

# Himax Technologies, Inc.

Dat, Martin & Noah

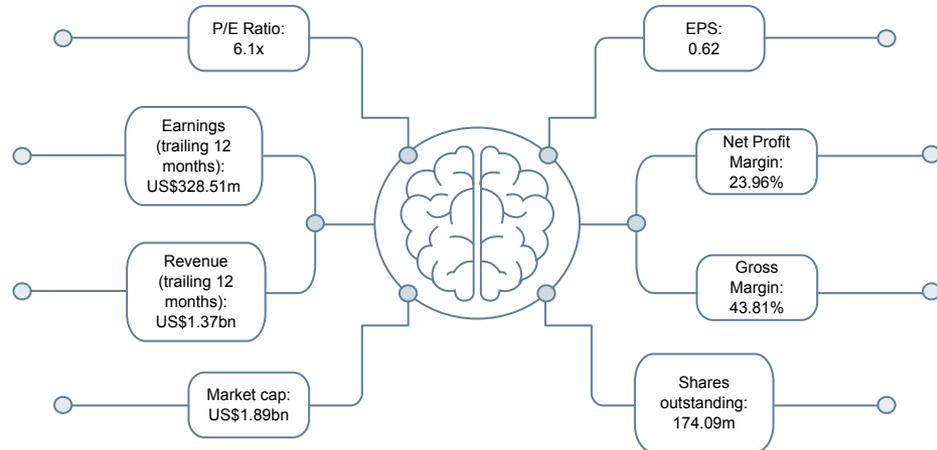


## Company Background

- Himax Technologies, Inc., a fabless semiconductor company, provides display imaging processing technologies in China, Taiwan, the Philippines, Korea, Japan, Europe, and the United States. The company operates through two segments, Driver IC and Non-Driver Products.
- It offers display driver integrated circuits (ICs) and timing controllers that are used in televisions, laptops, monitors, mobile phones, tablets, automotive, digital cameras, car navigation, virtual reality devices, and other consumer electronic devices.
- The company also designs and provides controllers for touch sensor displays; in-cell touch and display driver integration single-chip solutions; light-emitting diode driver and power management ICs; and liquid crystal on silicon micro-displays for augmented reality (AR) devices and head-up displays for automotive industry.
- In addition, it offers complementary metal oxide semiconductor image sensors and wafer level optics for AR devices, 3D sensing, machine vision, and ultra-low power smart sensing, which are used in various applications, such as mobile phone, tablet, laptop, TV, PC camera, automobile, security, medical devices, home appliance, and Internet of Things.
- The company markets its display drivers and display-related products to panel manufacturers, agents or distributors, module manufacturers, and assembly houses; and non-driver products to camera module manufacturers, optical engine manufacturers, and television system manufacturers.
- Himax Technologies, Inc. was founded in 2001 and is headquartered in Tainan City, Taiwan.

\*<https://finance.yahoo.com/quote/HIMX/profile/>

## Fundamentals summary



\*based on September 30th, 2021 earnings

## Industry

The industry benefited from an extraordinary boost of digital technologies due to the importance of connecting people and businesses during the lockdown.

Burgeoning investments in self-driving cars, the Internet of Things, and artificial intelligence, along with the coming shift to the 5G connectivity standard, microchips, and present opportunities for further growth and specialization.

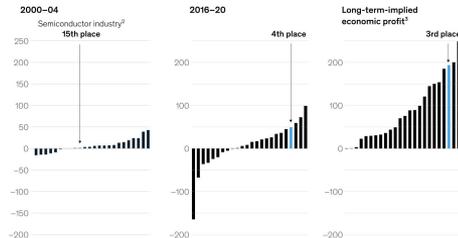
The semiconductor industry is expected to thrive during and after the pandemic due to accelerated demand for microchips and electronic products in the upcoming years, regardless of supply chain issues.

Growth is driven by mobile phones, notebooks, servers, automotive, smart home, gaming, wearables, and Wi-Fi access points. IC shortages are also expected to continue easing through 4Q21 as capacity additions accelerate.

Overall, IDC predicts the semiconductor market to reach \$600 billion by 2025 - representing a CAGR of 5.3% through the forecast period. This is higher than the typical 3-4% mature growth seen historically.

In recent years, the semiconductor industry's economic profitability has improved relative to others, and this trend is expected to continue.

Average economic profit (EP), by industry, \$ billion (n = 2,644<sup>1</sup> companies in 24 industries)



<sup>1</sup>The publicly listed companies by revenues.  
<sup>2</sup>Semiconductor industry's position versus other industries (based on top pure-play companies only).  
<sup>3</sup>Long-term-implied economic profit is based on S&P 500 market valuations.  
 Source: McKinsey Strategy Practice and Corporate Performance Analytics.

McKinsey & Company

\*\*How the Semiconductor Industry Can Emerge Stronger after the Covid-19 Crisis, McKinsey & Company

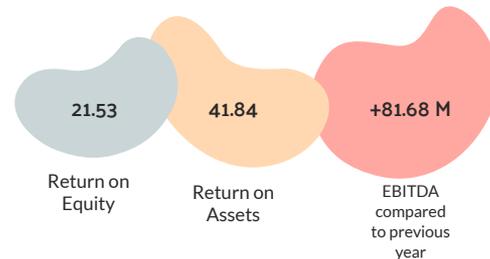
## Past performance

**48.3%**  
 Historical annual earnings growth over the last 5 years (positive upwards trend)



**2219.3%**

HIMX earnings growth over the past year, exceeding its 5-year average.



\*<https://www.wsj.com/market-data/quotes/HIMX/financials>

# Price to earnings comparison:

## Industry



HIMX is good value based on its PE Ratio (8.6x) compared to the US Semiconductor industry average (31.67x). This average is based on the median figure of 66 Publicly-Listed Semiconductor Companies.

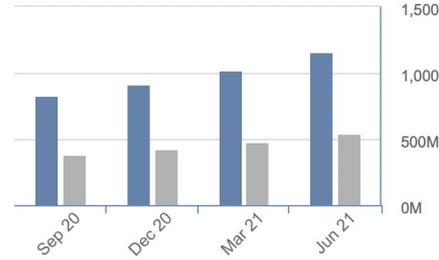
## Market



HIMX is good value based on its PE Ratio (8.6x) compared to the United States of America Market PE Ratio (18.24x). This average is based on the median figure of 3114 Publicly-Listed Companies.

# Financial position:

- Both, the short-term and long-term assets exceed the liabilities.
- The company has managed to reduce its D/E ratio over the last 5 years from 29.4% to 28.1%.
- The debt is well covered by operating cash flow (133.3%).
- The interest payments on its debt are well covered by EBIT (1401.6x coverage).



\*<https://www.investing.com/equities/himax-tech-financial-summary>

	S&P 500			IT			Difference
	Profit	Volatility	Sharpe	Profit	Volatility	Sharpe	
2020	16,26%	35,16%	0,42	-0,27%	42,27%	-	-16,53%
2019	28,88%	12,68%	2,09	20,27%	14,19%	1,26	-8,61%
2018	-6,24%	17,37%	-	-8,98%	20,26%	-	-2,74%
2017	19,42%	6,79%	2,79	19,16%	12,70%	1,47	-0,26%
2016	9,54%	13,32%	0,70	7,86%	16,17%	0,48	-1,68%
2015	-0,73%	15,75%	-	10,69%	17,06%	0,62	11,41%
2014	11,39%	11,53%	0,98	21,99%	15,26%	1,44	10,59%
2013	29,60%	11,24%	2,63	36,09%	15,58%	2,31	6,49%
2012	13,41%	12,97%	1,03	17,95%	19,17%	0,94	4,55%
2011	0,00%	23,20%	-	3,02%	31,08%	0,09	3,02%
2010	12,78%	18,35%	0,69	20,53%	23,02%	0,89	7,75%
2009	23,45%	27,69%	0,84	32,77%	22,10%	1,48	9,32%
2008	-38,49%	41,65%	-	-43,75%	50,67%	-	-5,27%
2007	3,53%	16,27%	-	14,47%	20,88%	0,45	10,94%
2006	13,62%	10,18%	0,94	23,60%	19,36%	1,01	9,98%
2005	3,00%	10,44%	0,07	27,45%	19,39%	1,30	24,45%

# Investment Thesis (IT):

	Accumulated	CAGR	Volatility	Sharpe	Consistency
S&P 500	209,93%	7,33%	17,82%	0,42	-
IT	408,50%	10,70%	22,44%	0,51	61%



	SPX	IT
Bullish Average	5,81%	7,06%
Bear Average	-7,66%	-7,21%
Bullish Consistency	-	59%
Bear Consistency	-	61%

30 Stocks	SPX	IT
CAGR	7,33%	10,70%
Consistency	-	61%

	IT
Q1	13,14%
Q2	10,31%
Q3	7,71%
Q4	6,84%
Q5	2,80%

Q-Spread	10,34%
----------	--------

# Internal strengths

- Strong Brand Portfolio → Over the years, Himax Technologies, Inc. has invested in building a strong brand portfolio. This brand portfolio can be advantageous if the organization wants to expand into new product categories.
- Strong dealer community → dealers promote the company's products and invest in training the sales team to explain to the customer how to capitalize on the benefits of the products.
- Strong distribution network → Over the years, Himax Technologies, Inc. has built a reliable distribution network that can reach the majority of its potential market.
- Reliable suppliers → The company has a strong base of reliable raw material suppliers, thus enabling the company to overcome any supply chain bottlenecks.
- Highly successful at Go To Market strategies for its products.
- Automation of activities brought consistency of quality to Himax Technologies, Inc. products and has enabled the company to scale up and scale down based on the demand conditions in the market.
- Strong Cash Flow → Himax Technologies, Inc. has strong cash flows that provide resources in the company's hands to expand into new projects.
- Successful track record of integrating complementary firms through mergers & acquisition. Himax has successfully integrated a number of technology companies in the past few years to streamline its operations and to build a reliable supply chain.

# Challenges

## Complex value Chain: Dependency on multiple locations

The semiconductor industry is not evenly distributed and is dominated by a few countries, mainly U.S., Taiwan, South Korea, Japan, China, and Europe. There is no single region with the entire production stack in its territory. As per SIA, 57% of the semiconductor materials, 56% of wafer fabrications, and 70% of the memory come from Asian countries. The U.S. leads the way in electronic design automation (EDA), logic, equipment, discrete and analog. This deep interdependence makes it difficult for any single country to maintain leadership in the entire value chain globally.



Data as of April 2021/Source: [etimes.com](https://www.etimes.com)

## Tensions between U.S. and China

Taiwan accounts for 92% of advanced semiconductors and nodes below 10 nanometers manufacturing. The current trade tensions between the U.S. and China are likely to impact chip production in Taiwan.

## Capital intensive business

Making semiconductors can be complex and comes with huge costs. The foundries and OSAT companies are likely to face increased pressure on capital expenditures as they continue to expand production to address the rising chip demand. Setting up a new foundry can cost anywhere around \$15bn-\$20bn and require extensive manufacturing know-how and robust infrastructure to operate.

→ **Conclusion:** The semiconductor industry is poised for significant growth in 2021 and beyond, post its recovery from a cyclical downturn. Technology inflections such as 5G wireless, artificial intelligence, Internet of Things, cloud computing and machine learning are driving up the long-term demand for the chip industry. Increased government funding and incentives remain a key for its rampant growth going forward.

# Investment strategy recommendation

Quantitative investing (factor investing) is an approach where stocks are analyzed solely through their past performance. It is built on the scoop that the companies that have been doing it well will continue to do so.

For this specific analysis, we have decided to use four factors and assign a weight to each of them, based on historical studies; price (40%), quality (25%), momentum (25%), volatility (10%). We back-tested this simulation and beat the market consistently over the last 16 years. Especially in quarters 3 and 4, the "price" factor outperforms all other factors, especially the S&P 500, which makes us choose to give it the highest weighting.

We quickly identified the investment opportunity when using the same factors and applying them to Himax Technology Inc. We expect this stock to be a solid investment in the short term due to its performance according to the factors used. We also qualify this stock as a long-term investment when looking at their EPS' growth over the last five years.

The calculated "score" seen below derives from the combination of the weight given to each of the factors used in this analysis and the performance in each of the subcategories (financial ratios), in comparison to the pool of over 2,500 stocks available in the United States market.

	Average	S&P 500	Momentum	Volatility	Price	Quality
Q1		0,75%	4,55%	5,25%	5,43%	5,90%
Q2		2,41%	5,65%	4,16%	5,11%	5,98%
Q3		2,56%	0,72%	-0,71%	4,28%	1,23%
Q4		2,73%	3,84%	0,52%	6,23%	2,50%

Index	News	ESG	Capitalization	Country	Traded Volume	Industry	Scorecard
S&P 500	1,761,127,000	1,761,127,000	1,761,127,000	US	1,761,127,000	Technology	Technology
HIMAX	1,761,127,000	1,761,127,000	1,761,127,000	Taiwan	1,761,127,000	Technology	Technology
Price-12m	Price-1m	Price					
10%	10%	1%	5%	4%	10%	13%	1%
12%							

Upon further research, based on the Two-Stage Free Cash Flow to Equity Valuation Model, we believe that the stock's intrinsic value is 35.5% discounted compared to the share price of \$11.45 (at close: Nov 5, 2021, 4:00 PM). This model shows that Himax is trading significantly below its fair value. When linking this fact with the quantitative investing approach, we rate this stock a strong buy.