Quantitative easing is regarded as a monetary policy and is abbreviated as QE. QE aims to facilitate the continuous capital injection from Federal Reserve Bank (FED) to the financial system in order to maintain the lowest interest rate. QE method is operated by FED to purchase securities and bonds in the public market to increase the Bank's liquidity, or intervene the foreign exchange market and purchase foreign currencies to increase money supply. Simply to say, FED increases the amount of currency in circulation and further stimulates bank loans through purchasing the bonds of government and enterprises. By doing so, FED can boost the economy.

After the financial crisis in 2008, U.S. government adopted the quantitative easing policy to bring the business back to recovery. Dow Jones Index reached 14,253.2 points on March 5, 2013, breaking through the highest point of 14,164.2 points in October 2007. By March 5, 2013, the loss of stock index caused by the financial crisis has been recovered. However, the quantitative easing policy triggered tremendous depreciation of US dollars and the considerable increase of commodities that use US dollars as the trading currency, finally resulting in the appreciation of global non-dollar currencies.

Emerging Market Development of Taiwan Fastener Industry After U.S. QE Policy

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Table 1. History of U.S. Quantitative Easing (QE)

Implemented times of QE	Implementation time	Contents
First round (QE1)	From March 2009 to March 2010	Total amount is US$ 1.75 trillion, including US$ 1.25 trillion of mortgage backed securities (MBS), US$ 300 billion of treasury bonds, and US$ 175 billion of agency bonds.
Second round (QE2)	From end of August 2010 to June 2012	Total amount is US$ 600 billion to purchase long-term bonds issued by U.S. Department of the Treasury with monthly amount of US$ 75 billion.
Third round (QE3)	From September 15, 2012	To purchase US$ 40 billion of mortgage backed securities (MBS) on monthly basis.
Fourth round (QE4)	From December 12, 2012	To purchase US$ 45 billion of long-term government bonds on monthly basis.

Table 2. International Stock Indices Under QE

Date / Country	October 2007 (Highest value of the month)	March 2009 (Lowest value of the month)	August 31, 2010	September 30, 2012	December 31, 2012	June 2013 (Highest value of the month
USA	14,164	6,547	10,014	13,090	13,104	15,318
Germany	8,041	3,666	5,925	6,970	7,612	8,307
France	4,172	1,780	2,538	2,552	2,728	2,954
Japan	17,458	7,054	8,824	8,839	10,395	13,677
Taiwan	9,809	4,425	7,616	7,397	7,699	8,201
Australia	6,808	3,111	4,438	4,339	4,664	4,886
China (Shanghai)	6,092	2,071	2,638	2,047	2,269	2,299
South Africa	31,531	18,120	27,253	35,389	39,250	41,003
Malaysia	1,413	838	1,422	1,646	1,688	1,787
Philippines	3,873	1,759	3,566	5,196	5,812	6,875
Thailand	915	411	913	1,227	1,391	1,555

After the financial crisis in 2008 and four rounds of QE **(Table 1)**, the fact indicates that QE is able to increase hot money into the market, pushing up assets prices and a large number of US dollars circulating in the global financial market. This article compiles the index statistics **(Table 2)** of the U.S., Germany, France, Japan, Taiwan, Australia, South Africa, Malaysia, Philippines, China and Thailand before October 2007 (when the financial crisis occurred) and four rounds of QE were announced.

This article takes Dow Jones Index 14,164 points before October 2007 (when the financial crisis occurred) as the highest reference point and further uses the stock index when the U.S. announced QE1 in March 2009 as the lowest reference point to analyze the stock price changes of 11 countries **(Table 3)**. After QE4, Dow Jones Index returned to the level before October 2007. When U.S. government announced to gradually decrease the QE amount in June 2013, Dow Jones Index grew 8% more than that of the financial crisis in 2007. **Table 3** indicates that only Germany was able to return to the level before the financial crisis due to its strong manufacturing industry, while the recovery strength of France, Japan and Australia demonstrates a difference of 25% on average. Emerging countries, such as South Africa, Malaysia, Philippines and Thailand have returned to the level of October 2007 in QE2. The increase of average stock index in June 2013 for these four countries reached 51%. However, Manila Exchange of Philippines and Thailand Exchange reached 78% and 70% respectively.

Under the QE policy, FED purchased bonds of the government and enterprises to increases the amount of currency in circulation, further stimulating bank loans and boosting the economy. Meanwhile, a large number of US dollars flow into the emerging markets. Abnormal increase in stock market will be back to normal after QE withdraws from the market. International hot money is expected to flow into the U.S. and other slowly recovering markets. However, Shanghai Stock Exchange is a special case. In August 2009, the index of Shanghai Stock Exchange rose to 3,471 points, totally deviated from the global stock market. The difference between June 2013, March 2009, or before the financial crisis is about 4%. Capital shortage occurred in China at the end of 2012, which was absolutely related to the flow of international hot money into other emerging markets.

Emerging markets are related to Taiwan fastener industry. Below are statistics of Taiwan fastener exports to South Africa, Malaysia, Philippines and Thailand from 2007 to 2012 **(Table 4)**.

South Africa located at the Southernmost of African continent, is regarded as the developing country with middle income and is also the most economically developed country in Africa.

Highly developed areas in South Africa include Cape Town, Johannesburg, Durban and Port Elizabeth. Wide income disparity occur in different races within South Africa so that blacks have xenophobic tendency, the crime rate is dramatically increasing, corruption is serious, the refugees from neighboring countries continuously flow to South Africa and AIDS rate is rising. The above situations

Table 3. Changes of International Stock Indices Under QE

Date / Country	October 2007 (Highest value of the month)	Change between October 2007 and March 2009 (QE1)	Change between October 2007 and August 2010 (QE2)	Change between October 2007 and September 2012 (QE3)	Change between October 2007 and December 31, 2012 (QE4)	Change between October 2007 and June 2013 (QE is about to withdraw)
USA	14,164	-54%	-29%	-8%	-7%	8%
Germany	8,041	-54%	-26%	-13%	-5%	3%
France	4,172	-57%	-39%	-39%	-35%	-29%
Japan	17,458	-60%	-49%	-49%	-40%	-22%
Taiwan	9,809	-55%	-22%	-25%	-22%	-16%
Australia	6,808	-54%	-35%	-36%	-31%	-28%
China (Shanghai)	6,092	-66%	-57%	-66%	-63%	-62%
South Africa	31,531	-43%	-14%	12%	24%	30%
Malaysia	1,413	-41%	1%	16%	19%	26%
Philippines	3,873	-55%	-8%	34%	50%	78%
Thailand	915	-55%	0%	34%	52%	70%
Average change		-54%	-25%	-13%	-5%	5%

Table 4. Statistics of Taiwan Fastener Exports to South Africa, Malaysia, Philippines and Thailand from 2007 to 2012

Country	Category	Export Amount/ Value	2007	2008	2009	2010	2011	2012	Change Between 2007 and 2012
South Africa	Steel Nails	Total value (US$)	228,494	439,298	373,096	466,426	436,230	454,721	99.01%
		Total weight (kg)	189,477	192,305	285,958	380,794	311,273	325,531	71.81%
		Unit price (US$/kg)	1.21	2.28	1.3	1.22	1.4	1.4	15.70%
	Steel Fasteners	Total value (US$)	11,663,500	13,398,357	8,056,612	11,490,427	15,103,365	18,334,986	57.20%
		Total weight (kg)	4,991,102	5,154,458	3,596,596	4,425,614	4,784,941	5,644,814	13.10%
		Unit price (US$/kg)	2.34	2.6	2.24	2.6	3.16	3.25	38.89%
Malaysia	Steel Nails	Total value (US$)	108,502	203,411	213,853	254,294	263,703	191,291	76.30%
		Total weight (kg)	44,527	89,414	127,756	147,938	125,405	91,338	105.13%
		Unit price (US$/kg)	2.44	2.27	1.67	1.72	2.1	2.09	-14.34%
	Steel Fasteners	Total value (US$)	44,114,873	44,561,962	25,850,587	22,579,080	22,094,430	20,005,760	-54.65%
		Total weight (kg)	10,679,794	10,312,629	7,619,768	7,059,588	6,530,380	6,127,843	-42.62%
		Unit price (US$/kg)	4.13	4.32	3.39	3.2	3.38	3.26	-21.07%
Philippines	Steel Nails	Total value (US$)	241,219	579,107	372,408	500,465	633,496	503,772	108.84%
		Total weight (kg)	170,701	245,378	204,535	294,018	287,451	219,073	28.34%
		Unit price (US$/kg)	1.41	2.36	1.82	1.7	2.2	2.3	63.12%
	Steel Fasteners	Total value(US$)	38,512,815	42,940,651	23,828,817	85,439,944	84,851,339	34,676,356	-9.96%
		Total weight (kg)	7,949,912	9,852,033	8,294,101	22,087,490	17,508,704	8,161,584	2.66%
		Unit price (US$/kg)	4.84	4.36	2.87	3.87	4.85	4.25	-12.19%
Thailand	Steel Nails	Total value(US$)	95,031	117,441	174,608	220,436	198,194	224,415	136.15%
		Total weight (kg)	25,070	26,421	27,778	44,531	47,937	52,697	110.20%
		Unit price (US$/kg)	3.79	4.44	6.29	4.95	4.13	4.26	12.40%
	Steel Fasteners	Total value(US$)	22,294,462	29,301,399	23,115,254	38,103,998	48,801,351	65,603,592	194.26%
		Total weight (kg)	7,905,006	9,770,085	9,442,972	14,207,769	16,173,988	21,887,267	176.88%
		Unit price (US$/kg)	2.82	3	2.45	2.68	3.02	3	6.38%

limit the economic development in South Africa. The flat money of South Africa is Rand, which experienced a huge depreciation in 2001. Rand used to be the fast appreciating currency against US dollar.

In South Africa, the heavy industry is focused on machinery, locomotives, agricultural implements, shipbuilding & repair and auto assembly. Its stock index grew 30% from 2007 to 2012. The export of Taiwan fastener industry to South Africa experienced a growth in the amount and unit price. The export unit price of Taiwan steel nails in 2012 showed an increase of 15.7% over 2007, while the export weight in 2012 grew 71.81% against 2007. The export unit price of Taiwan steel fasteners in 2012 experienced a growth of 38.89% over 2007, while the export weight in 2012 increased 13.1% against 2007. If Taiwan fastener industry intends to explore Africa, the emerging market, South Africa will certainly become an important base.

Malaysia is the third largest economy in Southeast Asia, the manufacturing industry imposes a remarkable influence on its macro economy.

Malaysia has a total population of over 28 million and is a diversified society in terms of its ethnic groups, cultures and languages. Additionally, Malaysia is an export country of natural and agricultural resources. The most valuable export product is petroleum. Malaysia used to be the largest production country of tin, rubber and palm oil. Its stock index showed an increase of 26% from 2007 to 2012. The export unit price of Taiwan steel nails in 2012 showed a decrease of 14.34% over 2007, while the export weight in 2012 grew 105.13% against 2007. The export unit price of Taiwan steel fasteners in 2012 decreased 21.07% against 2007, while the export weight in 2012 declined 42.62% over 2007. The export of Taiwan fastener industry to Malaysia indicates the decrease in the amount and unit price.

Philippines is the main member of ASEAN, and most of its industries are centered on the suburb of Metro Manila.

The Philippines comprises of 7,107 islands with the area of about 300,000 square kilometers. Its industrial and economic structure is focused on agriculture and industry, especially food processing, textile and electronics industries. Chinese people play a pioneering role in its 100-year economic development, especially in technology, capital and production equipment introduced from abroad. In the past few years, the overseas Chinese from Taiwan, Hong Kong and Southeast Asia experienced a prosperous development of manufacturing industry and accumulated capital to make investment in the Philippines to increase its industrial level and successfully promote the products to the international market. Philippines stock index indicated a high growth of 78% from 2007 to 2012. The export unit price of Taiwan steel nails in 2012 increased 63.1% over 2007, while the export weight in 2012 grew 28.34% against 2007. The export unit price of Taiwan steel fasteners in 2012 showed a decrease of 12.66% over 2007, while the export weight in 2012 increased 2.66% against 2007. Although Taiwan fastener industry increased its export unit price to the Philippines, yet the export amount was decreasing.

Thai Automotive industry is the main overseas production base of Japan

From 1985 to 1995, Thailand experienced a rapid economic development worldwide. However, the monetary crisis of Thailand in 1997 triggered Asian financial crisis, so that its national economy decreased 10% in 1998. In 1999, Thai economy began to experience the recovery driven by exports and tourism. Thailand index indicated a growth of 70% between 2007 and 2012. The export of Taiwan fastener industry to Thailand demonstrated the increase in the amount and unit price. For Taiwan fastener industry, the export unit price of steel nails in 2012 showed an increase of 12.4% over 2007, while the export weight in 2012 indicated a growth of 110.2% against 2007. The export unit price of steel fasteners in 2012 grew 6.38% over 2007, while the export weight in 2012 increased 176.88% against 2007. If Taiwan fastener manufacturers intend to explore Southeast Asia market, Thailand will certainly become an important fortress for development.

Average export unit price of Taiwan steel fasteners to South Africa, Malaysia, Philippines and Thailand was US$3.44/kg in 2012. They are medium-priced products.

Analysis of South Africa, Malaysia, Philippines and Thailand indicates that the same emerging market will impose a remarkable influence on the demand of Taiwan fasteners due to different geographical positions, population, basic industries and main developed industries. For instance, South African heavy industry is focused on machinery, locomotive, agricultural implements, shipbuilding and repair as well as automobile assembly, the fasteners demand will greatly increase due to the economic recovery. Thailand is also the main production base of automobiles. The economic recovery brings about the internal demand and generates the demand for medium-priced fasteners. Since Malaysia is an export origin of resources, the heavy industry or auto industry is not its main production value. The demand for medium-priced fasteners from Taiwan will not increase due to the economic turnaround. In Philippines, its industrial and economic structure is focused on agriculture and industry, especially on food processing, textile and electronics. As a result, the Philippines will not increase its demand for medium-priced fasteners from Taiwan due to the economic recovery.

Based on differences of these four emerging countries, below are two suggestions to Taiwan fastener manufacturers:

1. Taiwan fastener manufacturers should upgrade the quality and explore medium and high priced fastener markets. The upgrade and progress are the only ways for Taiwan fastener manufactures to survive when the price difference between China and Taiwan fasteners becomes smaller and the quality difference is gradually decreasing.

2. When Taiwan fastener manufacturers try to develop the emerging markets, they should focus on countries with heavy industries, which will require less effort to generate maximum results. As such, Taiwan fastener manufacturers can apply the limited marketing budget to explore the potential emerging market and march toward a promising future. ■