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HOSTILE TAKEOVER CASE STUDY: ANALYSIS OF THE ASE'S TAKEOVER OF RIVAL SPIL

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0. Executive Overview

The Mergers and Acquisitions (M&A) market represents an important aspect of the corporate environment. Mergers, acquisitions, and takeovers have been a part of the business world for centuries. Nowadays, companies are often faced with decisions concerning these actions due to the job of management is to maximize shareholder value. In any case, far from being common, in Taiwan has been few cases of hostile takeovers. However, the most famous one is happening currently and is being a complex issue. The aim of this study is to analyze for the financial and the strategic point of view the ASE's hostile takeover against SPIL and propose best solutions to all the players involved.

The financial analysis is split into two parts: the Financial Statements Analysis that compares the financial situation of both companies with the financial ratios of them, and the Stock and Synergies Valuation that provides an opinion of the intrinsic value of SPIL and estimate the value of the operating and financial synergies that can create the merger.

The strategic analysis provides a broad range of lobbying strategies that have SPIL and ASE to try to attack or defend in the future of the issue. Also, the role of the FTC is analyzed to know the importance of it in the future result of the takeover.

Finally, it is given some suggestions, justified in the results of the analyses, in order to help to each company to choose the best option for solve the current situation.

Key Words: Mergers and Acquisitions, M&A – Taiwan, hostile takeover, Business enterprises – Valuation, Business enterprises – Fusion

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1. Introduction

The Mergers and Acquisitions (M&A) market represents an important aspect of the corporate environment. Mergers, acquisitions, and takeovers have been a part of the business world for centuries. Nowadays, companies are often faced with decisions concerning these actions due to the job of management is to maximize shareholder value.

During the past 30 years, mergers and Acquisitions have represented an important aspect of the corporate environment. In most cases, the rationale behind these transactions has been to increase shareholder's wealth of the acquired by using a variety of sources, ranging from greater synergies by combined organization to the replacement of underperforming managers.

One of the most interesting aspects of M&A is the issue of a hostile takeover, which happen when the takeover occurs against the will of the company acquired. During the last years, since 1980, takeovers are being more common, but hostile ones are not a typical thing in Asia, at least not that much as the U.S. There are a lot of variables involved in the takeover process, such as different types of a hostile takeover, players involved in the process, possible strategies which can be used by resisting companies against hostile takeovers, different regulations, and laws in different jurisdictions, the role of the government institutions, among other things. In addition, there is a lot of different results to a hostile takeover, depending on the variables mentioned. Due to these points, the aim of this study is to analyze a real hostile takeover now in process, propose best solutions to all the players involved based on the financial and strategic points of view of each one.

As said before, in Asia a hostile takeover is not very common. In Taiwan has been very few cases, one of the most famous is happening nowadays and is the one to be analyzed in this report, and in so Japan has been no cases of it. The real hostile takeover analyzed that occurs in the Republic of China (Taiwan) involve two of the biggest companies in the IC packaging and testing industry in this country. These companies are Advanced Semiconductor Engineering (ASE), the largest company in IC packaging and testing, who is trying to acquire shares of his bigger rival Siliconware Precision Industries Co (SPIL) since the end of 2015.

The semiconductor industry is the major component of Taiwan's vital electronics sector so is the biggest part of a sector that generates 40% of exports, around NT$2,200 billion (about US$72.5 billion) that is, approximately, the 14% of GDP. In Taiwan, the exports are the 60% of GDP so it is the 22nd country with bigger exports based on GDP or 20th based on net exports.

2. IC packaging and testing industry

There are three main stages of semiconductor production: first chips are designed; next they are fabricated from silicon wafers, and finally they are packaged into a usable form and tested. Taiwan was the first in use a system in which each stage is performed by a separate company, as opposed to the integrated model used by companies such as Intel.

The main part of the integrated circuit (IC) industry revenue are from IC Manufacturing (50-55%). After that, is the IC Design that contributes about 25%. Finally, is the IC Packaging and Testing that it is the remaining 20-25%. Packaging and testing it is considerate the same stage because, usually, are done by the same company. Table 1 provides the major indices for Taiwan IC Industry.

(In NT$ billion)	2013	2014	2015 (e)	2016 (f)	2017 (f)
Industry Revenue	**1,888.6**	**2,203.3**	**2,246.6**	**2,374.9**	**2,529.0**
IC Design	481.1	576.3	562.6	600.0	640.0
IC Manufacturing	996.5	1,173.1	1,242.7	1,320.9	1,403.0
IC Packaging & Testing	411	453.9	441.3	454	486
Product Revenue	**718.4**	**835.4**	**791.6**	**815.0**	**850.8**

Table 1. Major Indices for Taiwan IC Industry (real, expected and forecast).
(Source: IEK-ITRI, TSIA, August 2015)

By the end of 2014, Taiwan Semiconductor industry consisted of 245 IC fabless design houses, 16 fabrication companies, 37 packaging and testing houses, 7 substrate suppliers, 11 wafer suppliers, 3 mask makers, and 4 lead frames companies, etc. (Figure 1). The advantages of cost efficiency, flexibility, and speed resulted from the vertically integrated infrastructure and the industry cluster effect has made Taiwan IC industry highly competitive in the global market.

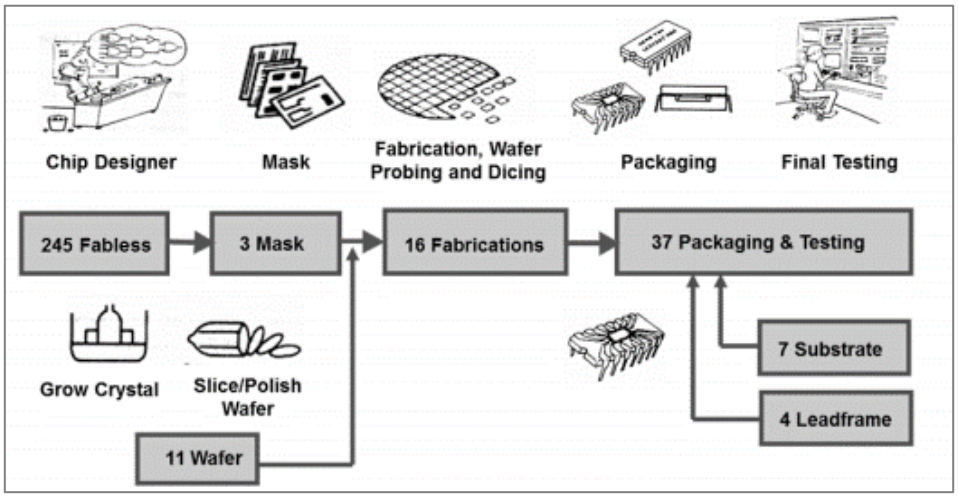


Figure 1. Unique Infrastructure in Taiwan (2014). (Source: IEK-ITRI, TSIA, July 2015)

Taiwan IC packaging and testing revenue reached NT$453.9 billion (including domestic and overseas sales) in 2014, with NT$316 billion from packaging and NT$137.9 billion from testing. Taiwan IC packaging and testing industry remained the number one worldwide, representing 55.9% of worldwide packaging and testing revenue, followed by the US and Singapore. Total capital investment reached NT$95.3 billion in 2014 and is expected to increase slightly to NT$96.2 billion in 2015.

Indicator	2011	2012	2013	2014	2015 (e)
# of Companies	37	37	37	37	37
Revenue (NT$B)	390.4	393.5	411.0	453.9	441.3
Growth (%)	-5.9%	0.8%	4.4%	10.4%	-2.8%
WW Market Share	55.2%	55.3%	55.2%	55.9%	56.2%
WW Ranking	1	1	1	1	1
Value-Added (NT$B)	187.8	192.0	201.0	222.9	217.0
Value-Added Rate (%)	48.1%	48.8%	48.9%	49.1%	49.2%
Capital Investment (NT$B)	84.7	88.8	87.2	95.3	92
Capital Investment/ Revenue (%)	21.7%	22.6%	20.3%	21.0%	20.8%
R&D Employee (p)	3,755	3,870	4,000	4,060	4,100
R&D Expense (NT$B)	11.3	13.0	14.6	15.4	15.6
R&D Expense/Revenue (%)	2.9%	3.3%	3.4%	3.4%	3.5%
Workforce (p)	91,52	92	93,7	94	95
Average revenue per workforce (NT$M)	4.3	4.3	4.6	4.8	4.6

Table 2. Major Indices of Taiwan Packaging and Testing Industry. (Source: IEK-ITRI, TSIA, August 2015)

As mentioned above, there is 37 IC packaging and tested companies. Total revenue of top 5 companies comprised 69% of total Taiwan packaging and testing revenue, and that of top 10 comprised 81.1%. Because that, it is difficult for small companies to compete in this industry due to an occupied great market share and the difficulty of obtaining the economies of scale that the big companies have. Also, it is complicated buyers of the industry change the supplier because they have a close association. ASE, SPIL, and PTI remained the top 3 packaging and testing companies in Taiwan in 2014 (Table 3).

2013 Ranking	2014 Ranking	Company	2013 Revenue	2014 Revenue	Growth (%)
1	1	ASE [1]	143.3	150.8	5.2%
2	2	SPIL	69.4	83.1	19.7%
3	3	PTI [2]	37.6	40.0	6.5%
4	4	Chipmos	17.3	22.0	27.2%
5	5	Chipbond	15.8	17.7	12.0%
6	6	KYEC	14.7	16.3	10.9%
7	7	OSE	9.6	13.8	43.8%
8	8	FATC	9.0	10.7	18.9%
9	9	Walton	8.9	10.0	12.4%
10	10	Tong Hsing	7.9	8.3	5.1%

Table 3. Taiwan Top 10 IC Packaging and Testing Companies. (Source: Market Observation Post System; IEK-ITRI, TSIA. May 2015)

[1] ASE:USI revenue excluded

[2] PTI: Greatek revenue included

3. ASE and SPIL. Introduction [3]

According to the survey released by the Industrial Economics & Knowledge Center (IEK) of the Taiwan government-backed Industrial Technology Research Institute (ITRI), in 2014 ASE commanded 37.5 percent of the Taiwan market and SPIL 20.6 percent, together controlling as much as 58.1 percent.

3.1 Advanced Semiconductor Engineering Inc. (ASE) (TAIEX: 2311, NYSE: ASX)

The ASE Group (Advanced Semiconductor Engineering Inc. and USI, IC.) is the world's largest provider of independent semiconductor manufacturing services in assembly and test, with more than 67,000 employees and an 80,000 billion NT$ capital. The group develops and offers complete turnkey solutions covering IC packaging, design and production of interconnect materials, front-end engineering test, wafer probing and final test, as well as electronic manufacturing services through USI, Inc. As a global leader, ASE provides a complete scope of services for the semiconductor market, driven by superior technologies, breakthrough innovations, and advanced development programs.

ASE is capable of providing services at all stages of the semiconductor manufacturing process, with the exception of wafer fabrication. The service capabilities range from front-end engineering testing, wafer probing, packaging and final test. They also provide design manufacturing service from board design to systems assembly through USI, Inc., an ASE group member.

Front-end engineering test is the testing of semiconductor prototypes before they go into volume production. The services include software development, electrical verification, reliability analysis and failure analysis.

Wafer probing is a process whereby each individual die (chip) on the wafer is tested for defects to identify operable semiconductors for packaging. Packaging, also known as assembly, is the processing of bare semiconductors into finished semiconductors, serving to protect the die and facilitate electrical connections and heat dissipation. They offer a broad range of semiconductor packages meeting the diverse function and cost requirements of our customers. Final testing of

[3] Overviews taken from the web sites of the companies

semiconductors ensures that they function properly before being shipped to customers or assembled in electronic products.

3.2 Siliconware Precision Industries Co., Ltd. (SPIL) (TAIEX: 2325, NYSE: SPIL)

Founded in May 1984, Siliconware Precision Industries Co., Ltd. (SPIL) focuses on IC packaging, processing, trading, testing, and other related fields. Our products are widely applied to PC, communication products, business consumer electronics and memory products. SPIL is the World No.3 professional packaging and testing services company with more than 24,000 employees and a 31 billion NT$ capital. Since the incorporation, they have been dedicated to technical alleviation and resource integration in the field of perspective packaging, testing, and wafer-bumping to provide complete semiconductor backend turnkey services for all our customers. In recent years, they also expanded to include copper-based process packaging services.

They have built up capacity and implemented mass production to ensure our company can withstand competition for copper-based process packaging services. Moreover, SPIL is also equipped with superior advantages, such as flexible capacity, robust financial structure, advanced technology, higher yield rate and stability. Further, they have also established worldwide service sites in Taiwan, United State, Europe, Japan and China to provide global services.

The advanced production processes demanded by the costumers have given SPIL a reputation of high quality and satisfying services. SPIL continuously fine-tunes its techniques to meet the demands of the customers and has become the priority partner their customer will turn to when they seek EMS professionals. SPIL is both public-listed on the Taiwan Stock Exchange and NASDAQ. To maintain the rights and interests of shareholders in both Taiwan and America, SPIL abides by all the related security laws and regulations, emphasizing corporate governance. SPIL has also implemented Sarbanes-Oxley Act of 2002 to reinforce the internal audit control and enhance the accuracy of their financial report, hence improving the quality of disclosure of financial information.

4. Takeover of ASE against SPIL: beginning and current state

The buyer is usually who initiates and drives an M&A operation and there are many reasons for them to do it. These reasons could be classified in five different types of M&A according to the buyer's strategic motivation:

- Overcapacity: The strategic objective of the acquirer is reduced overall industry capacity, gain market share and improve efficiency through the acquisition of a competitor.
- Geographic rollup: The strategic objective of the acquirer is expand its physical presence.
- Product or market extension: The strategic objective of the acquirer is to complement or extend its products with the products of the acquired.
- Research and development: The strategic objective of the acquirer is buying the technological advances of the acquired rather than trying to obtain it by itself.
- Industry convergence: The strategic objective of the acquirer is establishing a new industry by assembling resources from existing businesses.

As shown below, the takeover of ASE against SPIL is due to an overcapacity strategic motivation. Also, an M&A operation could be classified into four different types according to the positions of the acquired and the acquired in the line of business:

- Horizontal merger: A combination of two firms that produce the same type of good or service.
- Vertical merger: A merger between a firm and one of its suppliers or customers.
- Congeneric merger: A merger of firms in the same general industry, but for which no customer or supplier relationship exists.
- Conglomerate merger: A merger of companies in totally different industries.

As seen from above, ASE and SPIL are companies in the same industry and, more or less, both produce the same type of good and service. Therefore, the takeover is an attempt to do a horizontal merger.

Finally, a takeover can be friendly or hostile:

- Friendly: The managers of the acquired company want the acquisition.
- Hostile: The managers of the acquired company do not want the acquisition and will try to urge the stockholders not to tender their shares.

In the issue case, as shown below, SPIL's board of directors are positioned against the acquisitions. Therefore, the takeover is a hostile takeover.

4.1 First tender offer – August 2015 to September 2015

On August 21st, 2015, ASE announced that it planned to start on August 24th, 2015 tender offers in the Republic of China (Taiwan) and the United States for common shares and American Depositary Shares (ADS) of SPIL, at a price of NT$45 in cash per common share and NT$225 per ADS. ASE original plan was to acquire an estimated maximum number of 779,000,000 common shares of SPIL equivalent to approximately 25% of the common shares, and a minimum number of 155,818,056 common shares, approximately 5%. The tender offer started on August 24th, 2015 and ended on September 22nd, 2015. [1]

The purpose of ASE acquiring an equity interest in SPIL through the tender offer was look for an opportunity to explore possible avenues of cooperation between both firms, in compliance with current legislation and following mutual interest principles, and facing intense global competition and the accelerating trend towards consolidation in the semiconductor industry. ASE was willing to discuss such avenues of cooperation with SPIL's operation team, but the acquisition is a financial investment so ASE will not intervene in SPIL's operations.

The response of SPIL was on August 28th, 2015, with the advice of JPMorgan Chase & Co. as its financial advisor, Simpson Thacher & Bartlett LLP as its the United States legal counsel and Jones Day as its Taiwan legal counsel. In there, the Review Committee and the Board of Directors recommended shareholders not to tender their shares and/or ADRs following these reasons:[2][3]

1. SPIL believe the tender offer price premium is too low because using the average closing price of NTD 44.87 within the last 90 trading days prior to August 21st, 2015 as the calculation basis, the tender offer price premium, in SPIL's opinion, is only 0.29% and considering the firm's operations, market price of shares, earning per share, book value per share, future development, among others, it is not enough.
2. SPIL has retained J.P. Morgan Chase Bank, maybe because it is one of the major shareholders of the company, and the opinion of the bank is that the Proposed Cash Considerations are inadequate, from a financial point of view to the holders of the Company's common shares and the Company's ADS.

3. Pursuant to an opinion provided by the certified public accountant Fu-Jie Hsu from Ding Shuo Certified Accountants, the reasonable transaction price range is from NT$ 48.91 to NT$ 60.58 per common share, equivalent to a reasonable transaction price range of NT$ 244.55 to NT$ 302.90 per ADR (ADR has to be divide by 5 to get the equivalent of one share price).
4. ASE announced the tender offer is purely financial investment and it had no plans to interfere with the business operations of SPIL but had also stated publicly that the purpose is to seek to build a foundation and opportunity for cooperation between ASE and SPIL. For SPIL, these two statements of ASE are contradictory and the real purpose is not understandable.
5. SPIL has cooperation opportunities with other companies and is open to strategic partnerships with others but always held discussions with its partners in advance in order to find a consensus and achieve the goal of mutual benefit. SPIL distrusted ASE due to ASE did not communicate with SPIL before the tender offer, the real purpose was unclear and also the no information about what would happen with client relationships, the competitive relationship between SPIL and ASE, or the impacts to SPIL's business and employment.

Furthermore, SPIL started to negotiate an exchange of shares with Hon Hai Precision Industry Co., Ltd. (Foxconn) (Taiwan Stock Exchange: 2317) to start a strategic alliance relationship. They agreed to use market value method to calculate the share exchange ratio, which is 1 common share of Hon Hai Share for 2.34 common share of SPIL common share. After Hon Hai and SPIL exchange of shares, Hon Hai would hold 840,600,000 SPIL's shares, accounting for 21.24% shares of SPIL, post capital increase; and SPIL would hold 359,230,769 of Hon Hai shares, accounting for 2.20% shares of Hon Hai, post capital increase. [4] A summary of the reasons of this strategic alliance was SPIL intends to create synergies with Hon Hai through: [5] [6] [7]

1. Collaborating to capture the fast-growing SiP market from increasing applications
2. Co-develop system integration solutions for IoT, and be ready for the Next Big Thing
3. Capturing ODM IC business opportunities that leverage SPIL's existing wire-bonding capacity
4. Penetrating the smartphone market in emerging markets, which is expected to achieve substantial growth going forward

5. Improving operational efficiency with Hon Hai's expertise in process enhancement and automation.
6. Sharing relevant technologies and processes
7. More balanced shareholding structure

SPIL was very interested in this alliance to avoid ASE's tender offer, due to this, SPIL published two letters to the shareholders and one report during the end of September and beginning of October trying to convince them that Hon Hai alliance was the best option. Moreover, ASE was also interested in convincing SPIL's shareholders and tried to fight against this publication with letters to them. In the first one, ASE announced on October 1st, 2015, that the tender offer was well oversubscribed and they received the support of SPIL's shareholders. The number of Common Shares (including those represented by ADSs) validly tendered and not withdrawn in our Tender Offer was 1,147,898,165 (representing 36.83% of the issued and outstanding share capital of SPIL), a number which significantly exceeded the offer cap of 779,000,000 Common Shares (representing approximately 24.99% of the issued and outstanding share capital of SPIL).[8] Due to this, ASE said that the price of NT$45 was fair and affirmed that the market saw the compelling rationale for ASE's investment and the future collaboration between both firms. Also, ASE started a campaign against the strategical alliance between SPIL and Hon Hai, based on: [9] [10]

1. The reasonableness of the implied price of SPIL's shares to be issued in the Hon Hai Share Exchange is highly questionable for ASE. In ASE's opinion, the implied price of SPIL's shares to be issued in the Hon Hai Share Exchange (NT$35.85), calculated by them based Hon Hai's ex-dividend share price on September 3, 2015 (NT$83.90) divided by the share exchange ratio of 2.34, was below ASE's Tender Offer price (NT$45.00) and also significantly below the bottom end of the value (NT$48.91) determined by SPIL's independent appraiser. The implied price of SPIL's shares to be issued in the Hon Hai Share Exchange by ASE was also lower than SPIL's share price on the date SPIL first announced the proposed Hon Hai Share Exchange (NT$39.50).
2. The Hon Hai Share Exchange would not bring any cash to SPIL or SPIL shareholders. Instead, it allowed Hon Hai to become SPIL's largest shareholder through SPIL's issuance of new shares amounting to approximately 21.24% of its share capital under Article 156 of the Company Act of the Republic of China. If the shareholders would have approved the AOIs Amendment at the EGM, SPIL's Board of Directors have may issue new shares

in the amount of 1,883,638,861 shares. These additional shares would account for approximately 52.56% of the issued and outstanding share capital of SPIL.

3. SPIL intentionally disenfranchised ASE (a major shareholder holding 24.99% of outstanding and issued share capital of SPIL) and deprived ASE of the opportunity to voice a view to SPIL shareholders and to protect the interests of shareholders. In ASE's view, it was evident from these actions that SPIL's management team did not seriously take into account the interests of all shareholders.
4. SPIL only needed to increase its authorized capital from 3.6 billion shares to approximately 4.2 billion shares to effect the Hon Hai Share Exchange (such amount is adjusted to include the shares issuable upon the conversion of SPIL's offshore convertible bonds). ASE was wondering why was necessary for SPIL's Board to propose to amend its Articles of Incorporation to significantly increase its authorized capital to 5 billion shares.

Finally, the strategic alliance between SPIL and Hon Hai was unsuccessful due to the failure in the First Extraordinary Shareholders' Meeting of 2015, on October 10th, 2015, of the proposals needed to be accepted to allow SPIL management to do the shares exchange between both firms. [11] In response to that, SPIL tried to fill a lawsuit against ASE based on the fact that ASE said the tender offer was a financial investment but later they attempted to, directly and indirectly, control SPIL's business operations as criticizing the strategic alliance with Hon Hai but it was worthless.[12] In conclusion, ASE succeeded in its purpose of acquiring 25% of SPIL's shares. Not content with that, ASE would try to do a second tender offer.

SPIL			ASE	
ASE Takeover Response	Aug-21		Aug-21	ASE announced the tender offer for SPIL's shares
			Aug-24	The Tender Offer starts
SPIL formally recieves the public tender offer	Aug-25			
Recommendations of SPIL regarding the Tender Offer	Aug-28			
SPIL and Hon Hai try to form a strategic alliance	Aug-29			
Letter to shareholders 1	Sep-10		Sep-10	ASE publish Tender Offer conditions and Q&A
Conditions of Hon Hai and SPIL Exchage of Shares	Sep-15			
Shareholder Notice	Sep-18			
Letter to shareholders 2	Sep-28		Sep-28	Open letter to SPIL Shareholders from ASE 1
			Oct-01	Open letter to SPIL Shareholders from ASE 2
			Oct-05	Open letter to SPIL Shareholders from ASE 3
SPIL response to ASE letters	Oct-06			
SPIL is filing a lawsuit against ASE The Results of Shareholders' Meeting of 2015	Oct-15			

Figure 2. Timeline of the Tender Offer (Source: Own preparation)

4.2 Second tender offer – December 2015 to March 2016

Once ASE had acquired the 24.99% of SPIL's shares, the issue seemed to have come to an end, but on December 14th, 2015, two months after the final of the first takeover, ASE announced that its board of directors has approved and submitted a proposal to SPIL to acquire all SPIL shares for cash, to be effected through an agreed statutory share exchange transaction under Taiwan law between ASE and SPIL on customary terms and conditions. The terms and conditions of the proposal were: [13]

- Price: NT$55 per common share (or NT$275 per ADS).
- All shares of SPIL not otherwise owned by ASE. If the transaction had been consummated, SPIL would become a wholly-owned subsidiary of ASE. ASE would maintain SPIL's separate legal entity status and retain SPIL's legal entity name.
- All directors and management of SPIL would be retained and their current compensation and benefits maintained.
- SPIL's current employee policies would be observed and all SPIL employees would be retained to ensure the protection of their labor rights.
- SPIL have must terminate or cancel a Tsinghua Deal (SPIL formed a strategic alliance with Tsinghua Unigroup Ltd. On December 11th, 2015 [14]) in accordance with its terms or applicable laws (and terminate any other transaction that will dilute SPIL's shares or other similar transactions).

- ASE asked that SPIL reviews the proposal and send a response no later than December 21st, 2015.

It could be a good question to ask why ASE made first a tender offer of 25% of the SPIL's shares and, after that, another offer of 100%. One answer to this question is that ASE used the first takeover to show its power to SPIL and to acquire some power inside it, and, after being successful, tried to negotiate directly with the SPIL's board of directors to acquire a 100%. Therefore, ASE tried to avoid more hostile operations. Also, ASE threated SPIL with the second takeover of another 25% if they do not accept the offer of the 100% shares. This strategy is called a bear hug and it explained in next chapter.

The ASE's official reasons for this proposal were that ASE's investment in SPIL was based on the need for Taiwan's semiconductor packaging and testing industry players to actively seek opportunities for cooperation and resource consolidation to maintain and further improve the competitive strength of Taiwan's semiconductor packaging and testing industry in the face of intensified global competition and emerging competitors. Therefore, ASE hoped that their investment in SPIL would have promoted the cooperation between both companies and set an example in Taiwan for productive cooperation between two exemplary companies in the face of intense competition. However, from the time ASE launched the tender offer for shares of SPIL, they had noted the hostility of SPIL's management towards their investment and its refusal to reasonably consider the possibility of cooperating with ASE. Also, ASE were chagrined to learn that on December 11, 2015 the board of directors of SPIL decided to enter into a share placement agreement with Tsinghua Unigroup Ltd. pursuant to which SPIL would issue 1,033 million common shares to a subsidiary of Tsinghua for NT$55 per share contemplating a defensive and highly dilutive transaction that would bring no cash to its shareholders.

The SPIL's response to this proposal arrived the last day, on December 21st, and only said that the proposal would be discussed during the board of directors' meeting on December 28th, 2015. [15] However, ASE decides on December 22nd, 2015 to start a second tender offer for common shares and ADS of SPIL at a price of NT$55 per common share and NT$275 per ADS, respectively. ASE planned to acquire an estimated maximum number of 770,000,000 common shares of SPIL (including common shares represented by ADSs), equivalent to approximately 24.71% of the issued and outstanding common shares of SPIL. The offer period started on December 29th, 2015 and ended on March 17th, 2016. As a result, ASE planned to launch this Tender Offer for the purpose of increasing its shareholding in SPIL to approximately 49.71%. Furthermore, the tender

offer was subject to the conditions that SPIL shareholders, at the extraordinary general meeting to be held on January 28th, 2016 did not approve the proposals required for the Third Party Deal (SPIL would issue a large number of new shares to a third party through private, another highly dilutive transaction which brings no cash value to SPIL shareholders.). Also, SPIL had to terminate the Third Party Deal in accordance with its terms or applicable laws before January 28, 2016. [16]

After that, on December 28th, 2015 the SPIL Board announced the result of the discussion of the ASE Acquiring Proposal: [17]

1. SPIL defended itself against the ASE's accusations of hostility saying that SPIL has never opposed amicable industry consolidation that is beneficial for the development of the Taiwan semiconductor industry. On the contrary, SPIL opposed hostile plundering takeovers, because it may possibly be detrimental to the Taiwan semiconductor industry. ASE was the party that commenced the hostile takeover, while SPIL has never, from the beginning, maintained hostility towards ASE.
2. ASE admitted and proposed on December 14th and December 22nd that the acquisition of 100% of the shares of the Company and management control is ASE's ultimate goal. If ASE ceased its second hostile tender offer to demonstrate good will, SPIL was willing to proceed with evaluation and negotiation of ASE's proposal to use a share swap, with cash as consideration, to acquire 100% of the shares of the Company.
3. Prior to further evaluation of the proposal, ASE was requested to provide concrete responses to:
    a. Protect the rights and interests of the Company's Employees: SPIL asked ASE to detail a concrete proposal for the subsequent safeguarding of the rights of the Company's employees.
    b. Protect Shareholders' Equity Interests: SPIL asked ASE to explain the basis for determining the price of NT$55 per share, in order to facilitate the evaluation on the reasonability of ASE's proposed price.
    c. Comply with the Antitrust Laws in Main Markets Worldwide.

The ASE's response arrived only one day after, on December 29th, 2015 and in it, ASE announced that it was not going to cease the second tender offer but hopes that both parties could start to negotiate the Acquiring Proposal. [18] The next day, on December 30th, 2015, SPIL formally received the public tender offer prospectus and relevant documents from ASE and announced

a Review Committee and Board of Directors to discuss it on January 7th, 2016. The conclusions and recommendations that appear then were published the same day, January 7th, and said: [19]

1. ASE's second tender offer price was not reasonable. Independent expert CPA Wei-Lin Chen of Dingshuo accounting firm had produced a reasonability opinion determining that the reasonable transaction price range should have been NT$56.33 to NT$68.60 per share. Additionally, CPA Samuel Lu of Diwan & Company accounting firm had produced a reasonability opinion determining that the reasonable transaction price range should have been NT$58.32 to NT$63.44 per share. Also, ASE's tender offer price of NT$55 per share while the price offered by Company's private placement subscriber was also NT$55 per share. Comparing the control rights and liquidity of the two cases, ASE should pay a higher price premium, and thus should reasonably offer a higher price.
2. In view of ASE's tender offer prospectus not disclosing whether ASE had completed a thorough evaluation nor whether ASE had made filings with the competent authorities in foreign countries and jurisdictions, ASE needed to provide more information in order to resolve such doubts. The time to review anti-trust cases by the Taiwan Fair Trade Commission and antitrust authorities vary depending on countries or jurisdictions. If ASE was unable to obtain the approval of anti-trust authorities during the tender offer period, there was a risk that the selling shareholders' shares cannot be delivered.
3. Recommendation to the Shareholders: the shareholders of the Company should still consider the aforementioned explanations and closely review the tender offer announcement and tender offer prospectus issued by ASE, including the relevant risks associated with participating and not participating noted in the tender offer prospectus, to decide individually whether to participate in the tender offer.

In that moment the role of the Taiwan's Fair Trade Commission (FTC) became important. The FTC started to review the second tender offer because an antitrust filing. On February 18th, 2016, ASE publishes a clarification and explanation about the tender offer, trying to get the permission of the FTC that was still needed to the successful of the tender offer. Moreover, SPIL tried to pressure the FTC with the fact that the acquisitions will hurt the market and Taiwan, will create a monopoly situation and also raised anti-trust concerns and fears that the competition in the market would be affected. On February 24th, 2016, the FTC extended its review for the acquisitions for another 60 days: "Because there are still many unanswered questions regarding the nation's industry, market structure and competition that needed to be clarified through

further deliberation, the commission has decided to extend the review period," the commission said in a statement. Also, the statement said that the commission was scheduled to hold more briefings with related companies. Industry representatives and government agencies before reaching a final decision. However, the tender offers ended on March 24th, 2016, so the regulatory approval had to be received by that time, if not the tender offer would fail.

Finally, the last day of the tender offer arrived without a decision of the FTC, so the tender offer failed and the acquisition was unsuccessful. Due to this, the FTC suspended its review of the bid and that decision meant a victory for SPIL. The FTC said in a statement that as "ASE's tender offer has expired on March 17th, 2016, there is no chance that the merger will happen. As a result, the commission will stop reviewing the case". The consequences of this fail in the ASE's attempt to acquire 100 percent shares of SPIL is that ASE has been barred from launching a new round of tender offers to fully acquire SPIL within a year as the Company Act stipulates.

The response of ASE to the role of the FTC in the tender offer failed arrive the same March 17th, when the firm said formally that the tender offer could not go through: "We deeply regret and are extremely baffled by the FTC's decision, which is complete without legal basis and violates the FTC's own administrative precedents," ASE said in the statement. On the other hand, SPIL welcomed the decision of the FTC.

With the failed of the tender offer, another chapter of the issue was gone, but it was not the end of it because ASE was not likely to give up so soon. ASE released a statement saying: "we will continue with our plan to acquire 100 percent equity interest in SPIL through all legally permissible means and avenues." Following these declarations, ASE acquired in the open market 224.3 million SPIL shares by spending NT$11.9 billion in a span of three days. On March 21st, 2016, ASE put down NT$ 2.93 billion to gather 54.8 million SPIL shares at NT$ 53.53 per share. On March 24th, another bid on cost more than NT$784 million to garner 15.2 million shares at NT$51.56 per share. Finally, on March 25th, ASE expended NT$8.21 billion to buy 154.3 million shares, at a unit price of NT$53.21. With these operations, ASE holds 33.28% of SPIL's shares that comes closer to a threshold of 33.33% which requires a review by the FTC. If ASE continues to raise its stake in SPIL to a level above that threshold, it will need regulatory approval.

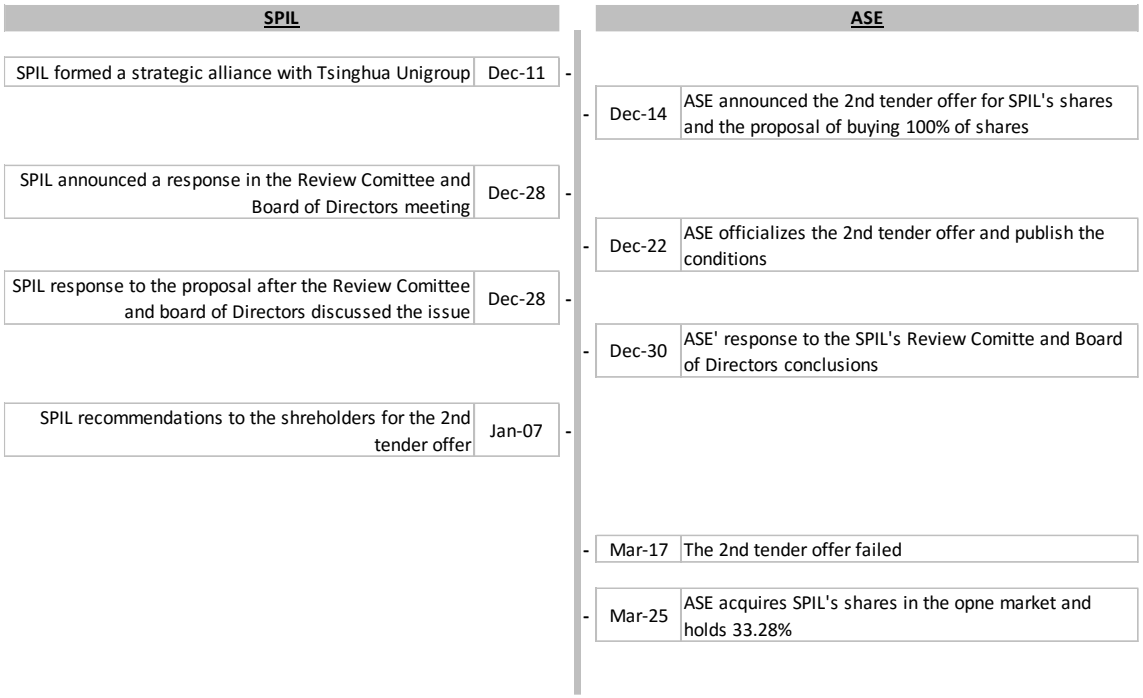


Figure 3. Timeline of the 2nd Tender Offer (Source: Own preparation)

In conclusion, the analysis starts in a situation of uncertainty. Firstly, ASE wants to acquire 100% of SPIL's shares by hook or by crook and looks than the shareholders support it. However, SPIL is defending itself against the takeover – with the help of the FTC – making ASE as the bad guy of the issue. Also, the SPIL's employees have been expressing against the takeover, as their managers, adding social pressure to the issue. That last point apart from the fact of a takeover is not common in Taiwan, is generating also a social rejection in Taiwan's economic. In conclusion, the next step of the issue looks to be difficult to predict, but ASE needs to clarify its purpose of obtaining the permit of the FTC, social support, and, in the best situation, the support of SPIL's managers. Also, ASE needs to analysis the maximum effort that makes the takeover unworthy. All in all, the next steps of the analysis of the issue are the financial analysis to quantify the reasons of ASE and the worth of the effort, and a strategic analysis of the possible actions of both companies.

5. Financial analysis I: Financial statements of ASE and SPIL

Financial statement analysis is the process of reviewing and evaluating a company's financial statements (such as the balance sheet or profit and loss statement) to improving the awareness of the financial health of the company and the effectivity and quality of decision making. Financial statements record financial data; however, this information must be evaluated through financial statement analysis to become more useful to investors, shareholders, managers and other interested parties. Financial statements of ASE and SPIL are in Appendix 1.

Financial analysis also involves comparing the firm's performance to that or other firms in the same industry and evaluating trends in the firm's financial position over time. Ratio analysis is the principal tool in financial analysis. They are used to make comparisons based on relations between statements, allowing comparisons between different volumes and industry averages.

The ratios that are going to be analyzed can be divided into five categories:

- Liquidity ratios, which gives an idea of the firm's capability to pay the debts that are due within one year.
- Asset management ratios, which gives an idea of the efficiency and the effectively of how use the firm its assets.
- Debt management ratios, which gives an idea of how the firm has financed its assets and the firm's ability to repay its long-term debt.
- Profitability ratios, which gives an idea of the effectively, based on profits, of how the firm is operating and utilizing its assets.
- Market value ratios, which gives an idea of the thinks of the investors about the firm and its future prospects with the stock price.

In conclusion, in this chapter, it is going to be compared the financial situation of ASE and SPIL between each other and against the industry average. In order to have an industry average accurate, it has been calculated all of the ratios for each company of the Top 10 IC packaging and testing companies viewed on Chapter 2 (IC packaging and testing industry). These companies are: (Table 3)

- Advanced Semiconductor Engineering Inc. (ASE)
- Siliconware Precision Industries Co., Ltd. (SPIL)
- Powertech Technology Inc. (PTI)
- ChipMOS Technologies Bermuda Ltd. (ChipMos)

- Ability Enterprise Co. Ltd. (Chipbond)
- King Yuan Electronics Co. Ltd. (KYEC)
- Orient Semiconductor Electronics Ltd. (OSE)
- Formosa Advanced Technologies Co. Ltd. (FATC)
- Walton Advanced Engineering Inc. (Walton)
- Tong Hsing Electronic Industries Ltd.(Tong Hsing)

The ratios of each company and the industry average obtained are in Appendix 2.

5.1 Liquidity ratios

Will the firm be able to pay off the short-term debts as they come due and thus remain a viable organization? Liquidity ratios help answer this question showing the relationship of a firm's cash and other currents assets to its current liabilities. A liquid asset is one that trades in an active market and thus can be converted to cash at the going market price.

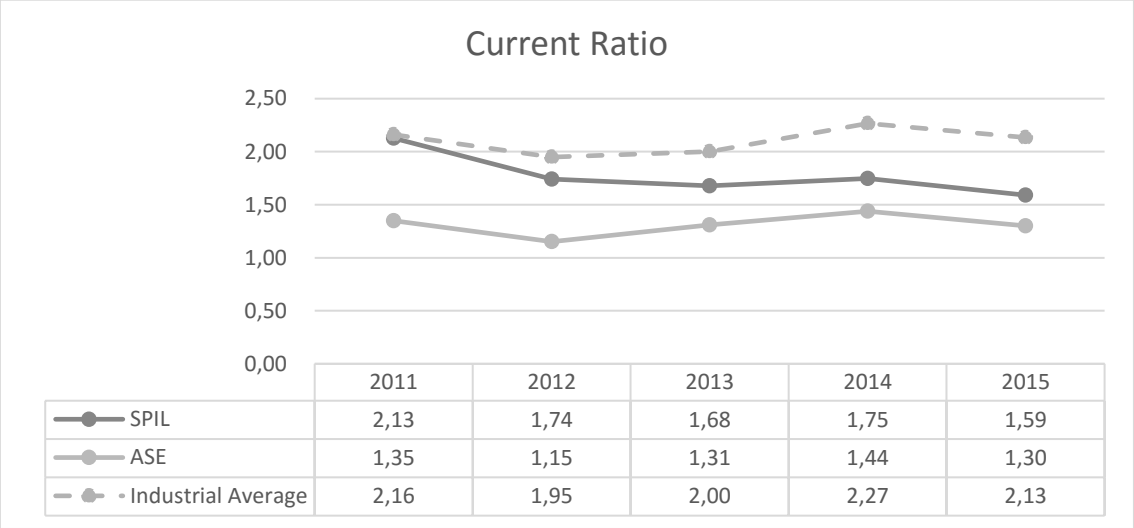
Current Ratio

It is calculated by dividing current assets by current liabilities. Current assets include cash, marketable securities, accounts receivable and inventories. Current liabilities consist of accounts payable, short-term (due within one year) notes payable to its bank and accrued wages and taxes. So the current ratio measures if the company is capable of paying the liabilities most demandable with liquids assets.

$$Current\ Ratio = \frac{Current\ assets}{Current\ liabilities}$$

The current ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 4. In there, it can be seen how the liquidity of each firm is. Looking for the industry average, it could be seen that in IC packaging and testing the average is more than 2 in the last years.

SPIL has been losing liquidity last 5 years. Now the firm is still solvent, but might have liquidity problems in the future (the current ratio is less than the industry average), so it has to be analyzed why it happens and fixed. On the other hand, ASE has been in a risky area for at least 5 years, so they must investigate deeply the cause of this problem of liquidity.



	2011	2012	2013	2014	2015
SPIL	2,13	1,74	1,68	1,75	1,59
ASE	1,35	1,15	1,31	1,44	1,30
Industrial Average	2,16	1,95	2,00	2,27	2,13

Figure 4. Current Ratio of ASE and SPIL (Source: Own preparation)

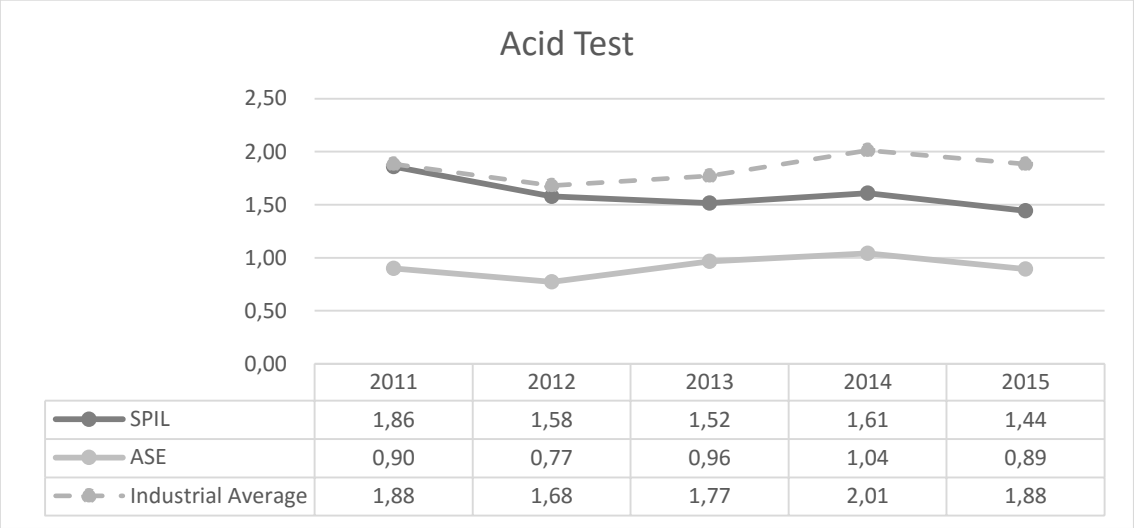
Quick Ratio or Acid Test

It is calculated by dividing current assets deducting inventories by current liabilities. Inventories are typically the least liquid of a firm's current assets and usually, the slow sale and a poor financial condition can provoke less cash than expected. This account is one of the major cause of losses in an almost broken firm. Due to this, the acid test gives a more conservative view of the liquidity.

$$Acid\ Test = \frac{Current\ assets - Inventories}{Current\ liabilities}$$

Acid Teste has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 5. In there, it is possible to have a second vision of the liquidity of a firm.

As seen in the current ratio, SPIL has been losing liquidity last 5 years, and now the company has an acid test lower than the industry average. It confirms the problem of liquidity seen before. Likewise, in ASE case, the acid test has been lower than the industry average since at least 5 years ago, so the liquidity problem diagnosed before is also confirmed.



	2011	2012	2013	2014	2015
SPIL	1,86	1,58	1,52	1,61	1,44
ASE	0,90	0,77	0,96	1,04	0,89
Industrial Average	1,88	1,68	1,77	2,01	1,88

Figure 5. Acid Test of ASE and SPIL (Source: Own preparation)

5.2 Asset Management ratios

Does the amount of each type of asset seem reasonable, too high or too low in view of current and projected sales? Asset management ratios help answer this question measuring how effectively the firm is managing its assets. The importance of these ratios are in the fact that the companies acquire assets with capital from banks or other sources, and it is expensive. It has to be a balance between neither too many assets that would make a big cost of capital or too few assets that would make profitable sales are being lost.

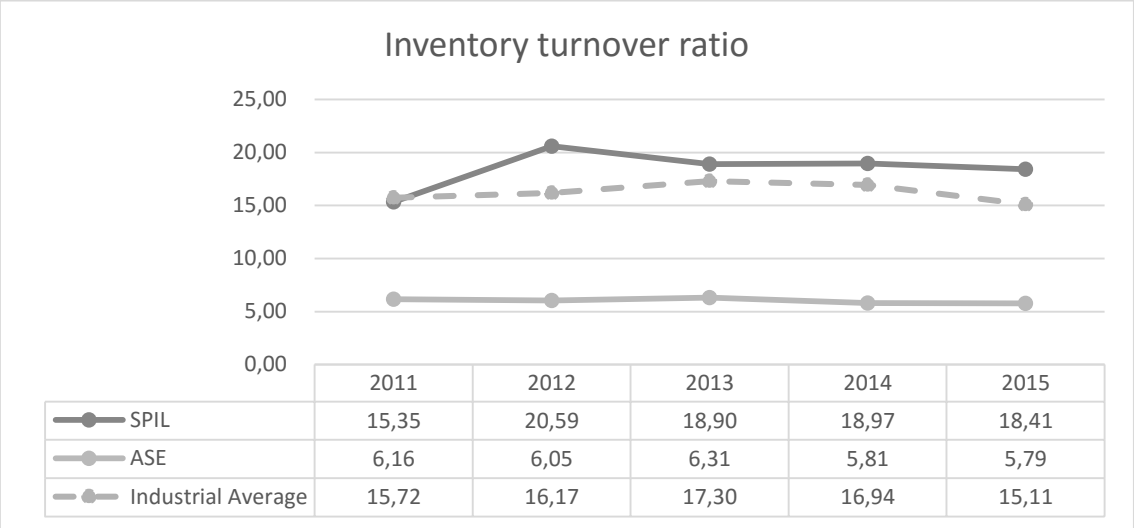
Inventory Turnover Ratio

Turnover ratios divide sales by some asset and show how many times the particular asset is turned over during a year. In the case of inventory turnover ratio, you can see the times an inventory is sold and restocked per year.

$$Inventory\ Turnover\ Ratio = \frac{Sales}{Inventories}$$

Inventory Turnover Ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 6. In there, it can be seen how the inventory of SPIL have a more often (three times more) turnover than the inventory of ASE and the industry average is closer to SPIL than to ASE. This suggests that ASE is holding too much inventory, something unproductive by the fact of the high cost of storage and fast devaluation of the technology. The great turnover of SPIL can be explained by the growth that is living the

firm in the last years, which could involve a higher number of sales and more movement of inventory[4].



	2011	2012	2013	2014	2015
SPIL	15,35	20,59	18,90	18,97	18,41
ASE	6,16	6,05	6,31	5,81	5,79
Industrial Average	15,72	16,17	17,30	16,94	15,11

Figure 6. Inventory Turnover Ratio of ASE and SPIL (Source: Own preparation)

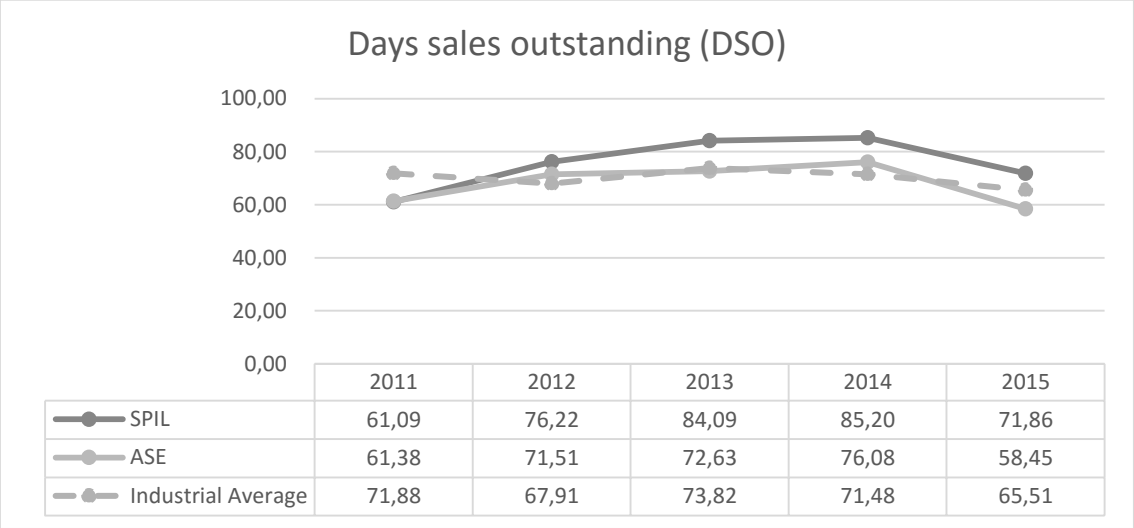
Days Sales Outstanding (DSO)

The Days sales outstanding evaluate the account receivable and represents the average length of time the firm must wait after making a sale before receiving cash. The best thing to evaluate this ratio is comparing it with the credit terms of the firm. If the credit terms are lower than DSO, the firm's credit manager should to review it and try to collect receivables after.

$$Day\ Sales\ Outstanding = \frac{Receivable}{Annual\ sales\ /365}$$

DSO has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 7. In there, it can be seen how both firms are having similar values and similar trend than the industry average, so it looks that they are in normal ranges. Despite that, ASE has a lower value that is always better, because receivables are blocked cash without profit (more DSO means higher working capital needed and lower free cash flow).

[4] The growth of SPIL can be seen in Chapter 2 - Table 3



	2011	2012	2013	2014	2015
SPIL	61,09	76,22	84,09	85,20	71,86
ASE	61,38	71,51	72,63	76,08	58,45
Industrial Average	71,88	67,91	73,82	71,48	65,51

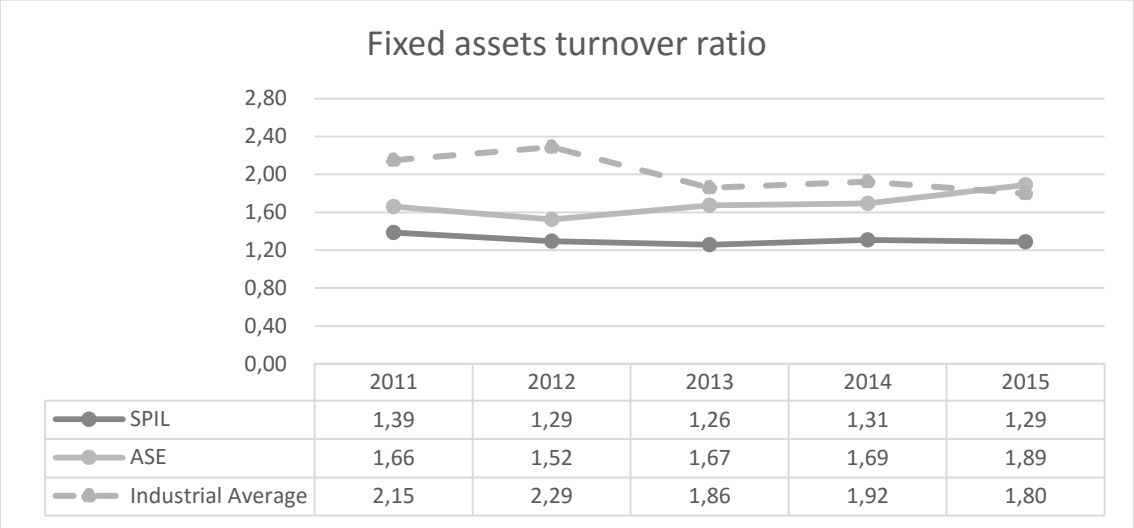
Figure 7. DSO of ASE and SPIL (Source: Own preparation)

Fixed Assets Turnover Ratio

The fixed assets turnover ratio is the ratio of sales to net fixed assets and measures the effectivity of how the firm uses its plant and equipment. However, this ratio has to be analyzed carefully, because the depreciation and inflation make that an old company using its fixed assets as intensively than a new company is going to have a higher fixed assets turnover ratio.

$$Fixed\ Assets\ Turnover\ Ratio = \frac{Sales}{Net\ fixed\ assets}$$

Fixed Assets Turnover Ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 8. In there, it can be seen how ASE have a higher ratio that means that they could be using more effectively its fixed assets, but also could be caused by the fact that is an older and bigger firm than SPIL. Furthermore, the industry average was higher and now same as ASE, so SPIL is also less effectively or newer than the industry. As said before, depreciation and inflation can provoke that an old company looks using its assets more effectivity, according to this, the SPIL's low fixed turnover ratio could be explained by new acquisitions of plant and equipment to face the growth that it is living.



	2011	2012	2013	2014	2015
SPIL	1,39	1,29	1,26	1,31	1,29
ASE	1,66	1,52	1,67	1,69	1,89
Industrial Average	2,15	2,29	1,86	1,92	1,80

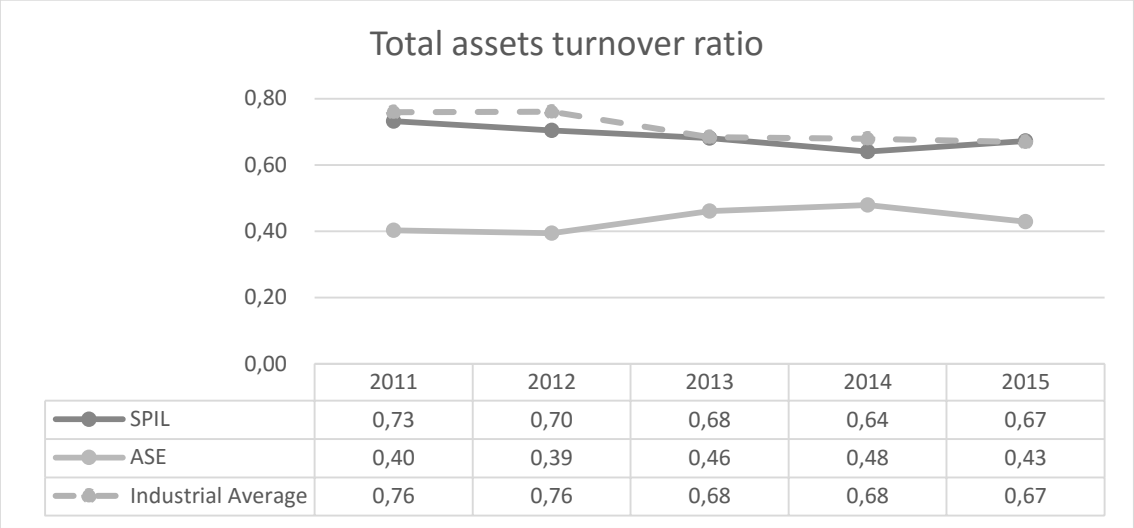
Figure 8. Fixed Assets Turnover Ratio of ASE and SPIL (Source: Own preparation)

Total Assets Turnover Ratio

The final asset management ratio is the total assets turnover ratio and measures the turnover of all of the firm's assets.

$$Total\ Assets\ Turnover\ Ratio = \frac{Sales}{Total\ assets}$$

Total Assets Turnover Ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 9. In there, it can be seen how ASE has a below ratio value even if having better effectivity with net fixed assets. It could be caused by current assets as the fact of the low turnover of the inventories that have already seen before and it has to be improved.



	2011	2012	2013	2014	2015
SPIL	0,73	0,70	0,68	0,64	0,67
ASE	0,40	0,39	0,46	0,48	0,43
Industrial Average	0,76	0,76	0,68	0,68	0,67

Figure 9. Total Assets Turnover Ratio of ASE and SPIL (Source: Own preparation)

Debt Management ratios

Does the firm earn more on its assets than the interest rate it pays on debt but avoiding taking too many risks? Debt management ratios help answer this question measuring how effectively the firm is managing its debts.

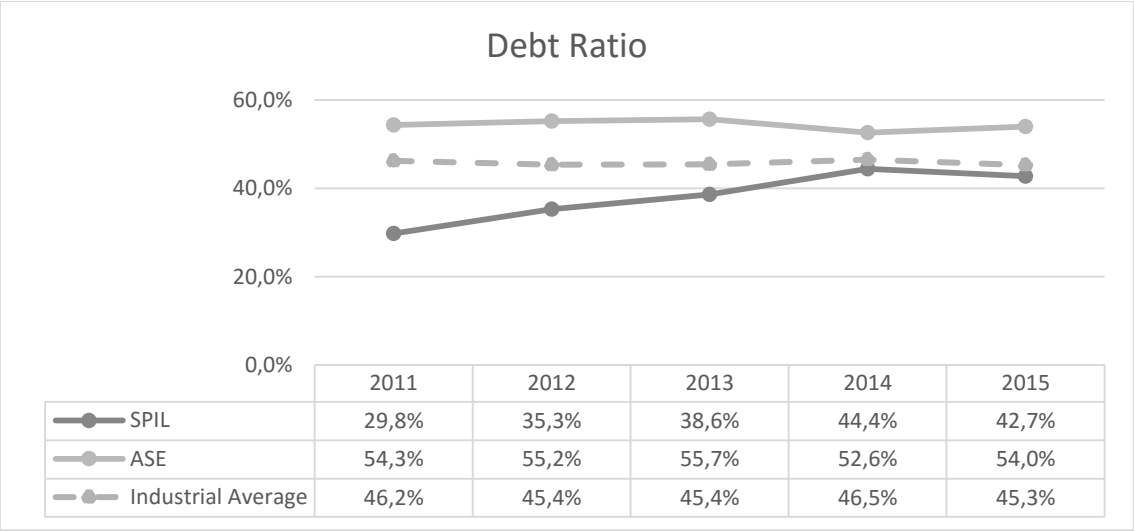
Companies financed without debt have less risk but less potential benefits than companies financed with debt, this is due a two reasons: first, the interest of the debt is deductible, so the use of debt lowers the tax bill and leaves more of the firm's operating income available to its investors, and secondly, if the return on assets exceeds the interest rate on debt, as is generally expected, a company can use debt to acquire assets, pay the interest on the debt, and have something left over. The bigger risk appears when the return on assets does not exceed the interest rate. Thus, firms with high debt ratios usually have higher expected returns when the economy is normal but lower returns and higher possibility of bankrupt if the economy goes into a recession.

Debt Ratio

The Debt Ratio measures the percentage of funds provided by creditors. Includes current and long-term liabilities and creditors prefer a lower debt ratio because it means that have a greater cushion against creditor's losses I the event of liquidation.

$$Debt\ Ratio = \frac{Total\ debt}{Total\ assets}$$

Total debt to total assets ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 10. In there, it can be seen how ASE is more indebted than SPIL and the industry average (that is constant around 46%). So ASE needs to review its external funding.



	2011	2012	2013	2014	2015
SPIL	29,8%	35,3%	38,6%	44,4%	42,7%
ASE	54,3%	55,2%	55,7%	52,6%	54,0%
Industrial Average	46,2%	45,4%	45,4%	46,5%	45,3%

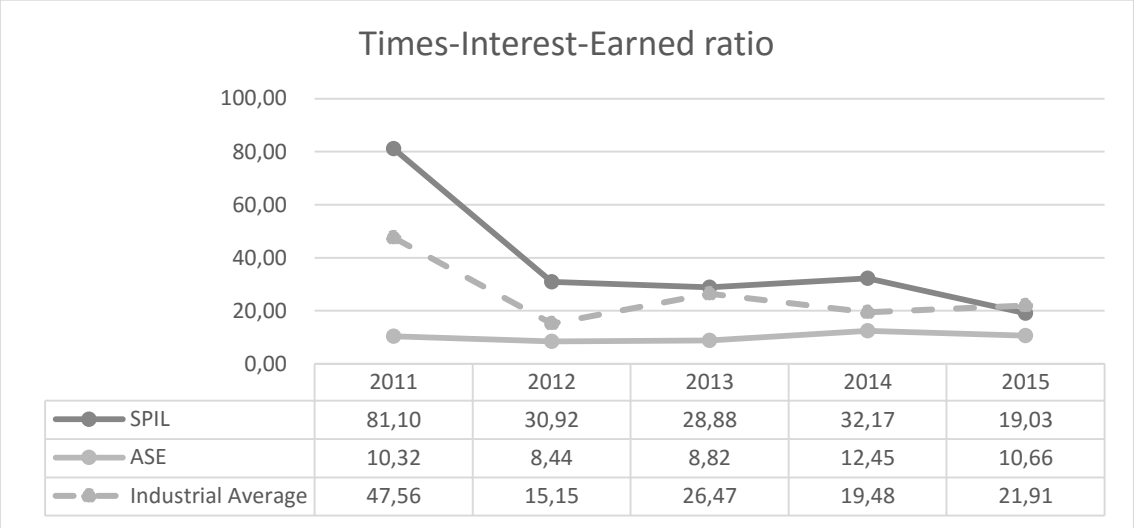
Figure 10. Total Debt to Total Assets Ratio of ASE and SPIL (Source: Own preparation)

Times-Interest-Earned Ratio (TIE)

The times-interest-earned (TIE) ratio is determined by diving earnings before interest and taxes (EBIT) by the interest charges. It measures the extent to which operating income can decline before the firm is unable to meet its annual interest cost. Failure to pay interest will bring a legal action by the creditors and probably result in bankruptcy.

$$Times - Interest - Earned\ Ratio\ (TIE) = \frac{EBIT}{Interest\ charges}$$

The times-interest-earned ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 11. In there, it can be seen how ASE is covering the interest charges by a much lower margin of safety than SPIL or the industry average



	2011	2012	2013	2014	2015
SPIL	81,10	30,92	28,88	32,17	19,03
ASE	10,32	8,44	8,82	12,45	10,66
Industrial Average	47,56	15,15	26,47	19,48	21,91

Figure 11. Times-Interest-Earned Ratio (TIE) of ASE and SPIL (Source: Own preparation)

5.3 Profitability ratios

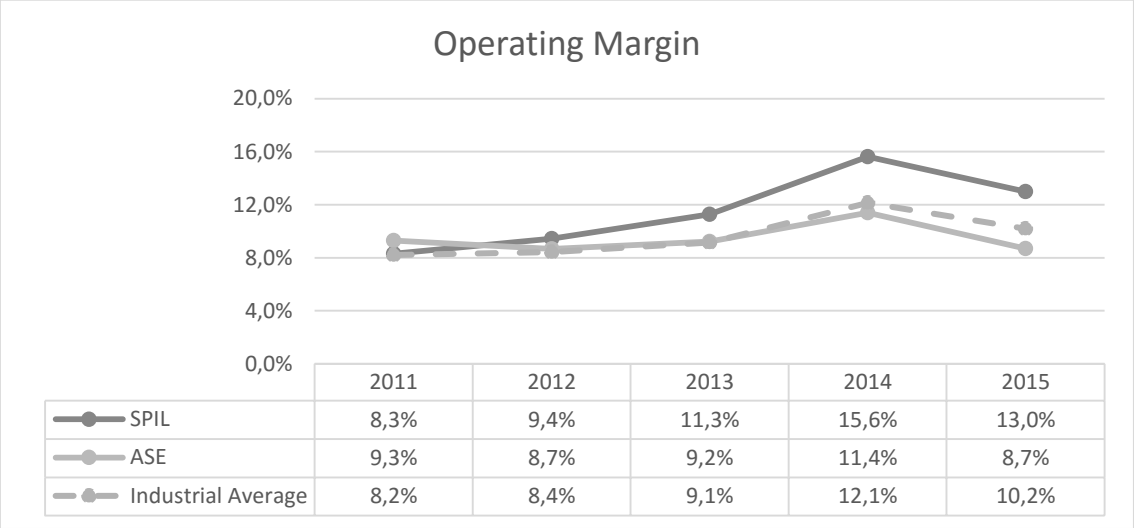
Have the firm a properly ability to create earnings? Profitability ratios help answer this question showing the combined effects of liquidity, asset management, and debt on operating results. The combined effects tell something about firm's policies and operations, so profitability ratios reflect the net result of all the firm's financing policies and operating decisions.

Operating Margin

The operating margin indicates the earnings of the operating activity for each dollar of sales. It is used to analyze the operating costs of a company.

$$Operating\ Margin = \frac{EBIT}{Sales}$$

Operating margin has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 12. In there, it can be seen how ASE and SPIL have similar operating costs than the industry average but the last years SPIL is having greater margin, that could be explained by the growth and the acquisitions of new net fixed assets mentioned before.



	2011	2012	2013	2014	2015
SPIL	8,3%	9,4%	11,3%	15,6%	13,0%
ASE	9,3%	8,7%	9,2%	11,4%	8,7%
Industrial Average	8,2%	8,4%	9,1%	12,1%	10,2%

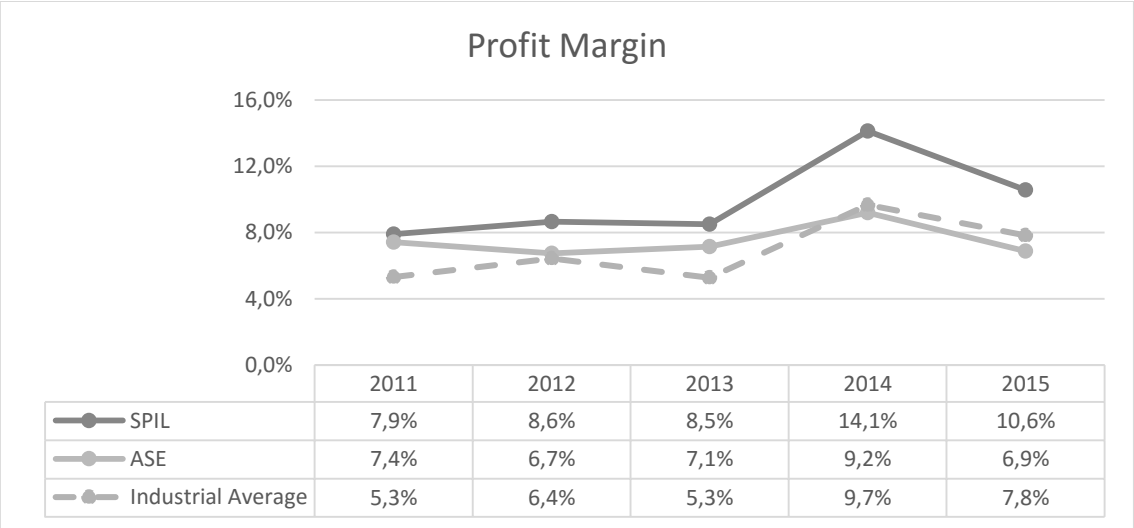
Figure 12. Operating Margin of ASE and SPIL (Source: Own preparation)

Profit Margin

As the operating margin, the profit margin indicates the earnings for each dollar of sales but in this case after interest and taxes. So indicates the net income per dollar of sales. It is used to analyze the total costs of a company.

$$Profit\ Margin = \frac{Net\ income}{Sales}$$

Profit margin has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 13. In there, it can be seen how SPIL has a higher profit margin so its totals costs are fewer than the industry average and ASE.



	2011	2012	2013	2014	2015
SPIL	7,9%	8,6%	8,5%	14,1%	10,6%
ASE	7,4%	6,7%	7,1%	9,2%	6,9%
Industrial Average	5,3%	6,4%	5,3%	9,7%	7,8%

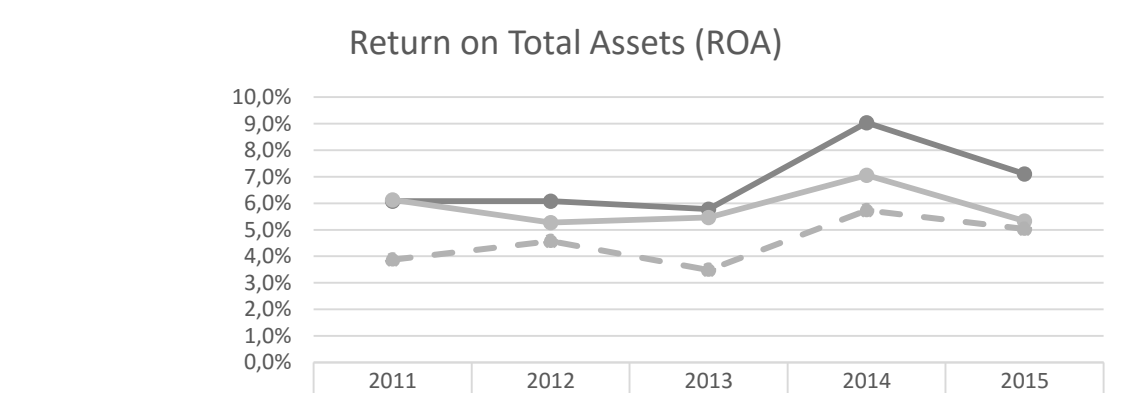
Figure 13. Profit Margin of ASE and SPIL (Source: Own preparation)

Return on Total Assets (ROA)

The ROA indicates net income the firms gain for each dollar invested in assets.

$$Return\ on\ Total\ Assets\ (ROA) = \frac{Net\ income}{Total\ assets}$$

Return on total assets has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 14. In there, it can be seen how both companies obtain more profitability for their assets than the rest of the industry but SPIL is better than ASE.



	2011	2012	2013	2014	2015
SPIL	6,1%	6,1%	5,8%	9,0%	7,1%
ASE	6,1%	5,3%	5,5%	7,1%	5,3%
Industrial Average	3,9%	4,6%	3,5%	5,7%	5,0%

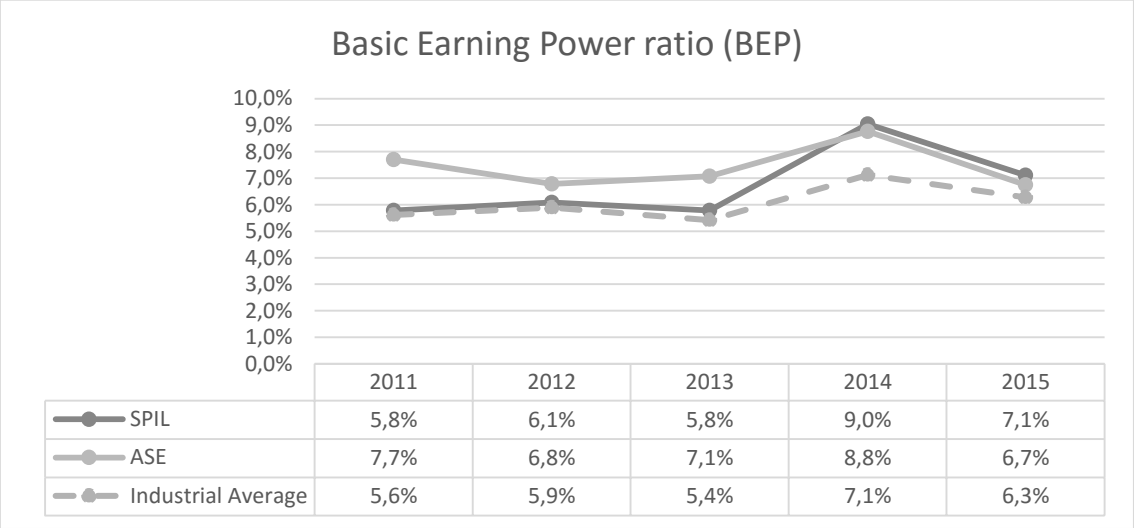
Figure 14. Return on Total Assets (ROA) of ASE and SPIL (Source: Own preparation)

Basic Earning Power Ratio (BEP)

As the ROA, the BEP analyze the earnings against the investment in assets but now without the effect of taxes and interests.

$$Basic\ Earning\ Power\ Ratio\ (BEP) = \frac{EBIT}{Total\ assets}$$

Basic earning power ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 15. In there, it can be seen how now ASE obtain more profitability than SPIL but both still more than the industry average. So ASE and SPIL obtain similar profit to their assets but SPIL has better conditions in interests and taxes.



	2011	2012	2013	2014	2015
SPIL	5,8%	6,1%	5,8%	9,0%	7,1%
ASE	7,7%	6,8%	7,1%	8,8%	6,7%
Industrial Average	5,6%	5,9%	5,4%	7,1%	6,3%

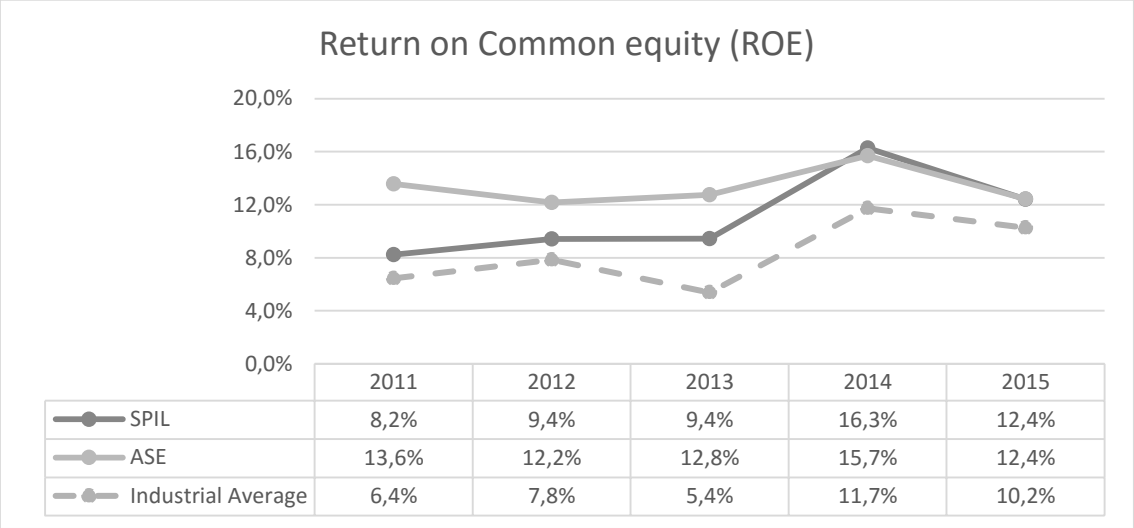
Figure 15. Basic Earning Power Ratio (BEP) of ASE and SPIL (Source: Own preparation)

Return on Common Equity (ROE)

The ROE is the most important profitability ratio due to measures the rate of return on common stockholder´s investment. Stockholders expect to earn a return on their money, and this ratio tells how well they are doing in an accounting sense.

$$Return\ on\ Common\ Equity\ (ROE) = \frac{Net\ income}{Total\ assets}$$

Return on common equity has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 16. In there, it can be seen how SPIL and ASE have the same ROE and higher than the industry average.



	2011	2012	2013	2014	2015
SPIL	8,2%	9,4%	9,4%	16,3%	12,4%
ASE	13,6%	12,2%	12,8%	15,7%	12,4%
Industrial Average	6,4%	7,8%	5,4%	11,7%	10,2%

Figure 16. Return on Common Equity (ROE) of ASE and SPIL (Source: Own preparation)

5.4 Market value ratios

How is the opinion of the investors about the firm and its future? Return on Equity (ROE) reflects the effects of all of the other ratios and it is the single best accounting measure of performance. Usually, investors like a high ROE, and it is correlated with high stock prices. However, ROE is not the only important thing, for example, financial leverage generally increases ROE but also higher risk. It has been seen before and that make the stock price lower. So market value ratios give an idea of the investor's judge of the rest of the ratios of the firm now and of its future.

The market value ratios are used in three primary ways: by investors when they are deciding to buy or sell a stock, by investment bankers when they are setting the share price for a new stock issue, and by the firm when they are deciding how much to offer for another firm in a potential merger.

In Figure 17 it can be seen some market value information about ASE and SPIL. Firstly, the earnings per share (EPS) that divide the net income by the common shares. Secondly, the dividends per share (DPS) that shows the amount of dividend paid by each stock. Thirdly, the book value per share, that give the value of each stock in the firm's account books. Finally, the stock price of each stock in the Taiwan Stock Market. In Figure 17, it can be consulted the monthly stock price of both companies during the last 5 years.

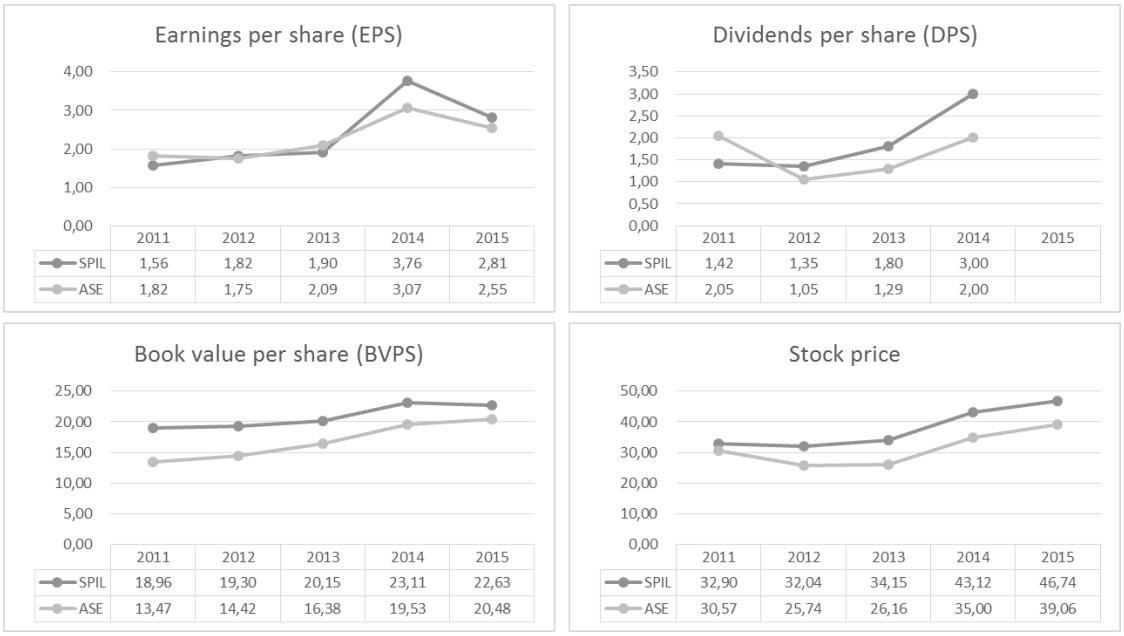


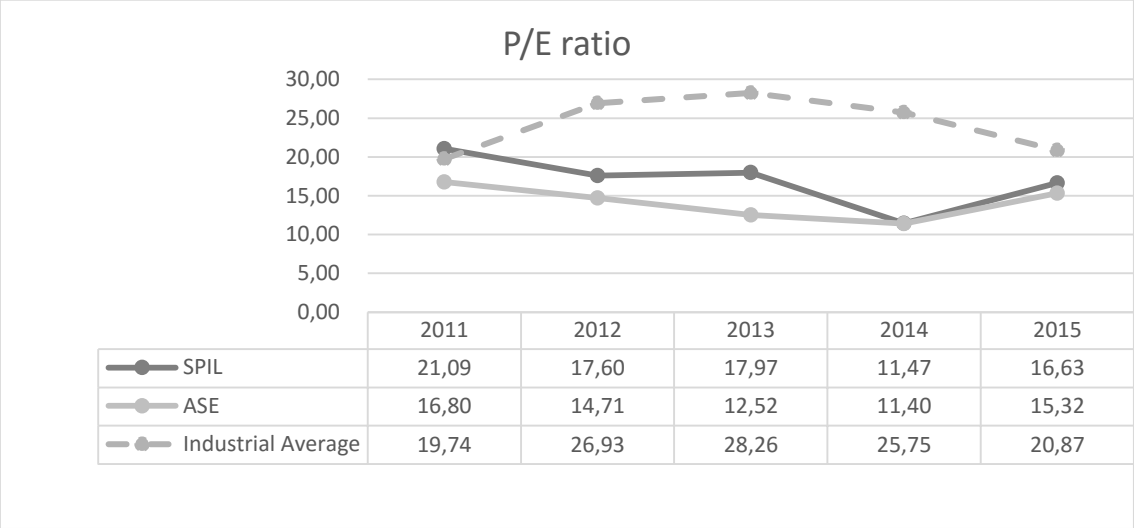
Figure 17. Market value information of ASE and SPIL (Source: Own preparation)

Price / Earnings (P/E) Ratio

The price/earnings ratio shows how much investors are willing to pay per dollar of reported profits. P/E ratios are higher in these companies with strong growth prospects and little risk and low for slowly growing and risky firms. It is used to estimate if the firm's shares are undervalued or overvalued and has to be compared with the P/E historic of the market, the industry average and also other market value ratios as market/book ratio

$$P/E\ Ratio = \frac{Price\ per\ share}{Earnings\ per\ share}$$

P/E ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 18. In there, it can be seen how P/E ratio for both companies are lower than the industry average, though there is being a change in trend. During last years both firms lost investors trust while the market was expected to growth with little risk, but since 2015, the firms are growing and investors are valuing them better while the market is being lost investors trust. It could mean that investors think that both companies were undervalued last years and now they are willing to pay more for the stock of both firms. The historic P/E ratio in Taiwanese market is around 15, a value similar to the actual of SPIL and ASE and less than the industry average, a further reason to think that both firms are undervalued.



	2011	2012	2013	2014	2015
SPIL	21,09	17,60	17,97	11,47	16,63
ASE	16,80	14,71	12,52	11,40	15,32
Industrial Average	19,74	26,93	28,26	25,75	20,87

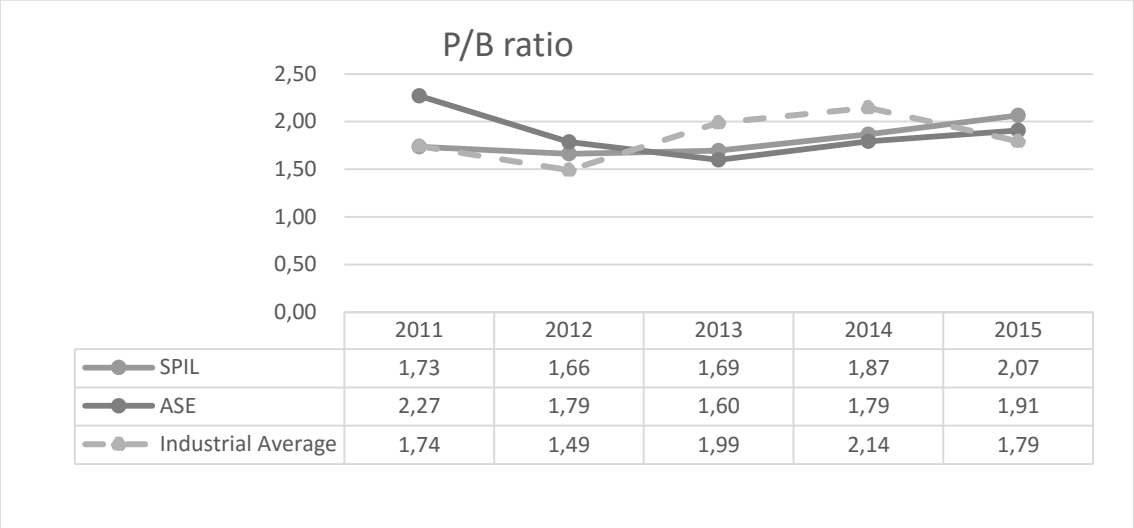
Figure 18. P/E Ratio of ASE and SPIL (Source: Own preparation)

Market / Book Ratio

The market/value ratio is another indicator of how investors regard the company. A higher M/B ratio means a company more valued by investors due to this ratio shows how much investors are willing to pay for a dollar the firm's stock book value. Usually, it is more than 1 because the books do not reflect inflation or goodwill.

$$Market\ /\ Book\ Ratio = \frac{Market\ price}{Book\ value\ per\ share}$$

Market / book ratio has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Figure 19. In there, it can be seen how SPIL's shares are better valued by investors than ASE's and both more than the industry average.



	2011	2012	2013	2014	2015
SPIL	1,73	1,66	1,69	1,87	2,07
ASE	2,27	1,79	1,60	1,79	1,91
Industrial Average	1,74	1,49	1,99	2,14	1,79

Figure 19. Market / Book Ratio of ASE and SPIL (Source: Own preparation)

DuPont equation

The DuPont equation is a formula that shows the ROE can be found as the product of profit margin, total assets turnover, and the equity multiplier. It shows the relationships among asset management, debt management, and profitability ratios:

$$DuPont\ equation: ROE = Profit\ Margin * Total\ assets\ turnover * Equity\ multiplier$$

DuPont Equation has been calculated with the Financial Statements of ASE and SPIL (Appendix 1), the results obtained can be observed in Table 4. In there, it can be seen how ASE has lower asset management ability but and a higher financial leverage. Also, in Table 4, it can be seen why ASE wants to acquire SPIL, to increase ROE with a better profit margin and total assets turnover-

DuPont Equation	2011	2012	2013	2014	2015
SPIL	7,9% * 0,73 * 1,42	8,6% * 0,7 * 1,55	8,5% * 0,68 * 1,63	14,1% * 0,64 * 1,8	10,6% * 0,67 * 1,75
ASE	7,4% * 0,4 * 2,21	6,7% * 0,39 * 2,31	7,1% * 0,46 * 2,33	9,2% * 0,48 * 2,22	6,9% * 0,43 * 2,33
Industry average	5,3% * 0,76 * 1,6	6,4% * 0,76 * 1,6	5,3% * 0,68 * 1,49	9,7% * 0,68 * 1,79	7,8% * 0,67 * 1,96

Table 4. DuPont Equation of ASE and SPIL (Source: Own preparation)

5.5 Conclusions

It has been possible to see how ASE has severe liquidity problems due to a high level of inventories. In the other hand, SPIL could have liquidity problems too and that could be

dangerous due to a big debt, however, the profitability of the operation of the firm is bigger than ASE and the interest coverage is good. Also, SPIL uses more efficiently its assets and has better conditions in interests and taxes. Finally, the ROE of both companies are bigger than the industry average and it looks like both are being more valued by investors, being yet undervalued. However, ASE wants to increase its ROE, acquiring SPIL and, because it, increasing its profit margin and asset management ability.

6. Financial Analysis II: Stock valuation and synergies

6.1 SPIL's Stock Valuation

In general, when the stock market is reasonably efficient, the intrinsic value of a firm is similar to the stock price. However, in some cases, a firm could have a stock price significate higher or lower to its intrinsic value due to an under or overestimate growth expected, illusory or pessimist earnings reports, risk under or overestimated, among others reasons.

When investing in common stocks, one's goal is to purchase stocks that are undervalued (stock price lower than intrinsic value) and avoid stocks that are overvalued (stock price higher than intrinsic value). Thus, estimating the intrinsic value of a company is vital to investments and valuations of mergers. To do it, three basic models are used: the corporate valuation model (based on free-cash-flow), firm multiplies method (based on P/E Ratio or on the Evaluation of Value Added approach), and the constant growth model (based on dividends).

Analyzing the SPIL's stock price last years with the evolution of the TAIEX Index (Figure 20) it is possible to see how the evolution of SPIL's stock price are similar to the TAIEX until the beginning of the first tender offer of ASE. Since then, the index of the Taiwanese market had been decreasing in the last of 2015 and increasing in 2016. However, the stock price of SPIL has been increasing since August 2015, when ASE decided to start the takeover. Furthermore, the days when the two tender offers started, the stock price growth more than 10%. On August 24th, 2015 the growth was 10%, and the next day was 8.83%, so almost 20% between the day before the first tender offer and two days after it. On December 15th, 2015, when ASE announced the second tender offer and the attempt to acquire the 100% of SPIL, the stock price increased 9.98%. Thus, the attempt of ASE to acquire 100% of SPIL's shares could break the equilibrium between the intrinsic value of the firm and the stock price. Due to this, is important to analyze if it is still interesting to ASE to invest in SPIL with the actual stock price.

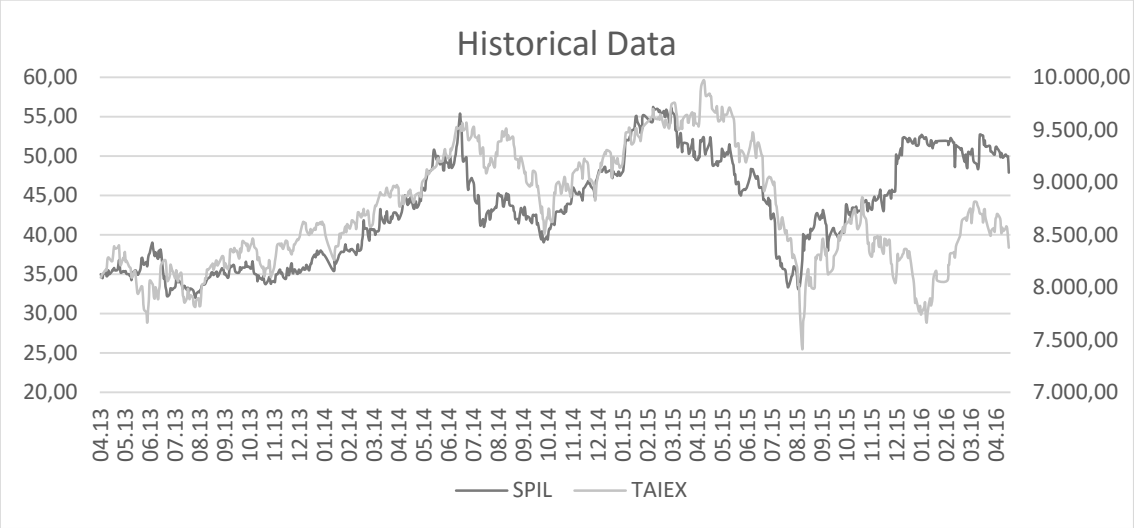


Figure 20. SPIL's stock price and the TAIEX Index during the last years.
(Source: TWSE)

The Constant Growth Model

The Gordon growth model values a company's stock using an assumption of constant growth in payments a company makes to its common equity shareholders. The four key inputs in the model are actual stock price (P_0), last dividends per share (D_0), the growth rate in dividends per share (g) and required rate of return (r_s). The formula of the model is:

$$P_0 = \sum_{t=1}^{\infty} \frac{D_0 * (1+g)^t}{(1+r_s)^t}$$

Dividends per share represent the annual payments a company makes to its common equity shareholders, while the growth rate in dividends per share is how much dividends per share increases from one year to another. The required rate of return is a minimum rate of return investors are willing to accept when buying a stock of a particular company, and there are multiple models investors use to estimate this rate.

The Gordon growth model assumes a company exists forever and pays dividends per share that increase at a constant rate. To estimate the value of a stock, the model takes the infinite series of dividends per share and discounts them back to the present using the required rate of return. The result is a simple formula, which is based on mathematical properties of an infinite series of numbers growing at a constant rate.

The main limitation of the Gordon growth model lies in its assumption of a constant growth in dividends per share. It is very rare for companies to show constant growth in their dividends due to business cycles and unexpected financial difficulties or successes. Therefore, the model is limited to firms showing stable growth rates. The second issue has to do with the relationship between the discount factor and the growth rate used in the model. If the required rate of return is less than the growth rate of dividends per share, the result is a negative value, rendering the model worthless. Also, if the required rate of return is the same as the growth rate, the value per share approaches infinity.

The stock closing price of May 2016 of SPIL was NT$ 53.00, which is going to be considered the initial price (P_0). The last dividend paid by SPIL, announced also in May 2016, was the dividend of 2015 and its value was NT$ 3.80 per share and are D_0. The required rate of return (r_s) and growth rate in dividends per share (g) have to be calculated.

The expected rate of return can be calculated with the CAPM. The capital asset pricing model (CAPM) is a model that describes the relationship between risk and cost of equity and that is used in the pricing of risky securities. The key inputs are the risk-free rate (r_f), the market risk premium (r_{mf}) and the beta coefficient (β), and the formula is:

$$r_s = r_f + r_{mf} * \beta \qquad (1)$$

Firstly, the risk-free rate of return is the theoretical rate of return of an investment with zero risks. The risk-free rate represents the interest an investor would expect from an absolutely risk-free investment over a specified period of time. Secondly, the risk premium is the return in excess of the risk-free rate of return that an investment is expected to yield. An asset's risk premium is a form of compensation for investors who tolerate the extra risk - compared to that of a risk-free asset - in a given investment. Finally, beta is a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. A beta of less than 1 means that the security will be less volatile than the market. A beta of greater than 1 indicates that the security's price will be more volatile than the market.

The value of the risk-free rate and the market risk premium are 1.63% and 8.10% (source: market-risk-premia website), and the beta coefficient has to be calculated dividing the covariance of the daily growth of the SPIL's stock price and the daily growth of the TAIEX Index during the last 3 years, by the variance of the daily growth of the SPIL's stock price. Also, it can be calculated representing the both daily growths in an XY chart (TAIEX Index growth as X and

SPIL's stock price growth as Y) and calculating the slope (Figure 21). The value of the beta is 0.80, so SPIL is theoretically 20% less volatile than the market. The SPIL stock price could have a higher correlation with the TAIEX Index but, as seen before, the attempt of ASE to acquire SPIL made the stock price of SPIL increase when the index was decreasing and, since then, it seems like is not in equilibrium. With this information, the cost of equity obtained applying the equation (1) is 8.08%.

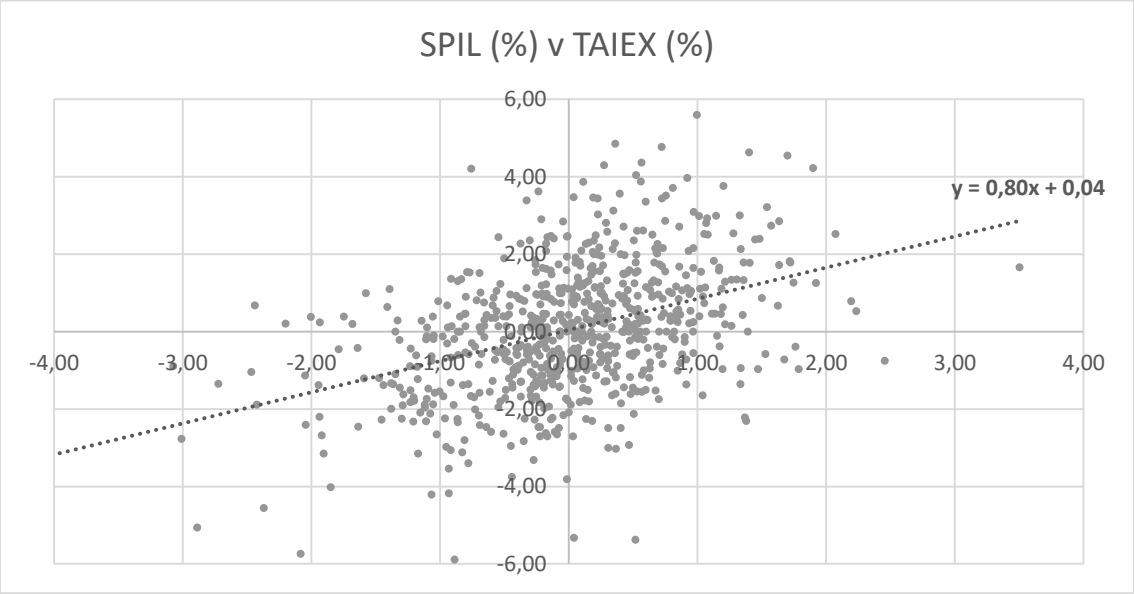


Figure 21. Correlation between the TAIEX Index daily growth and the SPIL's stock price daily growth. (Source: TWSE)

The growth rate is the last variable needed and is the most difficult. It will define if the stock's intrinsic value is higher or lower than the real stock price. If the intrinsic value and the stock price are in equilibrium then the growth rate is calculated with the equation (2). In SPIL's case, this growth rate is 0.85%.

$$r_s = \frac{D_1}{P_0} + g \qquad (2)$$

But, if it is not an equilibrium, it has to be estimated. One way to do it is extrapolating the historical growth rates, using the equation:

$$g = \sqrt[10]{\frac{D_{10}}{D_1}} + 1 \qquad (3)$$

Using the historical dividends since 2006, 10 years ago (Table 5). Applying the equation (3), the growth rate obtained is 1.41%.

Year	DPS (NT$)	Year	DPS (NT$)
2006	3.35	2011	1.42
2007	4.50	2012	1.67
2008	1.80	2013	1.80
2009	2.58	2014	3.00
2010	1.62	2015	3.80

Table 5. Historical Dividends of SPIL (source: SPIL)

The main problem of this method is that dividends are not growing constant, as it shows the Table 5, and, because that, each analyst is going to estimate a different growth rate that will provide a different result. Another problem of this estimation is that the earnings of the company could be invested in capital and not in dividends. To know the capital gain (earnings invested in the company), the growth rate is calculated with the payout ratio (DPS/EPS) and the ROE applying the equation (4). In this case, the resultant growth rate is almost 0.00% due to the last year all the earnings were used to paid dividends and not used in invest in capital gain. In conclusion, the estimation of the growth rate is based only on the dividends and is 1.41%.

At end year	Dividend	Price	Dividend yield	Capital gains yield	Total return	PV of dividend
2016	3.80	53.00				
2017	3.85	58.57	7.27%	10.51%	17.79%	3.57
2018	3.91	59.40	6.67%	1.41%	8.08%	3.35
2019	3.96	60.24	6.67%	1.41%	8.08%	3.14
2020	4.02	61.09	6.67%	1.41%	8.08%	2.95
2021	4.08	61.95	6.67%	1.41%	8.08%	2.76
2022	4.13	62.82	6.67%	1.41%	8.08%	2.59
2023	4.19	63.71	6.67%	1.41%	8.08%	2.43
2024	4.25	64.60	6.67%	1.41%	8.08%	2.28
2025	4.31	65.51	6.67%	1.41%	8.08%	2.14

Table 6. The Constant Growth Model. (Source: Own preparation)

Applying the model to the inputs obtained the result of the stock price of SPIL is NT$ 57.76, 8.98% more than the real price (

At end year	Dividend	Price	Dividend yield	Capital gains yield	Total return	PV of dividend
2016	3.80	53.00				
2017	3.85	58.57	7.27%	10.51%	17.79%	3.57
2018	3.91	59.40	6.67%	1.41%	8.08%	3.35
2019	3.96	60.24	6.67%	1.41%	8.08%	3.14
2020	4.02	61.09	6.67%	1.41%	8.08%	2.95
2021	4.08	61.95	6.67%	1.41%	8.08%	2.76

2022	4.13	62.82	6.67%	1.41%	8.08%	2.59
2023	4.19	63.71	6.67%	1.41%	8.08%	2.43
2024	4.25	64.60	6.67%	1.41%	8.08%	2.28
2025	4.31	65.51	6.67%	1.41%	8.08%	2.14

Table 6), so the company is undervalued respect the stock price of NT$ 53.00 but the difference is very small. Also, the growth rate than equals the intrinsic value per share with the real price is 0.85%.

The Corporate Valuation Model

Instead of looking at dividends, the Corporate Valuation model uses a firm's discounted future cash flows to value the business. The big advantage of this approach is that it can be used with a wide variety of firms that don't pay dividends, and even for companies that do pay dividends.

This model has several variations, but the most commonly used form is the Two-Stage DCF model. In this variation, the free cash flows are generally forecasted for five to ten years, and then a terminal value is calculated to account for all of the cash flows beyond the forecast period. So, the first requirement for using this model is for the company to have predictable free cash flows, and for the free cash flows to be positive. Based on this requirement alone, you will quickly find that many small high-growth firms and non-mature firms will be excluded due to the large capital expenditures these companies generally face. The market value can be expressed as:

$$Market\ value = \sum_{t=1}^{\infty} \frac{FCF_t}{(1+WACC)^t} \qquad (4)$$

Forecasting techniques for the future Free Cash Flows (FCF) are not very sophisticated. The simplest and most common used method looks at the historical rate of growth and extrapolate this growth into the future. The regression line of the historical data during the past 11 years has a negative slope of 10.38% but the data does not fit with a linear regression. On the other hand, during the past 13 years, SPIL highest 3-Year average FCF per share growth rate was 38.50% per year, the lowest was -43.70% per year, and the median was 12.74% per year. Using the average of these rates, the result is a growth rate of 1.18%, similar to the one that has been obtained in the constant growth model.

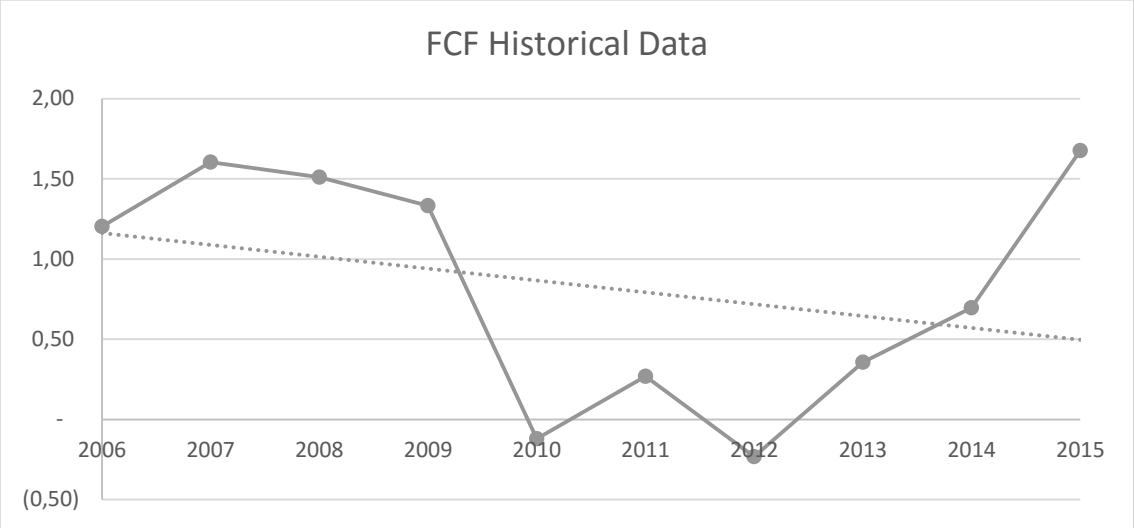


Figure 22. FCF (NT$ billion) per share of SPIL during the last 5 years.
(Source: Own preparation)

With the growth rate defined, the next step is to calculate the discount rate with the equation (6) and the result obtained is a discount rate of 6.19%.

$$\text{WACC} = r_d * (1 - T) * \frac{D}{D + E} + r_s * \frac{E}{D + E} \qquad (6)$$

Year	2015
Current and Long-term Debt	NT$ 29.27 billion
Interest Paid	NT$ 0.57 billion
Cost of Debt (r_d)	**1.93%**
Total Equity	NT$ 70.60 billion
Cost of Equity (r_s)	**8.08%**
Tax rate (T)	15%
WACC	**6.19%**

Table 7. Discount rate calculation based on 2015 financial statements.
(Source: Own preparation)

Finally, it has to be applied the model. The model consists in calculating the present value of the future FCF estimated in a horizon of 5 or 10 years and then add the present value of the firm's residual value. The result of this model is an intrinsic value per share of NT$ 65.96, 24.45% more than the real price (Table 8). Also, the growth rate than equals the intrinsic value per share with the real price is 0.30%.

WACC	6.19%
Growth rate	1.18%

SPIL	**2016**	**2017**	**2018**	**2019**	**2020**
FCF	12.97	13.12	13.27	13.43	13.59
PV of FCF	12.21	11.63	11.08	10.56	10.06

FCF 2021	13.75
HV 2020	273.99
PV of HV2020	202.90

Sum of PV of FCF	55.55
PV of HV2020	202.90
Total Corporate Value	**258.45**
Market value of debt and preferred	- 52.64
Intrinsic Value common equity	**205.81**
Shares outstanding	3.12

Intrinsic value per share	**65.96**

Table 8. The Corporate Valuation Model. All values in NT$ billions (currency) or billions (shares) except the intrinsic value per share (Source: Own preparation)

Firm Multiples Method: P/E Ratio

As seen before, the P/E Ratio shows how much investors are willing to pay per dollar of reported profits. P/E ratios are higher in these companies with strong growth prospects and little risk and low for slowly growing and risky firms.

Valuing stocks is not that simple. Companies have not same P/E ratios due to the risk, investor's discount the earnings of riskier stocks at a higher rate. Thus, riskier stocks should have lower P/E ratios. In addition, companies with growth opportunities will generate more earnings in future and thus should trade at higher P/E ratio. Therefore, a higher P/E not always means that stock is overvalued, maybe the future prospects of the company justify the value of it.

Nevertheless, P/E ratio can provide a useful starting point in stock valuation. If a stock's P/E ratio is well above its industry average and if the stock's growth potential and risk are similar to other firms in the industry, the stock's price may be is too high. Likewise, if a company's P/E ratios fall well below its historical average, the stock may be undervalued, particularly if the overall for the market has remained constant or increased.

As seen in the Financial Statement analysis, SPIL's P/E ratio is 16.63, and the industrial average is 20.87. Also, the trend of the industry average is decreasing and the trend of SPIL is increasing. These, considering that the historic P/E ratio in Taiwanese market is around 15 that is a value similar to the actual of SPIL and less than the industry average, could mean SPIL's stock is undervalued.

There is also possible, perhaps less common, to try to define the exact intrinsic value with the P/E Ratio, but to do it is needed an estimation of the earnings for the next years. During the last years, the earnings per share (EPS) of SPIL have been increasing in average (in 2014 the earnings, for SPIL and the industry in general, were well above the average). One way to forecast the EPS is the extrapolation of the historical data. Using the past 5 years, the average growth (slope of the regression line) is 44.40%. But, as said, in the year 2014 SPIL had unusual earnings, so this year has to be out of the analysis. The result of this correction is a growth of 30.80%. Thus, the EPS estimated for 1026 is NT$ 2.81 (EPS 2015) multiplied by 1.309 that is NT$ 3.67. If the P/E is 16.63, the price expected (P) is 16.63 multiplied by NT$ 3.67, that is NT$ 61.03, a price 15.15% higher than the actual one (NT$ 53.00) and the estimated by other methods so SPIL's stock could be undervalued. But, also, that is the minimum intrinsic value that this method estimates. If the approach is done with the P/E ratio of the industry, the one that SPIL is supposed to reach in the future, the price expected (P_{max}) would be NT$ 76.59, a price 44.51% higher than the actual one.

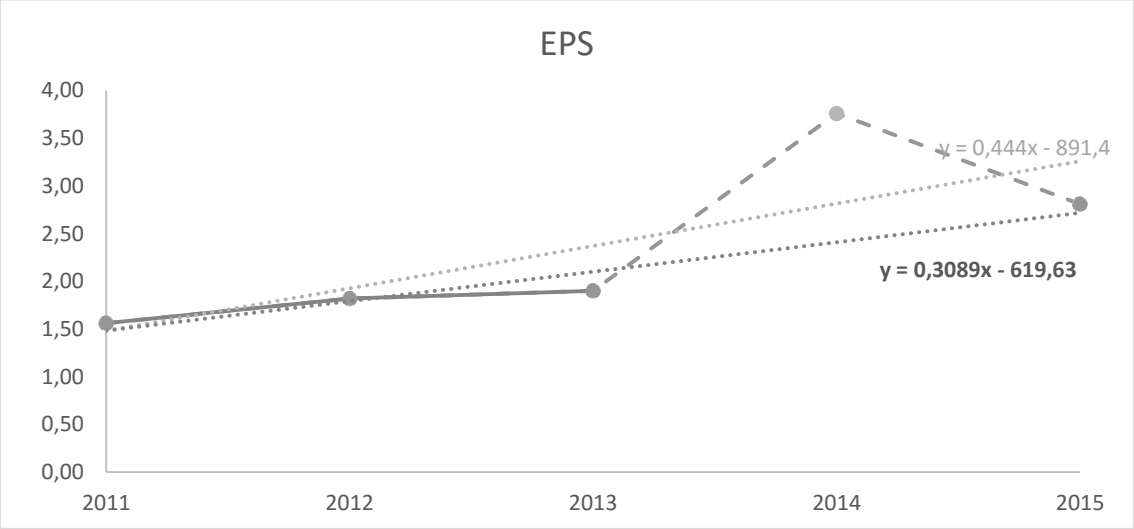


Figure 23. SPIL's EPS during the last years. (Source: Own preparation)

Economic Value Added Approach

The Economic Value Added (EVA) Approach try to measure the value created by a firm in a period of time, a consideration that this value has to be created after the payback and after covering the cost of debt and capital. EVA compare the revenue of the company with the revenue needed to cover the cost of capital:

$$EVA = (Equity\ Capital) * (ROE - Cost\ of\ Equity\ Capital) \qquad (7)$$

For the last 5 years, it has been calculated the EVA with the Equity Capital (Balance sheet in Appendix 1), ROE viewed in the Financial Statement Analysis and calculating the Cost of Capital with the CAPM as viewed in the constant growth model.

$$Market\ value = Book\ value + PV\ of\ all\ future\ EVAs \qquad (8)$$

Using the WACC calculated before and considering a constant growth in EVA each year, the same as the corporation value model (1.18%), the intrinsic value obtained is NT$ 64.67 per share, 22.01% more than the real price.

Conclusions of the stock valuation

After applying the most common methods of stock valuation, all the methods say to buy the SPIL's stock because it is undervalued, obtaining intrinsic values of NT$ 57.76 per share (+8.98% - Growth constant model), NT$ 65.96 (+24.45% - Corporate valuation model), NT$ 61.03 to NT$ 76.59 (+15.11% to +44.51% - P/E approach), and NT$ 64.67 (+22.02% - EVA approach), so ASE should continue the attempt of acquiring it under the financial point of view based on the stock valuation. However, ASE has to wait until a next tender offer almost a year, so it could be interesting to do again the analysis after the close of 2016 when the data is going to be less affected by the takeover.

6.2 Valuing synergies

Financial managers and theorists have proposed many reasons for merger operations. These reasons can be grouped into three groups:

- Operating synergies motivation: increase the value of the combined enterprise
- Financial motivation: obtain finance profit as tax considerations, purchase assets cheaper, investment benefits, among others

- Strategic motivation: following a strategic plan seeking for diversification, overcapacity, geographical rollup, product / market extension, and research and development or industry convergence, as seen before. This point usually is included inside the operating synergies due to the majority of these points can be considered synergies for operations. Also is going to be in this study.

Following this differentiation of products, it is interesting to analyze if the effort of ASE to acquire SPIL is justified and id the SPIL's response is the best option to itself.

Estimating future synergies is one of the most important points in a takeover, after all, firms are going to pay billions in dollars for these synergies and usually is the clue to define the premium that a firm is willing to pay for the acquisition.

Operating Synergies

Many acquisitions and some large investments are often justified with the argument that they will create synergy. Synergies make a combination of two companies a third company more valuable than the sum of both companies separately. That means that the sum of 1 plus 1 is not 2, is 3. The synergies could be differenced in two groups: operating and financial. In this point, it is going to talk about operating synergies that are based on decreasing costs or increasing revenues.

Operating synergies increase the operating income from existing assets and increase growth. It exists four types: economies of scale, greater pricing power, a combination of different functional strengths and higher growth in new or existing markets.

- Economies of scale allow the combined firm to be more efficient in cost and increase the operating profit. Usually, economies of scale appear in horizontal mergers.
- Greater pricing power is also more common in horizontal mergers and it appears when the competition is reduced and the market share is increased due to the merger.
- The combination of different functional strengths as would be a company with strong sales or marketing skills with a firm with strong production or inventory skills.
- Higher growth in new or existing markets due to the combination of the firms. Usually is with vertical, congeneric or conglomerate mergers. A firm acquires another firm that helps in establishing a network and brand name recognition.

In the case of study, ASE could have synergies interest in the attempt of acquiring SPIL. It is a horizontal merger and both companies are the first and the third biggest in the market in the whole world. Due to this, it looks logic to imagine a big generation of economies of scales and a greater pricing power if the companies are combined. Also, sure that the strengths of the companies are different, ASE is a consolidated group with a presence in different markets of the semiconductor industry and SPIL is growing in size at an exponential rate. In the next chapter, these possible synergies are going to be analyzed and valued.

There is a potential for operating synergy in many takeovers. Some disagreement exists, however, over whether synergy can be valued and, if so, what that value should be. Estimating synergies is a very important step in a takeover decision due to is one of the ways to settle the premium that an acquirer will pay for the takeover. While valuing synergy requires making assumptions about future cash flows and growth, the lack of precision in the process does not mean it is not possible to obtain an estimate of value.

The method uses to value the operating synergies that ASE and SPIL can create if the first one acquires the second one is going to be: (1) Value the firms independently with the corporate valuation model, (2) value of the combined firm with no synergy, and (3) value of the combined firm with synergy.

To calculate the first and second steps, it is used the results of the stock valuation for SPIL and the result of applying the same methods explained before for ASE. The results are in the table as follows:

Year 2015	SPIL	ASE	Combined firm
Total Debt (NT$ billion)	29.27	120.18	149.45
Interest Paid (NT$ billion)	0.57	2.31	2.88
Cost of Debt	1.93%	1.92%	1.92%
Equity (NT$ billion)	70.60	156.70	227.30
Cost of Equity	8.08%	9.33%	8.94%
Tax rate	15%	19%	17%
Cost of Capital	6.19%	5.95%	6.03%
Expected Growth of rate	1.18%	1.00%	1.06%
Length of growth period	5 years	5 years	5 years
Value of the firm (NT$ billion)	258.45	471.15	730.34

Table 9. The corporate valuation model for SPIL, ASE, and a potential combined firm. (Source: Own preparation)

For the next step, it is necessary to make assumptions of the synergies that the merger can create. Firstly, the COGS in revenue percentage can decrease due to the creation of economies of scale and a greater pricing power. Nowadays, both firms pay approximately an 80% of the revenue in COGS (the average of the last 5 years is 80% to SPIL and 82% to ASE). Secondly, as seen in the Financial Statement analysis seen before, SPIL has better ratios of profitability and assets management of ASE, so if the second one acquires the first one, it can be expected a higher growth to ASE. Thus, the growth rate of the FCF estimated is bigger than the used before and its value is 1.50%. Finally, the rate of reinvestment and the number of projects developed can increase with the combination of the companies, so the period of growth expected could be longer. Due to this, the horizon for the model is expected to be 10 years. In conclusion, the present value of the operating synergies is NT$ 72.83 billion, that is almost the 10.00% of the combined value without synergies.

Year 2015	Combined firm	Combined with operating synergies	Operating Synergies
Total Debt (NT$ billion)	149.45	149.45	--
Interest Paid (NT$ billion)	2.88	2.88	--
Cost of Debt	1.92%	1.92%	--
Equity (NT$ billion)	227.30	227.30	--
Cost of Equity	8.94%	8.94%	--
Tax rate	17%	17%	--
Cost of Capital	6.03%	6.03%	--
Expected Growth of rate	1.06%	1.50%	+ 0.44 %
Length of growth period	5 years	10 years	+ 5 years
Value of the firm (NT$ billion)	730.34	803.17	+ 72.83

Table 10. Estimation of the operating synergies value. (Source: Own preparation)

Financial Synergies

The other kind of synergies are the financial ones that are related to decreasing the cost of capital, reduce the risks, increase financial margins and improve cash flows. The most typical financial synergies are excess cash and high-returns projects, debt capacity, tax benefits, manager's personal incentives, breakup value, and diversification.

- A combination between a firm with excess cash, because it has limited project opportunities or extraordinary incomes, and a firm with high-returns projects and limited cash. This synergy is likely to show up most often when large firms acquire smaller firms, or when publicly traded firms acquire private businesses.

- The increase of the debt capacity due to earnings and cash flows more stable and predictable.
- Tax benefits obtained when a profitable firm in the top of the tax bracket acquire a firm which is accumulating tax losses. These losses are converted in mediate in tax savings. Also, it affects to companies with excess cash because is a way to pay fewer taxes. Is very common to see four ways to invest when the firm has cash and has not investment opportunities: pay an extra dividend, invest in marketable securities, repurchase its own stock, and purchase another firm.
- Manager's personal incentives due to the correlation between a larger size of a firm and higher salaries of managers. Manager's personal motivations are also a motivation to the economic operation and also to mergers.
- Breakup value, which is a new basis of valuation in addition to book value, economic value or replacement value; is the value of the individual's part of the firm if they are sold off separately. If this value is higher than the market value, a bidder could acquire the firm and sell it in pieces obtaining profit.
- Diversification is the last and the most controversial reason. Managers use it to stabilize a firm's earnings and thus benefits its owners. Actually, this stabilization is beneficial to employees, suppliers, and customers but not to shareholders who think that if they want they could to buy stock for another firm themselves to stabilize.

In the case of study, it is said that ASE has been doing business in China that is providing them an amount of extraordinary cash. This excess cash fits with the growth and good work of SPIL during the last years, so it could be a reason for the takeover attempts. In the next chapter, these possible synergies are going to be analyzed and valued.

Synergy can also be created from financial factors. The fact of a possible excess cash of ASE and the combination with the growth of SPIL commented is one of the financial operating seen before, but this one is already valued in the expected growth in the valuing of operating synergies. However, the others potential financial synergies commented are related to tax benefits and increase in debt capacity.

The ASE's excess cash seen before cause a higher taxes (SPIL paid 15% in taxes and ASE 19%), so the combined firm without financial synergies is the average (17%) but a combined firm with financial synergies it can be considered less, ass pay SPIL. Also, the increase of the debt capacity means that the cost of debt could be less than 1.92% obtained. The cost of debt estimated for

the combined firm with synergies is going 1.50%. In conclusion, the present value of the operating synergies is NT$ 21.61 billion, that is a 2.96% higher than the combined value without synergies. Finally, considering both kinds of synergies, the estimated value of the potential synergies are NT$ 94.44 billion, 12.96% higher of the combined value without synergies. Thus, the potential synergies in the merger is an important reason for both companies to go ahead with it, especially for ASE that is going to improve its profitability.

Year 2015	With operating synergies	With financial synergies	Financial Synergies	Total Synergies
Total Debt (NT$ billion)	149.45	149.45	--	--
Interest Paid (NT$ billion)	2.88	--	--	--
Cost of Debt	1.92%	1.50%	- 0.42%	- 0.42%
Equity (NT$ billion)	227.30	227.30	--	--
Cost of Equity	8.94%	8.94%	--	--
Tax rate	17%	15%	- 2.00%	- 2.00%
Cost of Capital	6.03%	5.90%	- 0.13%	- 0.13%
Expected Growth of rate	1.50%	1.50%	--	+ 0.44%
Length of growth period	10 years	10 years	--	+ 5 years
Value of the firm (NT$ billion)	803.17	824.78	+ 21.61	+ 94.44

Table 11. Estimation of the financial and total synergies value. (Source: Own preparation)

7. Strategic analysis

At this point, the ASE's attempt of acquiring all SPIL shares looks stalled. In this chapter, it is going to be analyzed the future of the issue: possible attack strategies that ASE could use, possible defense tactics of SPIL and the important role that still have the FTC. The aim of this analysis is to determinate the best solution to the issue, that will be proposed in the next chapter.

7.1 SPIL: possible defense strategies

Preventative antitakeover measures are becoming an increasingly important part of companies. Most of them have considered and developed a plan of defense in the event the company should become the target of a hostile bid. Furthermore, a target firm that does not want to be acquired generally enlists the help of an investment banking firm, along with a law firms that specializes in mergers. As seen from above, SPIL has the advice of JPMorgan Chase & Co. as investment banking, and Simpson Thacher & Bartlett LLP and Jones Day as its law firms.

There are some defensive tactics against a takeover as:

- Measures: the goal is to build a high and resistant wall to protect the company changing the characteristics of itself that made it less interesting to the acquirer. These measures are commonly named "shark repellents" are include poison pills, corporate charter amendments, scorched-earth defenses and golden and silver parachutes.
- Active defenses: if a bidder passes the wall of a target firm, it still could take some actions after it receives an unwanted bid like attack the logic of the bid, greenmail, standstill agreements, white knight, white squire, capital structure changes, litigation and Pac-Man defense.

Poison pills

Poison pills are one of the most used defense strategies. It was invented by Martin Lipton, a famous takeover lawyer who used them in 1982 to defend El Paso Electric against General American Oil and also used them in 1983 during the Brown Foreman versus Lenox takeover contest. This defense strategic consists of committing economic suicide doing actions that will seriously hurt the target company if it is acquired by another. This first generation of poison pills consists of offering each shareholder preferred shares of the company if the acquisition is successful so the bidder never holds an important part of the company without losing money on their investment. The problems of this strategy are that it is difficult to redeem and have an immediate adverse impact on the balance sheet.

The second generation of the poison pill is called the flip-over poison pills. They do not involve preference stock being more effective and eliminating the adverse impact on the balance sheet. These new poison pills are rights offerings that allowed the holders to buy stock in the acquiring shares for a discounted price if it is a total merger or acquisition. The problem of this strategy is that it provides defense against a full acquisition, because the bidder, acquiring the shares enough to control the target company, avoid the poison pill and also can use it against other defense tactics as a white knight that is explained below.

The third generation of poison pills was an innovation designed to be useful to defense against a takeover that is not a full acquisition. The name of this new strategy is flip-in poison pills and consists of provisions that allow holders of rights to acquire stock in the target instead of stock in the acquirer as flip-over. It was designed to dilute the target company regardless of whether

the bidder merged the target into his company and is useful to fight against raiders who seek to acquire controlling influence while not even acquiring majority control.

The last variation is the poison puts that consist of an issuance of bonds that contain a put option exercisable in a hostile takeover which allows the holder to sell to another buyer, individual or firm, during the certain time period and for a fixed price.

It is said that the attempt of SPIT to create a strategic alliance with Hon Hain (Foxconn) was a kind of poison pill. The proposed alliance between the companies had a share swap plan that would have made Hon Hai the biggest shareholder and would have reduced ASE's holding in SPIL to about 19%. The strategy failed because it did not achieve the support required in the shareholders meeting.

Theses poison pills strategies, such as those commonly adopted in the US, is rarely seen in Taiwan. In practice, government intervention is the most powerful anti-takeover defense. Laws and related regulations on antitrust, protected industry reviews, protection of minority shareholders, and protection of employees, have been successfully used as anti-takeover defenses in Taiwan.

In the future, SPIL could try to use a defense strategy based on poison pills, but the fact that ASE is the biggest shareholder and has the 33.28% of the SPIL's shares means that it would be difficult to have the required support to do an action that will affect the value of the firm having ASE a third part of the votes. Also, SPIL's managers hold a few part of the shares of the firm, it is believed that the actual chairman controls less than 15% of the shares votes, so trying to enlist support for the action is even harder. Finally, many studies have been done trying to analyze the impact of the poison pills in the stock prices. Usually, the poison pills provoke a reduction in stockholder wealth and abnormal negative stock returns to the firm that use them.

Corporate charter amendments

Another common strategy to defense the firm against a hostile takeover is doing changes in the corporate charter. These changes usually need the shareholders' approval and seek to maintain the control of the management of the company. Some of the more commons antitakeover corporate changes are staggered board, a supermajority, fair price and dual capitalizations.

The Staggered board consists of dividing the Board of Directors of the firm into three groups and split the elections in three years. That means only one-third of the board directors is elected

every year. The result of this action is that the bidder has to wait more time until having the majority of the representation on the board. That will reduce the capability of the bidder to do important changes in the management of the acquired firm.

The Supermajority consists of changing the number of votes of shareholders needed to approve a merger in a number higher than a majority, typically around 75%. This supermajority usually has clauses that permit the managers avoid them when they want but shielding behind it when is a hostile takeover. The laws of the state corporation determine the ability of the firm to implement supermajority. Due to this, it appears a new defense that consists of changing the state of incorporation trying to find a state con better protection antitakeover.

The Fair price is a provision based on a modification of a corporation's charter that requires the bidder to pay at least a fair price, according to the market, for the firm's shares. Many state laws already include fair price provisions. However, it is not a common antitakeover tactic due to it will not paralyze the acquisition, only increase the price.

The Dual capitalizations is a change in the equity structure of the target firm that creates two classes of stock with different voting rights. The aim of this is to five more voting power to a group that sympathizes with the actual management due to common shareholders will choose the not voting rights instead of the voting rights shares because the last ones give fewer dividends or lack marketability.

According to the information obtained from the press room of SPIL and analyzed before, it does not look that SPIL has made any corporate charter amendment. In my opinion, it could be a good way to avoid ASE acquiring 100% of the shares of the company. However, it has not to forget the fact that ASE holds almost one-third of the SPIL's shares and the chairman controls less than 15% of the voting shares. Due to this, doing a dual capitalization do not look a good idea, because ASE could increase its voting power. Also, doing a fair price provision also does not appear effective because the shareholders are responding well to the tender offers that ASE did. In conclusion, SPIL could try to prepare defense using a staggered board or a supermajority.

Scorched-earth defense

Also called crown jewels, this strategy is based on the goal of being less attractive to the bidder. To achieve this, usually, companies sell its most valuable asset (crown jewels) to another company trying to be sure that it could be possible to buy back the assets when the takeover pass. Because the risk of the strategy, sometimes it is considered a poison pill and also need a

white knight (a friendly company that is going to help an acquired company to avoid a takeover, a tactic that is going to be explained later in this chapter).

This strategy looks to have a considerable risk to SPIL due to the industry in where the firm works. IC industry. And technology, in general, has a severe competition and is dangerous to trust the best assets in other company, especially if the company is also in this industry like Hon Hai (Foxconn).

Golden and silver parachutes

The golden and tin parachutes are measures that make the acquisition very expensive trying to make it less desirable to an acquirer. The golden parachutes are economic compensations to the managers and directors of the firm in case an acquirer try to fire them due a takeover. The silver parachutes are salary increases to the employers that remain in the company after the takeover. Both of the measures could make an acquisition expensive enough to convert it in an impossible operation but the problem is that stockholders are usually against this measure due to it does not need the approval of them and also it is believed that could affect the management actions and violate management's fiduciary responsibilities.

Actually, this measure it was applied in many big companies in the seventies but in some cases, it results in a not defensive action. Even the fact that it made increase the costs of acquisitions, in mergers and acquisitions the costs of personal increased until being the 8% of the cost of the operation, this measure also provoke that managers are more interested in the operation if, because it, they are going to gain an enough quantity of money.

Attack the logic of the bid

Attack the logic of the bid is one of the most common tactic used by companies to defense them against a takeover. It consists of question the reasons of the acquisition, the price, the impact, among others, in order to persuade the shareholders to not support the acquisition and not sell. SPIL has been using these tactics since the beginning of the issue, as seen before, but it was unsuccessful.

Greenmail

The greenmail is a payment of an amount of money to repurchase the shares that the acquirer has bought paying a substantial premium, because that it is also called targeted share

repurchase. Also, applies to the purchases of stock from other shareholders not interested in taking the control of the company.

ASE used repeatedly the argument that the takeovers against SPIL are a financial investment and SPIL use it to say that the aim of the takeover is unclear because ASE is actively interfering in the management of the company. In this situation, SPIL could use a greenmail strategy, offering a large amount of money for repurchasing its shares in possession of ASE, to cast doubt on the purpose of the takeovers.

Standstill agreements

The standstill agreements consist of signing a contract in which ann acquirer agrees not to buy additional shares in exchange for a fee. It typically occurs when an acquirer holds enough shares to be able to create a threat to mount a takeover battle for the target. Also, many of these agreements include a right of first refusal for the acquired in case the acquirer wants to sell the shares that it holds.

Like greenmail, standstill agreements provide compensation for the bidder for not to threaten to take control of the target. In fact, standstill agreements are often accompanied by greenmail. Due to this, SPIL could try using greenmail and standstill agreement to cast doubt on the financial investment purpose of ASE, as said before.

White knight and white squire

A white knight is another company, not acquirer or acquired, that would buy all or part of the acquired on more favorable terms and a promise not to interfere in the management. Also, a white knight can be chosen for other several reasons such as friendly intentions, the belief of better synergies, promises of not dismissing employees, among others. It is difficult to find a company interested in this agreement. Because that, it appears a different way to use the strategy that is selling the assets that make the company interesting for the acquirer under the promise of being returned, this case is also called lockup transactions.

The white squire defense is similar to the white knight defense but seeking for a firm or investor who purchases a large block of the target firm's stock, like the majority of the voting shares, and is not interested in acquiring the control of the target. So the difference is the white knight is going to acquire the target firm in more friendly conditions and the white squire is going to invest in the target firm without interest of intervening on the management of it. Warren Buffet

is a legendary white squire, through his company, Berkshire Hathaway, he has invested in white squire stock positions in companies such as Gillette, Coca-Cola, U.S Air, and Champion International Corporation.

SPIL has been trying a white knight and squire defense during the takeovers of ASE. In the first one, SPIL tried to do a share swap with Hon Hai (Foxconn) but the attempt of white knight defense failed due to not received the support of the SPIL's shareholders. It is said that the offer of Hon Hai was not good, so was not more favorable than the ASE's one. In the second takeover, SPIL tried to do a strategic alliance with Tingsua Unigroup that would be an investor (white squire) of the firm but, finally, the agreement was canceled when the second tender offer failed.

Capital structure changes

A target firm can make various changes in its capital structure in an attempt to ward off a hostile takeover. It is four main ways; recapitalize, assume more debt, issue more shares, and buy back shares.

Recapitalization consists of paying a superdividend to the shareholders financed through the assumption of considerable debt. For this reason, this strategy received also the name of leverage recapitalizations. Doing this, the target firm will pay a dividend higher to the premium of a tender offer bid and also the interest of the acquirer will be fewer due to a large increase in the target company debt. There are similarities between recapitalization plans and leveraged buyouts. A leveraged buyout (LBO) is a private equity investment that in which a small group of investors borrows heavily to buy all the shares of a company, the investors group usually includes the managers of the firm. One of the advantages of recapitalizations and LBO is that the firms assume an amount of debt and changes taxable dividend payments to tax deductible interest payments. The other big advantage is that managers of the firm acquire ownership.

In the case of study, SPIL might have more difficult to do an LBO, due to the investors seek for a high profit and having to fight against ASE's offer would decrease it because a higher prize in the acquisitions of shares. On the other hand, doing a recapitalization would be possible, though it is a drastic measure because it would increase the ownership of the SPIL management. Similar to this, assume more debt consists of increasing the firm's debt without a recapitalization or an LBO, with the objective to prevent a takeover. The ways to do that is with more bonds or bank loan.

Another antitakeover option available to the target company would be to issue more shares. This would change the company's capital structure since it increases equity while maintaining the current level of debt. Doing that, the target firms makes more difficult the acquisition of the majority of the share by the bidder. The problem of this measure is that the company's stock price is going to decrease and stockholders will demand an adequate compensation. It is a possible strategy to SPIL in the case of study.

Finally, the last capital strategy change strategy is buy back shares. It consists of buying the shares acquired by the bidder (greenmail), doing a self-tender, or buying in the open market. To do that without increasing the debt it is needed a big amount of cash. It is a possible strategy to SPIL in the case of study.

Litigation

Litigation is one of the more common antitakeover defenses based on antitrust violations, inadequate disclosure, and fraud. SPIL tries it, as has already been seen, in both takeovers. In the first one it failed but in the second it helped to make the FTC decision more difficult, and finally the lack of decisions made the takeover unsuccessful.

Pac-Man defense

The Pac-Man defense, so-called because the popular video game in which the characters try to eat each other before they have eaten themselves, occurs when the target firm makes an offer to buy the acquire firm in response to its bid. The difference in the value and the size of ASE and SPIL makes difficult to imagine SPIL trying to acquire ASE in the response of the takeovers.

7.2 ASE: possible attack strategies

Since the late 1980s, it has been required more powerful takeover attack tactics due to stronger antitakeover defense developed by the target firms. In contrast with these defense tactics, it is not a great amount of information on different strategies. When it is not possible to have a friendly and negotiated transaction, there are other ways to acquire the public shares of a company.

Open Market Purchases

The first way to acquire the shares of a company is through open market purchases. It is not common in acquisitions because purchasing a lot of shares in the open market would be too

expensive and slow due to the quantity of each purchase is limited and after each purchase, the price of each share grows. To avoid this, it appears the most common way to acquire a big amount of public shares of a company, which is a tender offer.

Street Sweeps

Another tactic common in takeovers related with open market purchases is the street sweeps. It consists on the bidder purchasing stock of the target firm in the open market, usually through various shell corporations and partnerships whose names do not convey the true entity of the ultimate purchaser, and after that, start the tender offer. Doing this, the tender has more probability to success because part of the shares are already held by the bidder but in a shell corporation.

Tender Offer

A tender offer is a way to buy a lot of public shares quickly and all at the same price. It consists of buying an important amount of shares to the public shareholders paying a price higher than the market price. It is characterized by eight factors:

- Active and widespread solicitation of public shareholders for the shares of an issuer
- Solicitation made for the substantial percentage of a company's stock
- Offer to purchase made at premium over the prevailing market prize
- Terms of the offer are firm rather than negotiated
- Offer contingent on the tender of a fixed number of shares, often subject to a fixed maximum number to be purchased
- Offer to open only a limited period of time
- Offered subject to pressure to sell his stock
- Public announcements of purchasing program concerning the target company precede or accompany rapid accumulation of larger amounts of the target company's securities.

The costs of using a tender offer are higher than a negotiated deal, due to legal filing fees and publication costs. Also, a tender offer can be an all-cash tender offer or use securities as part of the offer. Finally, a tender offer can be an any-and-all, buying 100% of the target firm, or a partial tender offer, buying by steps. For the shareholders, the first case is more attractive because usually an acquisition by step is offering less premium in each step. Maybe because that, ASE did a first attractive tender offer, offering a price that looked fair, and later did another one after being successful first.

This method was the ASE's choice to try to acquire SPIL. As seen before, the fist tender offer was successful and the second one failed, due to this fail, ASE cannot do another attempt until next year, in March 2017.

Two-Tiered Tender Offer

There is a particular case of the common tender offer that is called the two-tiered tender offer. It consists of doing the first offer of an amount of shares that will assure the control of the target firm and a premium attractive to shareholders, and, just after that, do another offer with a lower price. This strategy is used to pressure shareholders who are concerned that they may become part of a second tier and receive a fewer compensation, because if the first tender offer is successful, the remaining shareholders can lose their positions and have to tender for the inferior price. Also, usually, the first offer is an all-cash tender offer while the second tender offers a non-all-cash. It could be an interesting strategy to ASE if the managers are willing to wait one year to continue the acquisition of SPIL.

Bear Hug

It exists another way that usually appear just before a tender offer, it is called bear hug. A bear hug consists of the pressure the management of the target firm before initiating the tender offer and tries to buy avoiding it. Usually is made when it is not sure that the target company's management is willing to sell. ASE tried it before the second tender offer when ASE pressure SPIL to negotiate a 100% acquisition under the threat of another tender offer of 25% more of SPIL's shares.

Proxy Fights

Finally, the last common tool to do a hostile takeover is the proxy fights. A proxy fight is when the acquirer, who has some shares of the target firm, persuaded to join forces to other shareholders with the attempt of win voting power and take the control of the firm. A proxy fight may be a less expensive alternative to a tender offer due to is needed 50% of shares. Typically, there are two main forms of proxy contest:

- Contest for seats on the Board of Directors: the insurgent group of shareholders tries to replace management. If the opposing slate of directors is elected, it may then use its authority to remove management and replace them with a new management team.

- Contests about management proposal: these proposals concern the approval of M&A. Actual management opposes the merger and the insurgent group may be in favor. Other relevant proposals might be the passage of antitakeover amendments.

A critical aspect of this fight are the different groups of the votes of the shareholders that it can be made:

- Share controlled by insurgents and shareholders groups unfriendly to management
- Shares controlled by the management team (directors, officers, employees, among others)
- Shares controlled by institutions
- Shares controlled by brokerage firms
- Shares controlled by individuals

For the issue of the study, the proxy fight seems a good alternative to tender offers to ASE due to, as seen before, the shares controlled by the management team is only less than 15%. The contests would be a contest about management proposal and ASE will try to replace the management by persuading shareholders. To do that, is important to analyze the major shareholders of SPIL that are, before the first takeover of ASE in 2015 (on September 16th, 2015), the following:

Type of Shareholders	Governmental Organization	Financial Institution	Other Corporation	Foreign Organization and Others	Individual	Total
Number of Shareholders	1	47	205	893	69,166	70,312
Ratio	0.00%	10.59%	12.24%	55.27%	21.90%	100%

Table 12. Status of SPIL Shareholders (Source: SPIL Annual Report 2015)

And the major of the SPIL shareholders are:

Name of Shareholders	Shareholding
JPMorgan Chase Bank in Custody for ADR of SPIL	9.36%
Regarding directors and supervisors	3.73%
Citibank in Custody for Government of Singapore	2.90%
Ku-Ming Investment Company Ltd.	2.09%
Shin Kong Life Insurance Company Ltd.	1.96%
Chunghwa Post Co., Ltd.	1.77%
Labor Pension Fund (New Scheme)	1.60%

Labor Retirement Fund (Old Scheme)	1.54%
Citibank in Custody for Norges Bank	1.51%
Cathay Life Insurance Company Ltd	1.40%

Table 13. Major SPIL Shareholders (Source: SPIL annual Report 2015)

It can be seen from that the shareholders of SPIL are dominated by foreign institutions and others (55.27%) and individual shareholders (21.90%). It is supposed to be different in the current situation after the first takeover but it gives an idea that is possible for ASE to start a proxy fight due to a varied mix. Also, it can be seen how the regarding management team have only 3.73% and influenced in less than 15%, as seen before.

7.3 Legal analysis and the role of the FTC

In Taiwan, there is some laws and regulations that are relevant to M&A operations. This laws and regulations are in:

- Business Mergers and Acquisitions Act (BMAA)
- Fair Trade Act
- Company Act
- Securities and Exchange Act
- Statute for Upgrading Industries
- Labor Standards Act
- Statute For Investment By Foreign Nationals
- Financial Institutions Merger Act
- Financial Holding Company

And the entities in charge of public M&A transactions are:

- Securities Futures Bureau (SFB) of the Financial Supervisory Commission (FSC): the main regulatory entity
- Fair Trade Commission (FTC): the authority in charge of anti-trust clearance
- Investment Commission (IC): the authority in charge of reviewing foreign investment

In all of these laws and regulations is not a specific one to takeovers, but some of them are applicable and enforced. For the case of study, the most important points in the laws and regulations are fairness, anti-takeover defenses, and antitrust review.

First at all, regarding the fairness, Taiwan law places great emphasis on the fairness of the consideration. Usually, in public companies acquisition, it is required from shareholders an opinion of the fairness. The Mergers and Acquisitions Act requires that the board of directors establishes a special committee to review the fairness of the acquisition price, in addition to retaining an impartial expert to issue a fairness opinion. Also, in Taiwan is not common control premium, especially in acquisitions of the 100% of the company acquired within a short period of time. In this situation, the law requires the same consideration to all shareholders; otherwise, the major shareholder of the target company, who also controls the management, would be exposed to a breach of fiduciary duty claim. Also, in tender offers, mergers, statutory share exchanges, and demergers, the consideration paid to all selling shareholders must be the same.

Secondly, in reference to antitakeover defense, government intervention is the most powerful and common anti-takeover defense in Taiwan, as seen before. Therefore, it is not any special regulation to the different defense or attack strategies viewed in the last points, apart from the laws and regulations of general M&A operations.

Finally, in Taiwan, all the M&A transaction exceeding certain thresholds needs an antitrust notification. These situations are:

- Two companies are merged into one
- A firm holds or acquires more than one-third of the total voting shares or total capital of another firm
- A firm is assigned by or leases from another firm the whole or the major part of the business or properties of such other firm
- A firm operates jointly with another firm on a regular basis or is entrusted by another firm to operate the latter's business
- A firm directly or indirectly controls the business operation or the appointment or discharge of personnel of another firm

Due to this, ASE needed the approval of the FTC in its second takeover against SPIL because the attempt of holding more than one-third of SPIL's shares. Also, in a hostile takeover, the management of the target company may inform the FTC to deter or stop the takeover, as happened in ASE and SPIL case.

It is important to know that there is no deadline for an anti-trust notification, but parties are not permitted to close the transaction before the anti-trust clearance is obtained. If the notification

requirement does not comply with, the FTC may impose penalties such as prohibiting the transaction to proceed or ordering the acquirer to transfer the company or divest itself of the assets it had acquired. The FTC also has the power to impose an administrative fine of between NT$200,000 and NT$50 million. Once the notification is submitted and the authority deems that the information in the filing is complete, there is a 30 day waiting period for the FTC to raise its objection. If the FTC does not object during the 30 day period, the clearance is deemed to be automatically obtained and the deal may be closed. The FTC has the power to shorten the 30 day period or extend it by up to a further 60 days. To start the 30 day waiting period, all of the required information and documents should be submitted to the FTC and the FTC will confirm the commencement of the waiting period. In the ASE and SPIL case, the clue was that the anti-trust review period was extended to a period that was more than the bid period, provoking the tender offer failed.

8. Suggestions proposed to the companies

Once the financial and the strategical analysis have been done, it is time to propose a solution to the issue. Before that, a resume of the results of the financial analysis are that the Financial Statement Analysis shows that the SPIL's performance is being better than ASE because a greater profit margin and asset management ability, the Stock Valuation shows that SPIL could be undervalued, and the Synergies Valuation shows that ASE and SPIL combined could generate more value. On the other hand, the resume of the results of the strategic analysis are that ASE has less potential actions to achieve its goal than SPIL, and the role of the FTC is very important in the future of the issue.

The suggestions to ASE seems to be clear, it still has to try to acquire SPIL regarding the better performance of SPIL that would make increase the ROE of ASE, to an undervalued stock price of SPIL, and to a considerable potential synergies value. The problem of ASE is how to achieve it. The typical ways to acquire SPIL shares are blocked, because ASE cannot purchase more SPIL stock in the open market due to it already has a third of the total stock, and a new tender offer needs to wait half year and also needs the approval of the FTC. As seen before, a proxy fight seems a good alternative due to the fact that the SPIL's shares controlled by its management team are only less than 15%. The contests would be a contest about management proposal and ASE will try to replace the management by persuading shareholders. It must be recalled that more than 75% of SPIL's shares are controlled by foreign organizations and other, and individuals. Finally, ASE has to try to avoid that the takeovers are seen not as a hostile action.

On the other hand, SPIL has the same financial reasons to defend itself as ASE to attack. SPIL has different potential strategies to avoid the hostile takeover. The ones suggested to the company are continue attacking the logic of the bid and the unclear purpose of ASE, try greenmail and standstill tactics repurchasing shares and attacking the financial reason of ASE and try to find a white squire that purchases shares without expecting benefits, something difficult to imagine but possible if SPIL looks in possible companies that would be harmed by the merger between ASE and SPIL. With this measures seems to be enough at the moment, having the protection of the FTC. Also, SPIL can create poison pills and look for a white knight, but these methods will injure the good performance of the company.

Finally, it exits an intermediate solution that appears in the real case, and it consists of a creation of a holding company. With this solution, ASE would lose the financial direct profits of the takeover, like the stock undervalued and the direct impact on its financial statements, but would gain the creation of synergies and an indirect impact of these synergies in its financial statements. As seen before, the value of the synergies estimated is very interesting for both companies, so it looks a good solution for ASE because is far easier and with a higher probability of triumph. Also, ASE maintains a third of SPIL' shares for obtaining financial benefits and protects its corporate name agonists the social opinion. On the other hand, it is a very good solution to SPIL because it will take profit of the synergies and maintain the management of the company, though ASE will be more important in the holding company.

9. Conclusions

During the last years, since 1980, takeovers are being more common, but hostile ones are not a typical thing in Asia, at least not that much as the U.S. In Taiwan exists a few cases and the one between ASE and SPIL is being the most famous one. The companies are the biggest and the second biggest in Taiwan IC packaging and testing market.

The importance of this issue to Taiwan is because the semiconductor industry is the major component of Taiwan's vital electronics sector so is the biggest part of a sector that generates 40% of exports, around NT$2,200 billion (about US$72.5 billion) that is, approximately, the 14% of GDP. In Taiwan, the exports are the 60% of GDP so it is the 22nd country with bigger exports based on GDP or 20th based on net exports.

Back to the initial situation of uncertainty, the analysis starts in a situation of uncertainty:

- ASE wants to acquire 100% of SPIL's shares by hook or by crook and looks than the shareholders support it
- SPIL is defending itself against the takeover
- The FTC acquired an important role in the issue
- The social opinion is against ASE

So, to be able to do suggestions to both companies, it has been done a financial and strategic analysis in order to be able to do suggestions to both companies.

Firstly, the conclusions of the financial analysis were:

- SPIL has a better performance
- ASE wants to acquire SPIL to increase its ROE
- SPIL stock is undervalued between 8.98% and 44.51%
- Synergies can create NT$ 94.44 billion of value in case of merger

Secondly, the conclusions of the strategic analysis were:

- ASE depend on the role of the FTC and the only way to attack SPIL is with a proxy fight or an another bid in half year. Also, ASE needs to change the hostile perception in the issue
- SPIL has differents defensive strategies but the most viable are attempts to attack the logic of the bid and the purpose of ASE to convince the FTC, the shareholders and the social opinion that is not good for the company, the market or Taiwan.
- The FTC is going to have a very important role in the future of the acquisition

Finally, based on this conclusions, the suggestions were done are:

- Is still interesting for ASE, for the financial point of view, to acquire 100% of SPIL's shares with a proxy fight to minimize the role of the FTC. Also, ASE needs to avoid the "hostile" perception.
- SPIL has to defend itself from the financial point of view and the way is attacking the logic of the bid and the purpose of ASE to convince the FTC, the shareholders and the social opinion that is not good for the company, the market or Taiwan.
- It exists an intermediate solution that will create value to ASE and SPIL with the synergies and give power to ASE and take from SPIL, but SPIL maintaining its independence.

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Appendix 1. Financial Statements of ASE and SPIL (source: marketwatch)

ASE

Balance Sheet Fiscal year is January-December. All values thousands of TWD millions.	2011	2012	2013	2014	2015
Cash & Short Term Investments	25,27	24,16	50,17	58,22	59,12
Cash Only	13,89	19,99	45,03	51,69	55,25
Short-Term Investments	11,38	4,17	5,14	6,52	3,86
Total Accounts Receivable	31,17	38,00	43,75	53,48	45,37
Accounts Receivables, Net	30,48	37,42	43,24	52,92	44,93
Accounts Receivables, Gross	30,60	37,50	43,30	53,00	45,01
Bad Debt/Doubtful Accounts	-0,13	-0,08	-0,07	-0,08	-0,08
Other Receivables	0,69	0,57	0,51	0,56	0,44
Inventories	30,07	32,07	34,87	44,15	48,97
Finished Goods	3,62	4,51	4,86	6,57	10,01
Work in Progress	17,71	18,60	20,29	26,05	27,41
Raw Materials	7,72	8,97	9,72	11,53	10,53
Progress Payments & Other	1,03	-	-	-	1,03
Other Current Assets	3,62	3,26	3,39	4,11	3,27
Miscellaneous Current Assets	3,62	3,21	3,33	4,07	3,12
Total Current Assets	90,13	97,50	132,18	159,96	156,73
Net Property, Plant & Equipment	111,78	127,20	131,50	151,59	150,00
Property, Plant & Equipment - Gross	249,22	274,85	295,64	336,78	355,12
Buildings	55,74	63,48	70,59	86,73	94,45
Land & Improvements	3,08	3,27	3,30	3,35	3,38
Computer Software and Equipment	-	-	-	-	-

Other Property, Plant & Equipment	4,97	5,44	5,97	6,39	7,72
Accumulated Depreciation	137,44	147,65	164,14	185,19	205,12
Total Investments and Advances	2,44	2,56	2,71	2,80	38,69
Other Long-Term Investments	0,39	1,38	1,50	1,31	1,27
Long-Term Note Receivable	-	-	-	-	-
Intangible Assets	16,82	12,36	11,95	11,91	11,89
Net Goodwill	10,37	10,31	10,35	10,45	10,51
Net Other Intangibles	6,44	2,05	1,61	1,47	1,38
Other Assets	1,25	4,37	4,71	3,22	2,82
Tangible Other Assets	1,25	0,20	0,64	0,64	0,26
Total Assets	**223,88**	**247,71**	**286,81**	**333,97**	**365,29**

ST Debt & Current Portion LT Debt	26,43	40,06	52,37	46,53	53,73
Short Term Debt	22,97	36,89	46,36	43,70	36,98
Current Portion of Long Term Debt	3,46	3,17	6,01	2,83	16,74
Accounts Payable	21,19	24,23	28,99	35,41	34,14
Income Tax Payable	2,40	2,78	3,00	4,15	4,55
Other Current Liabilities	16,74	17,60	16,47	25,11	28,09
Dividends Payable	-	-	-	-	-
Accrued Payroll	5,01	5,43	6,19	8,73	8,70
Miscellaneous Current Liabilities	11,74	12,17	10,28	16,39	19,39
Total Current Liabilities	66,76	84,67	100,84	111,20	120,50
Long-Term Debt	50,17	44,59	50,16	55,37	66,45
Long-Term Debt excl. Capitalized Leases	50,14	44,59	50,16	55,37	66,45
Non-Convertible Debt	50,14	44,59	50,16	55,37	66,23
Convertible Debt	-	-	-	-	0,21

Capitalized Lease Obligations	0,02	-	-	-	-
Provision for Risks & Charges	3,30	5,15	4,44	4,37	4,07
Deferred Taxes	-0,83	-1,92	-1,10	-0,56	-0,17
Deferred Taxes - Credit	0,62	1,81	2,66	3,93	4,99
Deferred Taxes - Debit	1,46	3,73	3,77	4,49	5,16
Other Liabilities	0,74	0,55	1,55	0,66	1,07
Other Liabilities (excl. Deferred Income)	0,74	0,55	1,55	0,66	1,07
Deferred Income	-	-	-	-	-
Total Liabilities	**121,60**	**136,76**	**159,65**	**175,54**	**197,08**
Non-Equity Reserves	-	-	-	-	-
Preferred Stock (Carrying Value)	-	-	-	-	-
Redeemable Preferred Stock	-	-	-	-	-
Non-Redeemable Preferred Stock	-	-	-	-	-
Common Equity (Total)	101,17	107,43	123,02	150,22	156,70
Common Stock Par/Carry Value	67,54	75,94	77,56	78,53	79,03
Retained Earnings	31,33	23,53	26,61	38,78	55,90
ESOP Debt Guarantee	0,86	-	-	-	-
Cumulative Translation Adjustment/Unrealized For. Exch. Gain	3,35	-3,21	-0,53	4,54	4,49
Unrealized Gain/Loss Marketable Securities	0,24	0,35	0,43	0,53	0,59
Revaluation Reserves	-	-	-	-	-
Treasury Stock	-4,73	-1,96	-1,96	-1,96	-7,29
Total Shareholders' Equity	101,17	107,43	123,02	150,22	156,70
Accumulated Minority Interest	1,11	3,52	4,14	8,22	11,50
Total Equity	102,28	110,95	127,16	158,44	168,21
Liabilities & Shareholders' Equity	**223,88**	**247,71**	**286,81**	**333,97**	**365,29**

P&L	2011	2012	2013	2014	2015

Sales/Revenue	185,35	193,97	219,86	256,59	283,30
Cost of Goods Sold (COGS) incl. D&A	152,42	159,40	179,10	205,17	235,54
COGS excluding D&A	129,47	135,96	153,63	178,82	206,02
Depreciation & Amortization Expense	22,95	23,44	25,47	26,35	29,52
Depreciation	21,32	22,47	24,70	25,81	28,94
Amortization of Intangibles	1,63	0,96	0,77	0,55	0,58
Gross Income	32,93	34,57	40,77	51,42	47,76
SG&A Expense	16,11	16,89	18,72	21,85	22,88
Research & Development	7,12	7,88	9,07	10,30	10,94
Other SG&A	8,99	9,01	9,65	11,55	11,94
Other Operating Expense	-	-	-	-	-
Unusual Expense	-0,42	0,27	1,75	-0,31	0,26
EBIT after Unusual Expense	17,24	16,80	20,29	29,26	24,63
Non Operating Income/Expense	0,99	0,94	1,28	1,61	2,51
Non-Operating Interest Income	0,33	0,32	0,21	0,24	0,24
Equity in Affiliates (Pretax)	-	-	-	-	-
Interest Expense	1,67	1,99	2,30	2,35	2,31
Gross Interest Expense	1,93	2,24	2,48	2,58	2,56
Interest Capitalized	0,26	0,25	0,18	0,23	0,25
Pretax Income	16,90	16,53	19,33	28,58	24,89
Income Tax	3,02	3,06	3,20	4,25	4,84
Income Tax - Current Domestic	2,56	2,61	2,52	3,62	4,48
Income Tax - Current Foreign	-	-	-	-	-
Income Tax - Deferred Domestic	0,46	0,45	0,69	0,63	0,36
Income Tax - Deferred Foreign	-	-	-	-	-

Income Tax Credits	-	-	-	-	-
Equity in Affiliates	0,10	0,06	0,03	-0,11	0,40
Other After Tax Income (Expense)	-	-	-	-	-
Consolidated Net Income	13,98	13,52	16,16	24,22	20,45
Minority Interest Expense	0,25	0,46	0,47	0,63	0,97
Net Income	**13,73**	**13,07**	**15,69**	**23,59**	**19,48**
Extraordinaries & Discontinued Operations	-	-	-	-	-
Extra Items & Gain/Loss Sale Of Assets	-	-	-	-	-
Cumulative Effect - Accounting Chg	-	-	-	-	-
Discontinued Operations	-	-	-	-	-
Net Income After Extraordinaries	13,73	13,07	15,69	23,59	19,48
Preferred Dividends	-	-	-	-	-
Net Income Available to Common	13,73	13,07	15,69	23,59	19,48
EPS (Basic)	1,82	1,75	2,09	3,07	2,55
Basic Shares Outstanding	7,51	7,45	7,51	7,69	7,65
EPS (Diluted)	1,78	1,71	2,03	2,95	2,44
Diluted Shares Outstanding	7,70	7,57	7,75	8,22	8,25
EBITDA	39,77	41,12	47,52	55,92	54,40

SPIL

Balance Sheet

Fiscal year is January-December. All values thousands of TWD millions.	2011	2012	2013	2014	2015
Cash & Short Term Investments	16,28	16,19	17,31	30,49	26,64
Cash Only	1,91	16,19	17,31	30,49	25,19
Short-Term Investments	14,37	-	-	-	1,45
Total Accounts Receivable	10,25	13,50	15,98	19,39	16,31

Accounts Receivables, Net	10,23	12,92	15,37	18,58	15,84
Accounts Receivables, Gross	10,26	13,08	15,56	18,58	15,84
Bad Debt/Doubtful Accounts	-0,03	-0,16	-0,19	-0,00	-0,00
Other Receivables	0,02	0,58	0,61	0,81	0,47
Inventories	3,99	3,14	3,67	4,38	4,50
Finished Goods	0,36	0,32	0,42	-	-
Work in Progress	0,42	-	-	0,57	0,59
Raw Materials	3,29	2,94	3,36	3,96	4,08
Progress Payments & Other	-0,09	-0,13	-0,11	-0,14	-0,16
Other Current Assets	1,13	0,62	0,86	0,94	1,33
Miscellaneous Current Assets	1,13	0,62	0,86	0,94	1,33
Total Current Assets	31,65	33,45	37,83	55,21	48,79
Net Property, Plant & Equipment	44,14	49,93	55,20	63,52	64,31
Property, Plant & Equipment - Gross	85,32	93,87	103,13	115,26	121,25
Buildings	17,37	18,99	21,02	22,79	30,95
Land & Improvements	2,90	2,90	2,90	2,90	2,90
Computer Software and Equipment	-	-	-	-	-
Other Property, Plant & Equipment	5,15	5,55	6,88	7,63	8,90
Accumulated Depreciation	41,18	43,94	47,93	51,74	56,94
Total Investments and Advances	5,30	6,07	6,70	9,08	8,23
Other Long-Term Investments	3,20	5,39	6,09	9,00	5,71
Long-Term Note Receivable	-	-	-	-	-
Intangible Assets	1,15	0,52	0,36	0,25	0,19
Net Goodwill	-	-	-	-	-
Net Other Intangibles	1,15	0,52	0,36	0,25	0,19
Other Assets	0,16	0,63	0,90	1,00	0,78

Tangible Other Assets	0,16	0,63	0,90	1,00	0,78
Total Assets	**83,69**	**91,85**	**101,81**	**129,75**	**123,25**
ST Debt & Current Portion LT Debt	1,51	5,62	5,69	11,49	8,78
Short Term Debt	1,51	2,47	2,53	4,52	2,79
Current Portion of Long Term Debt	-	3,15	3,15	6,97	5,99
Accounts Payable	6,40	5,85	6,54	7,29	6,94
Income Tax Payable	0,48	0,50	0,78	1,91	0,91
Other Current Liabilities	6,48	7,26	9,52	10,89	14,04
Dividends Payable	-	-	-	-	-
Accrued Payroll	-	1,58	2,77	3,67	3,93
Miscellaneous Current Liabilities	6,48	5,67	6,75	7,22	10,11
Total Current Liabilities	14,88	19,22	22,53	31,58	30,68
Long-Term Debt	9,53	12,04	15,36	24,67	20,49
Long-Term Debt excl. Capitalized Leases	9,53	12,04	15,36	24,67	20,49
Non-Convertible Debt	9,53	12,04	15,36	24,67	20,49
Convertible Debt	-	-	-	-	-
Capitalized Lease Obligations	-	-	-	-	-
Provision for Risks & Charges	-	-	-	-	-
Deferred Taxes	- 1,27	- 1,19	- 0,72	- 0,61	- 0,86
Deferred Taxes - Credit	-	0,08	0,10	0,08	0,09
Deferred Taxes - Debit	1,27	1,26	0,83	0,70	0,95
Other Liabilities	0,48	1,08	1,35	1,31	1,39
Other Liabilities (excl. Deferred Income)	0,48	1,08	1,35	1,31	1,39
Deferred Income	-	-	-	-	-
Total Liabilities	**24,90**	**32,42**	**39,34**	**57,64**	**52,64**

Non-Equity Reserves	-	-	-	-	-
Preferred Stock (Carrying Value)	-	-	-	-	-
Redeemable Preferred Stock	-	-	-	-	-
Non-Redeemable Preferred Stock	-	-	-	-	-
Common Equity (Total)	58,79	59,43	62,47	72,11	70,60
Common Stock Par/Carry Value	31,16	31,16	31,16	31,16	31,16
Retained Earnings	6,80	5,02	5,97	11,72	9,94
ESOP Debt Guarantee	-	-	-	-	-
Cumulative Translation Adjustment/Unrealized For. Exch. Gain	0,38	-0,26	0,17	0,72	0,49
Unrealized Gain/Loss Marketable Securities	0,11	0,36	0,95	3,95	3,42
Revaluation Reserves	-	-	-	-	-
Treasury Stock	-0,96	-0,96	-	-	-
Total Shareholders' Equity	58,79	59,43	62,47	72,11	70,60
Accumulated Minority Interest	-	-	-	-	-
Total Equity	58,79	59,43	62,47	72,11	70,60
Liabilities & Shareholders' Equity	**83,69**	**91,85**	**101,81**	**129,75**	**123,25**

P&L	2011	2012	2013	2014	2015
Sales/Revenue	61,24	64,65	69,36	83,07	82,84
Cost of Goods Sold (COGS) incl. D&A	52,37	53,11	55,13	62,26	61,39
COGS excluding D&A	42,73	43,01	44,09	49,82	47,87
Depreciation & Amortization Expense	9,65	10,10	11,03	12,44	13,51
Depreciation	9,09	9,52	10,45	11,84	12,90
Amortization of Intangibles	0,56	0,20	0,21	0,60	0,61
Gross Income	8,87	11,54	14,23	20,82	21,45
SG&A Expense	3,78	5,15	6,29	7,01	8,20

Research & Development	2,00	2,56	3,41	3,63	3,74
Other SG&A	1,77	2,59	2,89	3,38	4,46
Other Operating Expense	-	-	-	-	-
Unusual Expense	-	0,29	0,11	0,83	2,49
EBIT after Unusual Expense	5,09	6,10	7,82	12,98	10,76
Non Operating Income/Expense	0,44	0,76	-0,11	1,69	0,22
Non-Operating Interest Income	0,07	0,12	0,10	0,16	0,16
Equity in Affiliates (Pretax)	-	-	-	-	-
Interest Expense	0,06	0,20	0,27	0,40	0,57
Gross Interest Expense	0,09	0,20	0,27	0,40	0,57
Interest Capitalized	0,03	-	-	-	-
Pretax Income	5,54	6,78	7,54	14,43	10,57
Income Tax	0,71	1,18	1,56	2,52	1,63
Income Tax - Current Domestic	0,73	-	-	2,35	1,82
Income Tax - Current Foreign	-	-	-	-	-
Income Tax - Deferred Domestic	-0,03	-	-	0,17	-0,19
Income Tax - Deferred Foreign	-	-	-	-	-
Income Tax Credits	-	-	-	-	-
Equity in Affiliates	-	-0,01	-0,09	-0,17	-0,18
Other After Tax Income (Expense)	-	-	-	-	-
Consolidated Net Income	4,84	5,59	5,89	11,73	8,76
Minority Interest Expense	-	-	-	-	-
Net Income	**4,84**	**5,59**	**5,89**	**11,73**	**8,76**
Extraordinaries & Discontinued Operations	-	-	-	-	-
Extra Items & Gain/Loss Sale Of Assets	-	-	-	-	-
Cumulative Effect - Accounting Chg	-	-	-	-	-

Discontinued Operations	-	-	-	-	-
Net Income After Extraordinaries	4,84	5,59	5,89	11,73	8,76
Preferred Dividends	-	-	-	-	-
Net Income Available to Common	4,84	5,59	5,89	11,73	8,76
EPS (Basic)	1,56	1,82	1,90	3,76	2,81
Basic Shares Outstanding	3,10	3,08	3,10	3,12	3,12
EPS (Diluted)	1,55	1,81	1,89	3,74	2,78
Diluted Shares Outstanding	3,12	3,09	3,12	3,14	3,15
EBITDA	14,74	16,49	18,97	26,24	26,77

Appendix 2. Ratios of the industry

	OSE				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	0,64	0,64	0,55	0,59	0,49
Acid test	0,49	0,48	0,40	0,42	0,34
2. Asset management ratios					
Inventory turnover ratio	10,76	9,51	9,34	10,19	9,44
Days sales outstanding	73,97	74,08	67,82	55,16	63,26
Fixed assets turnover ratio	1,96	1,92	1,46	1,65	1,60
Total assets turnover ratio	0,91	0,84	0,68	0,77	0,77
3. Debt management ratios					
Debt Ratio	65,2%	67,6%	67,7%	65,6%	66,9%
Times-Interest-Earned ratio	7,14	4,88	0,24		0,21
4. Profitability ratios					
Operating Margin	8,5%	7,2%	0,5%		0,4%
Profit Margin	6,5%	4,8%	-2,2%	0,5%	-1,6%
Return on Total Assets (ROA)	5,9%	4,0%	-1,5%	0,4%	-1,3%
Basic Earning Power (BEP) ratio	7,7%	6,0%	0,4%		0,3%
Return on Common equity (ROE)	17,5%	12,8%	-4,8%	1,2%	-3,9%

DuPont Equation	6,5% * 0,91 * 2,94	4,8% * 0,84 * 3,18	-2,2% * 0,68 * 3,18	0,5% * 0,77 * 2,98	-1,6% * 0,77 * 3,08

	ChipMos				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	2,84	2,63	2,58	2,69	2,78
Acid test	2,57	2,43	2,38	2,40	2,45
2. Asset management ratios					
Inventory turnover ratio	11,88	12,90	12,73	11,41	12,15
Days sales outstanding	74,09	83,34	80,41	78,89	73,05
Fixed assets turnover ratio	1,41	1,63	1,51	1,59	1,35
Total assets turnover ratio	0,60	0,60	0,59	0,67	0,66
3. Debt management ratios					
Debt Ratio	36,5%	37,5%	36,9%	44,5%	47,0%
Times-Interest-Earned ratio	17,16	25,16	11,11	6,08	1,72
4. Profitability ratios					
Operating Margin	12,4%	16,1%	10,5%	7,2%	2,9%
Profit Margin	4,9%	7,6%	6,9%	3,8%	-0,1%
Return on Total Assets (ROA)	2,9%	4,5%	4,1%	2,5%	-0,1%
Basic Earning Power (BEP) ratio	7,5%	9,6%	6,2%	4,8%	1,9%
Return on Common equity (ROE)	7,5%	11,4%	9,8%	6,1%	-0,1%

DuPont Equation	4,9% * 0,6 * 2,55	7,6% * 0,6 * 2,53	6,9% * 0,59 * 2,4	3,8% * 0,67 * 2,42	-0,1% * 0,66 * 2,58

	PTI				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	2,88	2,69	2,28	2,13	1,83
Acid test	2,64	2,45	2,10	1,97	1,73
2. Asset management ratios					
Inventory turnover ratio	15,54	15,51	15,30	17,46	21,91
Days sales outstanding	82,51	72,21	76,45	69,51	140,72
Fixed assets turnover ratio	1,21	1,06	1,05	1,15	1,17

Total assets turnover ratio	0,59	0,58	0,52	0,58	0,58
3. Debt management ratios					
Debt Ratio	41,5%	43,1%	48,5%	40,2%	47,8%
Times-Interest-Earned ratio	28,36	21,93	16,55		62,45
4. Profitability ratios					
Operating Margin	13,3%	10,6%	7,7%		18,8%
Profit Margin	9,4%	8,1%	-10,7%	8,7%	12,0%
Return on Total Assets (ROA)	5,6%	4,7%	-5,6%	5,0%	6,9%
Basic Earning Power (BEP) ratio	7,9%	6,1%	4,0%		10,9%
Return on Common equity (ROE)	11,9%	10,3%	-13,5%	10,0%	13,3%

DuPont Equation	9,4% * 0,59 * 2,12	8,1% * 0,58 * 2,2	-10,7% * 0,52 * 2,43	8,7% * 0,58 * 1,99	12% * 0,58 * 1,91

	KYEC				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	1,81	2,30	3,10	2,55	3,39
Acid test	1,74	2,25	3,05	2,49	3,29
2. Asset management ratios					
Inventory turnover ratio	41,37	56,92	59,01	48,28	40,41
Days sales outstanding	83,08	102,11	131,11	106,03	101,62
Fixed assets turnover ratio	0,67	0,68	0,74	0,75	0,74
Total assets turnover ratio	0,42	0,41	0,39	0,41	0,42
3. Debt management ratios					
Debt Ratio	44,7%	42,2%	41,9%	42,2%	41,2%
Times-Interest-Earned ratio	15,72	21,09	14,38		3,21
4. Profitability ratios					
Operating Margin	15,8%	18,0%	15,6%		3,6%
Profit Margin	13,3%	15,7%	12,4%	10,6%	3,2%
Return on Total Assets (ROA)	5,6%	6,4%	4,9%	4,3%	1,3%
Basic Earning Power (BEP) ratio	6,7%	7,4%	6,1%		1,5%
Return on Common equity (ROE)	10,2%	11,1%	8,4%	7,4%	2,3%

DuPont Equation	13,3% * 0,42 * 1,81	15,7% * 0,41 * 1,73	12,4% * 0,39 * 1,72	10,6% * 0,41 * 1,73	3,2% * 0,42 * 1,7

	Chipbond				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	1,70	1,63	1,66	1,44	1,50
Acid test	1,41	1,30	1,38	1,09	1,18
2. Asset management ratios					
Inventory turnover ratio	12,97	10,89	14,61	12,53	14,13
Days sales outstanding	45,27	45,03	42,03	40,92	51,28
Fixed assets turnover ratio	5,48	6,39	6,65	10,46	9,13
Total assets turnover ratio	1,37	1,43	1,62	2,13	2,12
3. Debt management ratios					
Debt Ratio	37,7%	41,5%	40,8%	49,9%	55,2%
Times-Interest-Earned ratio	74,88	5,59	19,21		36,49
4. Profitability ratios					
Operating Margin	3,1%	0,4%	1,4%		2,7%
Profit Margin	3,6%	0,6%	1,8%	3,0%	2,3%
Return on Total Assets (ROA)	5,0%	0,9%	2,9%	6,4%	4,9%
Basic Earning Power (BEP) ratio	4,3%	0,6%	2,2%		5,7%
Return on Common equity (ROE)	8,1%	1,6%	4,9%	12,9%	11,2%

DuPont Equation	3,6% * 1,37 * 1,64	0,6% * 1,43 * 1,71	1,8% * 1,62 * 1,68	3% * 2,13 * 2,01	2,3% * 2,12 * 2,29

	FACT				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	7,35	5,29	5,20	2,24	1,17
Acid test	6,30	4,22	3,84	1,72	0,88
2. Asset management ratios					
Inventory turnover ratio	8,04	7,32	9,43	11,01	10,25
Days sales outstanding	70,41	78,32	63,26	67,18	61,08
Fixed assets turnover ratio	2,97	2,28	1,68	1,39	1,11

Total assets turnover ratio	0,80	0,87	0,96	0,86	0,74
3. Debt management ratios					
Debt Ratio	10,1%	11,5%	7,9%	28,1%	41,7%
Times-Interest-Earned ratio			-0,80		32,10
4. Profitability ratios					
Operating Margin	16,4%	11,3%	-0,1%		13,3%
Profit Margin	12,9%	9,2%	1,3%	2,7%	1,0%
Return on Total Assets (ROA)	10,3%	8,0%	1,3%	2,3%	0,7%
Basic Earning Power (BEP) ratio	13,2%	9,9%	-0,1%		9,7%
Return on Common equity (ROE)	11,5%	9,0%	1,4%	3,3%	1,3%

DuPont Equation	3,6% * 1,37 * 1,11	0,6% * 1,43 * 1,13	1,8% * 1,62 * 1,09	3% * 2,13 * 1,39	2,3% * 2,12 * 1,71

	Walton				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	1,52	1,56	1,25	1,17	1,34
Acid test	1,27	1,30	0,98	0,86	1,07
2. Asset management ratios					
Inventory turnover ratio	10,67	12,92	10,12	9,42	11,52
Days sales outstanding	40,72	57,14	61,43	53,26	50,74
Fixed assets turnover ratio	0,79	0,92	0,76	0,70	0,70
Total assets turnover ratio	0,51	0,60	0,54	0,52	0,49
3. Debt management ratios					
Debt Ratio	50,8%	53,3%	58,8%	59,4%	59,4%
Times-Interest-Earned ratio	0,93	6,96	2,53		9,32
4. Profitability ratios					
Operating Margin	1,4%	9,4%	3,7%		9,9%
Profit Margin	1,8%	8,7%	3,6%	-2,8%	1,4%
Return on Total Assets (ROA)	0,9%	5,2%	1,9%	-1,5%	0,7%
Basic Earning Power (BEP) ratio	0,7%	5,6%	2,0%		4,8%
Return on Common equity (ROE)	1,9%	11,2%	4,7%	-3,6%	1,6%

DuPont Equation	3,6% * 1,37 * 2,03	0,6% * 1,43 * 2,14	1,8% * 1,62 * 2,43	3% * 2,13 * 2,47	2,3% * 2,12 * 2,46

	TongHsing				
	2015	**2014**	**2013**	**2012**	**2011**
1. Liquidity ratios					
Current Ratio	4,93	5,76	3,60	4,08	4,65
Acid test	4,48	5,25	3,16	3,54	4,13
2. Asset management ratios					
Inventory turnover ratio	8,63	9,06	9,38	9,62	10,45
Days sales outstanding	59,60	48,11	48,38	59,73	43,74
Fixed assets turnover ratio	1,48	1,72	1,63	1,48	1,61
Total assets turnover ratio	0,51	0,53	0,67	0,67	0,66
3. Debt management ratios					
Debt Ratio	34,3%	36,1%	19,9%	15,9%	14,6%
Times-Interest-Earned ratio	23,31	45,13	136,54		223,20
4. Profitability ratios					
Operating Margin	15,6%	20,6%	22,4%		17,8%
Profit Margin	13,4%	18,1%	20,0%	18,8%	15,4%
Return on Total Assets (ROA)	6,8%	9,7%	13,3%	12,6%	10,2%
Basic Earning Power (BEP) ratio	7,9%	11,0%	14,9%		11,8%
Return on Common equity (ROE)	10,3%	15,2%	16,6%	15,0%	11,9%

DuPont Equation	3,6% * 1,37 * 1,52	0,6% * 1,43 * 1,57	1,8% * 1,62 * 1,25	3% * 2,13 * 1,19	2,3% * 2,12 * 1,17

	Industry Average				
	2011	**2012**	**2013**	**2014**	**2015**
1. Liquidity ratios					
Current Ratio	2,16	1,95	2,00	2,27	2,13
Acid test	1,88	1,68	1,77	2,01	1,88
2. Asset management ratios					
Inventory turnover ratio	15,72	16,17	17,30	16,94	15,11
Days sales outstanding	71,88	67,91	73,82	71,48	65,51
Fixed assets turnover ratio	2,15	2,29	1,86	1,92	1,80
Total assets turnover ratio	0,76	0,76	0,68	0,68	0,67
3. Debt management ratios					

Debt Ratio	46,2%	45,4%	45,4%	46,5%	45,3%
Times-Interest-Earned ratio	47,56	15,15	26,47	19,48	21,91
4. Profitability ratios					
Operating Margin	8,2%	8,4%	9,1%	12,1%	10,2%
Profit Margin	5,3%	6,4%	5,3%	9,7%	7,8%
Return on Total Assets (ROA)	3,9%	4,6%	3,5%	5,7%	5,0%
Basic Earning Power (BEP) ratio	5,6%	5,9%	5,4%	7,1%	6,3%
Return on Common equity (ROE)	6,4%	7,8%	5,4%	11,7%	10,2%

DuPont Equation	19,74	26,93	28,26	25,75	20,87

Appendix 3. ASE and SPIL monthly stock value (source: TWSEC)

ASE

Year	Month	Highest Price	Lowest Price	Weighted Average Price (A/B)	Transaction	Trade Value (A)	Trade Volume (B)	Turnover Ratio (%)
2015	1	40,45	36,50	38,44	134.509	16.809.256.615	437.198.799	5,56
2015	2	44,20	39,20	41,49	116.316	16.437.875.096	396.139.919	5,03
2015	3	47,85	41,05	44,50	270.611	40.843.363.430	917.688.407	11,65
2015	4	48,05	41,75	43,81	230.073	30.088.907.811	686.683.472	8,70
2015	5	45,20	42,05	43,42	159.576	20.534.919.808	472.909.906	5,99
2015	6	44,50	38,50	41,62	204.874	27.072.905.946	650.417.069	8,24
2015	7	42,80	34,60	38,45	202.923	25.622.265.048	666.296.047	8,44
2015	8	36,00	29,75	32,65	232.061	28.101.837.147	860.652.846	10,89
2015	9	37,90	31,20	34,97	182.903	20.124.583.190	575.399.802	7,28
2015	10	39,35	34,00	36,76	158.652	17.944.433.966	488.023.716	6,17
2015	11	38,75	34,20	36,41	117.138	12.685.543.390	348.405.613	4,40
2015	12	39,00	33,20	36,20	145.672	16.151.516.520	446.071.145	5,64
2014	1	29,60	26,60	28,14	128.273	13.290.082.949	472.260.856	6,06
2014	2	30,50	26,60	29,17	122.768	14.176.923.163	485.930.754	6,23
2014	3	33,80	29,40	31,71	15.027	20.215.486.177	637.378.479	8,17
2014	4	35,50	32,45	33,99	140.786	18.238.193.191	536.525.874	6,86
2014	5	39,30	33,95	36,35	141.153	16.651.372.650	458.002.577	5,85
2014	6	39,20	37,05	38,06	112.808	14.626.962.006	384.226.841	4,91
2014	7	42,15	35,20	38,10	200.834	28.693.137.988	752.909.193	9,62
2014	8	39,25	35,10	37,27	137.356	19.472.392.625	522.411.824	6,65
2014	9	38,15	35,20	36,65	122.979	14.150.564.358	386.026.408	4,91
2014	10	38,95	33,75	36,11	165.104	22.637.705.506	626.875.038	7,98
2014	11	38,15	34,80	36,57	125.785	20.224.540.571	553.017.732	7,03
2014	12	39,50	36,25	37,85	15.941	20.271.089.931	535.504.816	6,81

2013	1	27,00	23,80	25,10	130.164	13.176.747.829	524.968.288	6,90
2013	2	25,25	23,50	24,43	78.188	7.707.698.521	315.446.159	4,14
2013	3	25,80	23,90	24,84	9.604	9.553.588.253	384.460.606	5,05
2013	4	26,40	23,75	25,32	119.618	11.712.041.747	462.530.141	6,07
2013	5	26,25	25,00	25,81	87.884	8.261.116.460	320.059.539	4,20
2013	6	25,65	24,10	24,83	77.442	8.448.553.291	340.167.029	4,47
2013	7	25,75	23,80	25,08	97.598	11.678.410.665	465.529.338	6,11
2013	8	26,65	24,05	25,05	80.783	8.454.755.734	337.385.840	4,43
2013	9	28,80	26,35	27,64	146.278	17.079.237.983	617.898.785	8,11
2013	10	29,90	27,65	28,96	145.823	18.595.381.739	642.057.507	8,27
2013	11	30,80	28,05	29,37	143.016	18.496.163.916	629.750.890	8,10
2013	12	30,00	25,75	27,46	234.279	27.767.125.720	1.010.887.217	12,99
2012	1	31,20	25,30	28,51	94.595	11.707.061.597	410.519.861	6,07
2012	2	30,80	26,90	28,72	215.401	25.637.872.204	892.393.929	13,41
2012	3	29,70	27,10	28,70	130.671	14.288.524.442	497.841.815	7,48
2012	4	30,60	28,25	29,38	9.902	11.107.341.029	378.048.272	5,68
2012	5	30,40	26,85	28,38	119.081	13.981.486.247	492.537.414	7,39
2012	6	28,00	23,85	25,39	134.386	12.609.807.021	496.583.331	7,45
2012	7	25,70	21,65	23,67	165.823	14.894.372.163	629.054.486	9,44
2012	8	26,10	22,00	23,93	130.767	13.284.982.237	554.984.898	8,33
2012	9	23,60	22,40	22,93	113.981	10.762.668.522	469.207.663	6,18
2012	10	22,95	20,05	21,79	118.954	9.948.794.032	456.382.674	6,00
2012	11	24,45	21,55	22,92	128.872	11.641.552.223	507.837.866	6,68
2012	12	25,20	23,80	24,58	101.542	9.375.354.934	381.395.950	5,01
2011	1	37,80	31,25	35,15	182.122	25.531.875.825	726.352.626	12,04
2011	2	37,50	32,65	34,62	138.352	18.488.802.796	534.010.677	8,84
2011	3	35,40	29,70	32,53	204.285	31.226.395.129	959.677.616	15,86
2011	4	34,15	28,70	31,34	146.555	18.139.450.697	578.751.557	9,56
2011	5	36,00	32,55	34,03	122.654	17.683.685.037	519.589.536	8,58
2011	6	36,40	30,80	33,35	126.927	17.232.481.290	516.650.663	8,53
2011	7	32,85	28,30	30,95	145.772	18.792.733.680	607.055.439	10,03
2011	8	32,50	23,75	27,09	218.298	23.284.355.855	859.471.735	14,19
2011	9	30,00	25,45	27,52	231.372	25.468.432.449	925.413.276	13,70
2011	10	27,60	25,00	26,14	18.937	18.452.763.967	705.842.356	10,45
2011	11	28,80	26,05	27,53	146.571	15.196.279.347	551.946.146	8,17
2011	12	28,50	24,70	26,59	138.116	12.773.669.476	480.214.108	7,10

SPIL

Year	Month	Highest Price	Lowest Price	Weighted Average Price (A/B)	Transaction	Trade Value (A)	Trade Volume (B)	Turnover Ratio (%)
2015	1	53,8	47,05	49,91	103.316	13.216.093.162	264.789.674	8,49

2015	2	57,9	51,90	54,25	81.628	11.737.819.569	216.347.670	6,94
2015	3	56,9	50,80	54,32	114.622	14.784.610.369	272.134.275	8,73
2015	4	53,6	48,75	50,99	130.495	15.832.460.714	310.491.401	9,96
2015	5	52,6	48,55	50,21	89.919	10.945.926.434	217.961.041	6,99
2015	6	50,4	44,30	46,91	112.639	12.211.965.550	260.276.464	8,35
2015	7	47,7	34,20	40,88	140.909	14.972.782.125	366.241.006	11,75
2015	8	42	32,50	37,50	159.403	19.884.010.969	530.218.976	17,01
2015	9	43,3	37,90	41,10	17.026	25.804.936.239	627.728.388	20,14
2015	10	44,25	39,30	41,59	95.918	11.179.641.954	268.803.854	8,62
2015	11	46,65	42,80	44,13	72.662	7.590.720.123	171.975.416	5,51
2015	12	53,2	43,70	49,14	116.638	15.435.985.737	314.105.372	10,07
2014	1	38,55	35,45	37,30	62.919	7.290.928.473	195.436.851	6,27
2014	2	38,8	35,40	37,43	61.382	5.942.419.827	158.745.971	5,09
2014	3	42,3	37,25	39,89	93.313	13.707.690.605	343.586.020	11,02
2014	4	44,9	40,20	42,32	75.763	9.474.647.022	223.857.912	7,18
2014	5	48,3	43,25	45,11	76.018	9.702.720.374	215.070.738	6,90
2014	6	51,8	47,35	49,32	83.726	13.390.999.610	271.497.770	8,71
2014	7	55,8	41,50	48,46	163.977	40.733.302.438	840.414.265	26,96
2014	8	45,9	40,30	42,66	125.047	19.059.212.737	446.716.202	14,33
2014	9	45,5	41,10	43,16	90.227	11.223.039.126	260.003.735	8,34
2014	10	43	38,60	41,05	104.911	11.884.956.557	289.454.303	9,28
2014	11	46,55	42,50	44,12	73.654	9.769.362.170	221.425.145	7,10
2014	12	49,3	44,10	46,64	91.092	10.486.588.682	224.800.516	7,21
2013	1	31,75	30,10	30,79	48.407	4.498.744.573	146.096.658	4,68
2013	2	31,9	30,00	31,02	31.785	3.855.423.958	124.287.466	3,98
2013	3	34,6	31,50	33,47	51.136	6.101.106.582	182.259.934	5,84
2013	4	35,9	31,35	33,51	78.253	12.044.997.717	359.361.270	11,53
2013	5	36,9	34,00	35,24	7.195	9.691.011.136	274.991.794	8,82
2013	6	37,8	34,25	36,23	68.327	9.471.826.450	261.429.788	8,38
2013	7	39,5	32,05	35,58	88.889	11.386.956.176	320.020.992	10,26
2013	8	34,9	31,80	33,25	55.576	6.328.402.508	190.310.706	6,10
2013	9	36	33,30	34,84	44.056	3.985.531.830	114.371.687	3,67
2013	10	36,9	34,60	35,83	49.295	4.012.697.574	111.973.908	3,59
2013	11	36,4	33,70	34,47	40.652	3.517.919.294	102.030.658	3,27
2013	12	37,3	34,20	35,58	58.305	5.426.680.448	152.510.844	4,89
2012	1	34,5	26,65	30,05	50.623	5.393.522.408	179.449.656	5,75
2012	2	35,45	31,40	33,52	68.524	7.005.448.779	208.961.323	6,70
2012	3	35,8	31,80	34,46	56.203	6.054.929.579	175.699.985	5,63
2012	4	36,5	32,90	34,66	58.995	6.905.181.747	199.176.446	6,39
2012	5	36,1	29,10	32,63	64.327	6.503.071.453	199.282.767	6,39
2012	6	31,85	28,90	30,18	54.026	4.386.175.604	145.310.440	4,66
2012	7	33,55	27,65	30,66	6.497	6.372.810.117	207.792.649	6,66
2012	8	34,5	32,15	33,50	65.959	6.914.646.136	206.365.623	6,62
2012	9	34,55	32,15	33,43	44.711	4.151.597.924	124.160.492	3,98

2012	10	33,55	28,50	31,32	54.186	4.830.245.982	154.210.758	4,94
2012	11	31,45	27,00	28,93	70.316	5.947.657.004	205.550.657	6,59
2012	12	32	30,15	31,12	46.757	3.975.615.867	127.743.988	4,09
2011	1	41,25	32,40	37,52	117.178	16.629.044.874	443.104.777	14,21
2011	2	41,9	36,95	39,92	854	10.712.921.271	268.312.061	8,60
2011	3	41,7	33,90	37,05	98.632	12.412.659.854	334.995.092	10,74
2011	4	39,15	33,25	36,00	64.157	9.934.316.850	275.952.795	8,85
2011	5	39,35	35,70	38,07	61.413	7.260.321.256	190.681.104	6,11
2011	6	39,2	33,80	36,23	5.781	6.895.073.447	190.289.114	6,10
2011	7	35,75	28,35	31,08	89.023	9.892.164.994	318.226.936	10,21
2011	8	29,55	23,05	25,56	109.564	10.179.964.745	398.122.607	12,77
2011	9	30,5	25,50	28,01	90.091	8.313.125.514	296.772.625	9,52
2011	10	32,2	28,75	30,35	74.232	6.578.627.182	216.750.797	6,95
2011	11	31,4	25,80	28,30	58.387	4.951.256.238	174.929.787	5,61
2011	12	29,7	24,55	26,66	62.771	5.223.536.866	195.915.000	6,28