relatively short lapse by arbitrage usually performed by property traders of investment banks (those who manage their companies' own assets).

After two months of excruciating hassles and tug-o-wars between Hynix, creditor banks and regulators (governmental guarantee bodies), the syndicate was able to offer US\$12 billion of GDRs at US\$6.00 per GDR (this was then about double the trading price of Hynix in Korea - why?) on the Luxembourg Bourse in June 2001. The GDR holders were allowed to convert their GDRs to the new Hynix issues to be traded in Korea starting from September 1, 2001. Ex post, 60% of the GDR investors did so. In June of 2001, there were 4 billion Hynix shares outstanding in the Korea Stock Exchange. Then-expected calendar year 2001 net profits was US\$1 billion (this company then just completed its newest "Synergy Technology" DRAM assembly lines - known as "fabs" - so there was a huge amount of depreciation in addition to the capital expenditure, abbreviated as "CAPEX").

## 2 Shareholder value

How would the value of the existing shareholders of the Korean-traded Hynix shares be affected by the proposed GDR, *ceteris paribus* with various debt assumptions? Would they benefit or lose from a new influx of shares (so called dilutants)? How do we forecast the price performance qualitatively assuming we are in early September 2001 and can guess that a significant portion of GDR holders will convert their GDRs to new Hynix issues - i.e. they will move their trading location from Luxembourg to Korea? Let us further assume that abnormal market shocks from the 9/11 attacks never happened. Now,

$$\begin{aligned}
 & \text{earnings per share (EPS) of existing shares based on 2001 forecast net profits} \\
 & = \frac{\text{US\$1 billion}}{\text{4 billion existing shares outstanding}} \\
 & = \text{US\$0.25.}
 \end{aligned}$$

### 2.1 Zero-debt scenario

With zero debt, all earnings are due to equity capital, that is there is no leverage. Thus, the new US\$12 billion will create new earnings for Hynix of the amount:

$$\begin{aligned}
 \text{effective new shares sold} &= \frac{\text{US\$12 billion}}{\$3} \\
 &= \text{4 billion shares} \\
 \implies \text{earnings rate from new capital} &= \text{earnings rate from old capital} \\
 &= \text{US\$0.25} \times \text{4 billion} \\
 &= \text{US\$1 billion} \\
 \implies \text{new forecast earnings} &= \text{US\$1 billion} + \text{US\$1 billion} \\
 &= \text{US\$2 billion.}
 \end{aligned}$$

Thus, we have

*additional shares after conversion of GDRs into new Hynix issues (de facto SEOs)*

$$\begin{aligned}
 &= 4 \text{ billion shares} \\
 &\quad + 60\% \text{ conversion} \times 2 \text{ shares per GDR} \times \frac{\text{US\$12 billion from GDR proceeds}}{\text{US\$6 per GDR}} \\
 &= 2.4 \text{ billion new shares}
 \end{aligned}$$

$\implies$  *EPS after conversion of GDRs into new Hynix issues shares*

$$\begin{aligned}
 &= \frac{\text{US\$2 billion}}{4 \text{ billion existing shares} + 2.4 \text{ billion new shares}} \\
 &= \text{US\$0.3125}
 \end{aligned}$$

$$\implies \text{change in EPS} = \frac{0.3125 - 0.25}{0.25} = +0.25,$$

so there is a 25% increase - a huge jump in the shareholder value from the existing owners' perspective. In fact, reverse accounting dilution has occurred.

Due to suboptimal trading by many GDR holders, the existing shareholders of Hynix made a wind-fall profit in terms of earnings per share - 11.25 cents more than the previous 25 cents - up by 25%! The reverse dilution has significantly added to the shareholders' value as a result.

## 2.2 Non-zero debt and closed-debt covenant, scenario I

With non-zero debt and a closed debt covenant, earnings due to equity capital are leveraged. For ease of calculation, let us assume a 50% debt-equity ratio. This means that US\$4 billion of equity has the earning power of US\$8 million (assuming zero debt payment, but the ultimate effect will be the same as long as debt is less expensive than equity). Thus, the new US\$12 billion will create new earnings for Hynix of the amount:

$$\begin{aligned}
 \text{effective new shares sold} &= \frac{\text{US\$12 billion}}{\$3} \\
 &= 4 \text{ billion shares} \\
 \implies \text{earnings rate from new capital} &= \text{earnings rate from old capital} \\
 &= \text{US\$0.25} \times 4 \text{ billion} \times 0.5 \text{ assuming closed debt covenant} \\
 &= \text{US\$0.5 billion} \\
 \implies \text{new forecast earnings} &= \text{US\$1 billion} + \text{US\$0.5 billion} \\
 &= \text{US\$1.5 billion.}
 \end{aligned}$$

Thus, we have

*additional shares after conversion of GDRs into new Hynix issues (de facto SEOs)*

$$\begin{aligned}
 &= 4 \text{ billion shares} \\
 &\quad + 60\% \text{ conversion} \times 2 \text{ shares per GDR} \times \frac{\text{US\$12 billion from GDR proceeds}}{\text{US\$6 per GDR}} \\
 &= 2.4 \text{ billion new shares}
 \end{aligned}$$

$$\begin{aligned}
&\Rightarrow \text{EPS after conversion of GDRs into new Hynix issues shares} \\
&= \frac{\text{US\$1.5 billion}}{4 \text{ billion existing shares} + 2.4 \text{ billion new shares}} \\
&= \text{US\$0.2344} \\
&\Rightarrow \text{change in EPS} = \frac{0.2344 - 0.25}{0.25} = -0.0624,
\end{aligned}$$

so there is a 6.24% decrease - a significant slash in the shareholder value from the existing owners' perspective.

The existing shareholders of Hynix incurred costs in terms of earnings per share - 2 cents off from previous 25 cents down by 6.24%.

### 2.3 Non-zero debt and closed-debt covenant, scenario II

With non-zero debt and a closed debt covenant, earnings due to equity capital are leveraged. In this case, assume a 90% debt-equity ratio (again assume zero debt costs). This means that US\$4 billion of equity has the earning power of US\$40 million. Thus, the new US\$12 billion will create new earnings for Hynix of the amount:

$$\begin{aligned}
\text{effective new shares sold} &= \frac{\text{US\$12 billion}}{\$3} \\
&= 4 \text{ billion shares} \\
\Rightarrow \text{earnings rate from new capital} &= \text{earnings rate from old capital} \\
&= \text{US\$0.25} \times 4 \text{ billion} \times 0.1 \text{ assuming closed debt covenant} \\
&= \text{US\$0.1 billion} \\
\Rightarrow \text{new forecast earnings} &= \text{US\$1 billion} + \text{US\$0.1 billion} \\
&= \text{US\$1.1 billion.}
\end{aligned}$$

Thus, we have

$$\begin{aligned}
&\text{additional shares after conversion of GDRs into new Hynix issues (de facto SEOs)} \\
&= 4 \text{ billion shares} \\
&\quad + 60\% \text{ conversion} \times 2 \text{ shares per GDR} \times \frac{\text{US\$12 billion from GDR proceeds}}{\text{US\$6 per GDR}} \\
&= 2.4 \text{ billion new shares} \\
&\Rightarrow \text{EPS after conversion of GDRs into new Hynix issues shares} \\
&= \frac{\text{US\$1.1 billion}}{4 \text{ billion existing shares} + 2.4 \text{ billion new shares}} \\
&= \text{US\$0.1719} \\
&\Rightarrow \text{change in EPS} = \frac{0.1719 - 0.25}{0.25} = -0.3124,
\end{aligned}$$

so there is a whopping 31.24% decrease - a huge slash in the shareholder value from the existing owners' perspective.

The existing shareholders of Hynix incurred costs in terms of earnings per share - 8 cents off from previous 25 cents down by 31.24%.

### 3 Discussion

Despite the efforts exerted by the syndicate, Hynix and the regulators, Hynix shares plummeted to 10 cents in a year or so from approximate US\$3.00 when the GDRs were listed on the Luxembourg Bourse.<sup>2</sup> In the case of zero-debt scenario, do the institutional investors really have a case, or did the share drop to other external factors, such as 9/11?

With both the scenarios of non-zero debt and a closed debt covenant assumption, the dilution has infringed the shareholders' value as a result. It is an indirect potential cost a priori, but will become a direct hit ex post should the lower EPS be reflected in the trading price of Hynix—which it did. In these scenarios, did the institutional investors have a sound case against the investment bankers?

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<sup>2</sup>Numerous investment bankers and analysts of the joint book-running syndicate were sued by the institutional investors but Paul since he was in his probation when he participated in the GDR listing deal and was not legally liable.