Editorial Statement

The Pacific Economic Cooperation Council (PECC) is a unique tripartite partnership of senior individuals from businesses and industries, governments, academia and other intellectual circles. All participate in their private capacity and discuss freely on current, practical policy issues of the Asia-Pacific region.

PECC was established in 1980. It currently has 25 member committees from all over the Asia-Pacific region. Each member committee comprises tripartite senior representatives. In addition, PECC comprises two institutional members: the Pacific Trade and Development Conference (PAFTAD) and the Pacific Basin Economic Council (PBEC).

PECC is the only non-governmental official observer of APEC since the APEC's formation in 1989. PECC has provided information and analytical support to APEC. It also channels and facilitates the private sector's participation in the formal process.

The Chinese Taipei Pacific Economic Cooperation Committee (CTPECC) was formed in 1984, with the purpose of participating in PECC events as an observer. In November 1986, CTPECC's application for membership was approved by PECC at the 5th General Meeting. Since then, CTPECC has become a full and active member of PECC.

Asia-Pacific Perspectives is a key publication of CTPECC and an open forum welcoming submissions of analyses, perspectives, and commentaries on the Asia-Pacific region. The periodical focuses on political, economic, business and social issues.

For enquiries and submitting papers, please contact Ms. Tzuying Chen.
Address: Taiwan Institute of Economic Research, 5F, No.16-8, Dehuei Street, Taipei 10461, Taiwan.

Email: d17699@tier.org.tw

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Outlook of Digital Economy and SME O2O

Chien-Fu Lin

The following is Dr. Chien-Fu Lin's presentation at the PECC 24th General Meeting, "Vision for an Asia-Pacific Partnership for the 21st Century". He was invited to talk at the plenary session 3, "An Asia-pacific Agenda for the Digital/Internet Economy" on 15th may 2017.

Let me share with you the outlook of digital economy and Chinese Taipei's APEC SME O2O initiative. Digital economy by definition refers to the economy supported and promoted by digital computing technologies. Therefore, applications of IoT, AI, FinTech, Cloud Computing, AR, VR, Big Data, Sharing Economy, and Blockchain are all part of digital economy.

I was invited to attend a new economic think-tanks conference in Beijing earlier this year. We discussed 3 major subjects, new economy, new governance, and new technologies, and we focused on the issue of online economy and future technologies. We concluded that the digital economy would be the way out for us to cope with the era of "new mediocre", which means very slow and tepid economic growth.

The Ali Research Institute stressed that the next 30 years will be critical for a paradigm-shift. A report conducted by the institute made a few future forecasts: first) a market value of 1 trillion US dollars internet platform will replace many companies in 2020; second) the traditional 9-to-5 working system will be replaced by online employment that 50% of all employees can work at flexible hours in 2036, and third) 80% of the global trade will be traded online and dominated by SMEs and even individuals.

The traditional economic system is constrained by the law of diminishing returns. However, the digital economy will change the rule of the game to enjoy the "law of increasing returns", simply because all data can be processed and digitalized to be knowledgeable products. As a result, more readers or subscribers will generate more profits meaning the returns will be enhanced with more inputs.

I also believe that such a development and future trend of digital economy will make economic growth more inclusive as the SMEs and individuals can acquire digital opportunities in the future. In order to meet the future needs, Chinese Taipei in APEC SME Working Group has proposed a SME O2O initiative in APEC meetings. O2O stands for online to offline. This initiative will assist SMEs in our region to sell their products both in the stores and online.

This initiative is in response to the APEC Leaders' instruction in 2016 and APEC theme 2017 regarding the "Quality Growth" and "Strengthening MSMEs' Competitiveness and Innovation in the Digital Age", the promotion of competitive and resilient SMEs in digital economy is a good way to accomplish these priorities.

The Asia Pacific region has become the largest market of digital economy, accounting for 33% of total market scale, powering SMEs' growth and creating jobs. However, only a few SMEs in APEC are currently taking full advantage of new digital opportunities. How we support more SMEs to turn these opportunities into business will be a key driving force for the future growth.

In addition, 60% of SMEs experienced a cyber-breach and the average cost for each worst case was from 100 to 180 thousand US Dollars.

Therefore, lacking the awareness and capability of digital security will make SMEs even more vulnerable to deal with cyber attackers. This will disrupt the global supply and value chains, reducing the value by almost 3 trillion US Dollars in 2020 as estimated in a McKinsey report in the year of 2015.

For that reason, this O2O Initiative is a cross-border platform providing training, networking and showcasing opportunities for SMEs. This initiative will assist SMEs in seizing O2O business opportunities and well preparing for digital challenges, leading to a more competitive and resilient APEC SME community toward quality growth.

This initiative directly echoes encourages institutional support for promoting SME O2O business to move toward a more sustainable and resilient APEC communities. Our aim is to first), optimize the digital innovation ecosystem; second), enhance SMEs digital competitiveness and resilience; and third), capitalize on O2O opportunities for SMEs. Considering that public private partnership and cross fora collaboration is crucial to advance this O2O initiative for APEC SMEs, the project are carried out in cooperation with other APEC Fora and sub fora such as ABAC, Emergency Preparedness Working Group, and Human Resource Development Working Group. Non-APEC stakeholders such as International Chamber of Commerce, Intel, Siemens, Google, Acer, and O2O commerce platforms will also be engaged for enhancing SMEs' competitiveness and resilience toward quality growth.

This Initiative will be conducted with activities to maximize the project impact such as establishing an APEC SME O2O Expert Network and providing policy recommendations, holding serial summit and fora, providing SMEs training, networking and showcasing opportunities, as well as publishing the APEC SME Guidebook & Monitor to further the project influences.

By looking at the future potential of digital economy as well as the expected fruitful outcome of the APEC initiative, I trust that we can better and fully optimize our digital efforts and cooperation, and we will maximize our digital profits.

(Dr. Chien-Fu Lin is the Chairman of CTPECC)

Suggestions of Improving Taiwan's Economic Relations with the US and China

Darson Chiu

As the world's largest economy, the size of US economy is at US$ 19.38 trillion or 24.4% of the world's GDP. China is the second largest economy in the world, and its GDP will be standing at US$ 12.36 trillion or 15.5% of the world economy. The US provides the biggest market demand for end products, whereas China has been the largest exporting country since the year of 2010. As the US and China jointly represent around 40% of the global economy as well as the major demand side and major supply side, a potential economic conflict between these two giants will certainly cause tremendous impacts on the global economy and its supply value chains.

The economy of Taiwan standing at nearly US$ 535.54 billion in 2017 has been an export oriented economy and deeply integrated into the global supply value chain. From such a perspective, the negative impact on Taiwan will be inevitable, if a potential trade war between the US and China takes place.

Secure Economic Relations with the US and China

A trade deal between the US and China to boost the American exports to China was announced in May in wake of the Trump-Xi summit in April 2017. The trade war between the two giants seems unlikely; however, they will follow their agendas with respect to their own national interests. When the big powers are pursuing their national interests, small players such as Taiwan has been striving to cope with growth constraints. Sign a bilateral investment agreement (BIA) with the US and conclude the Economic Cooperation Framework Agreement (ECFA) with China would be the way for Taiwan to secure economic relations with these two big powers, whereas ensure good economic relations with the US and China can be a good strategy for an export oriented economy like Taiwan.[1]

The US has been recognized as the world market, and it used to be a world factory. Currently, the world factory is on the quest to find or bring back the spirit of world factory. China has long been identified as the world factory, and it has undergone the third 5-year plan trying to transform itself to be a world market. When the world market and world factory are in attempt to switch their partial identities, paradigm-shift in world economic order is unavoidable, and Taiwan also needs to adapt its economic model.

US National Interests and Self-agenda

The US President Donald Trump's policies could be critical and the biggest uncertainties to the world's economic outlook. At least, most economic forecasting agencies believed so after the election outcome in the year end of 2016. Trump pledged to promote GDP growth for the US and create more job opportunities for American citizens. During his campaign, Trump pledged to declare China as a currency manipulator, force China to uphold intellectual property laws, put an end to China's export subsidies, and

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[1] The US is the economy that provides 28%, the biggest, of Taiwan's annual export orders; around 40% of Taiwan's annual export heading for China.

place a 45% tariff on Chinese exports to the US. It was predicted before the Trump-Xi summit that a trade war between US and China was probable to happen.

Trump also issued an executive order to withdraw from the Trans-Pacific Partnership (TPP) in January 2017; he insisted to negotiate fair trade instead of free trade deals. In addition, Trump pledged to mandate a 15% tax on outsourcing jobs and cut corporate income tax from 35% to 15%. His purpose would be to move the manufacturing back to the US by using tax measure as a threat as well as an incentive. However, the fact is that the private consumption has long been the only economic engine function properly for the US economy. If Trump fulfills all of his promises, the imported inflation will take place and cause impacts on the US economic recovery.

China's National Interests and Self-agenda

President Xi Jingping of China has been conducting a supply side structural reform to fix the consequences resulted from China's over investment during the most recent global financial crisis and to resolve the issue that the Chinese economy has been overly relying on the external demand. The reform of Xi is about to a) cutting excess capacity, b) destocking, c) deleveraging, d) lowering corporate costs, and e) improving weak links.

In addition, Xi hopes to fulfill the goals of China's 13th 5-year plan: a) annual real GDP growth rate from 2016 to 2020 to reach 6.5% on average, and b) service sector accounting for 56% of GDP by 2020. Structural reform is in general targeted at the long-term outcome, and the reform may very likely to compromise cyclical growth or recovery. Therefore, a slowing down Chinese economy is almost certain. Nevertheless, with its economic performance in

2016 and forecast of growth in 2017, a hard landing for China in the near future seems hardly likely.[2]

Taiwan's Economic Constraints and Agenda

Taiwan is having troubles to regain its growth momentum due to two major structural constraints: a) its exports of ICT products have been facing difficulties in coping with "red supply chain" and b) its exports of traditional manufacturing goods have been dealing with tariff barriers because of insufficient free trade agreement (FTA) coverage.[3] Taiwan's President Tsai Ing-Wen is heading the five plus two innovative industrial plan, which include a) green energy technology, b) the development of an Asian Silicon Valley, c) biomedicine, d) intelligent machinery, e) national defense and aerospace, plus f) the development of a new agricultural paradigm, and g) a circular economy.

In addition, she is further heading the new southbound policy that calls for the development of comprehensive relations with ASEAN, South Asia, and Australia and New Zealand, while promoting regional exchanges and collaborations. The fact is that Taiwan needs to move up supply value chain, and Taiwan also needs to expand its FTA coverage. It is still uncertain that the five plus two innovative industrial plan can help Taiwan's industries

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[2] The economy of Chins grew by 6.7% in 2016, and the Economist Intelligence Unit predicted a 6.6% GDP growth for China in 2017.

[3] The “red supply chain” has been widely referred as China's import substitution policy that is instead of importing ICT parts and components from Taiwan, China's downstream manufacturers have been producing the intermediate goods by their own due to technology advancement. 43% of Taiwan's exports would be ICT goods, and the other 57% are traditional manufacturing goods.

move up their relevant supply value chains. It is also questionable that the new southbound policy is the right cure for resolving the issue of Taiwan's insufficient FTA coverage.

The State of US Economy and Policies

The US economy is on the right track with full recovery by lowering its unemployment rate to the level before the most recent global financial crisis. Despite the fact that most forecasting agencies referred the US President Donald Trump as one of the biggest uncertainties that could hinder the economic recovery. After the election, signature agencies such as the IMF, Global Insight institute and OECD adjusted their forecasts for the US economic growth of 2017 upward.[4] The upward adjustment is not that those agencies have endorsed Trump's leadership in leading the US economic recovery but increasing global demand due to the rebound of crude oil price. However, it can be concluded that the Trump uncertainties subside.

Although Trump pledged to promote growth and create jobs with whatever it took, what can be truly expected is that Trump is launching an expansionary fiscal stimulus policy, renew infrastructure and cut taxes with respect to budget constraint. In short, fiscal policy will replace monetary operations to help pick up the US growth from the year of 2017 on during Trump's term. As for moving manufacturing back to the US, it was on the former President Barack Obama's agenda as well. Trump would further push forward the agenda by providing tax incentives. As for protectionism, it will further list inflationary pressure on the US economy, Trump is likely only to

[4] For the year of 2017, IMF forecast the US economy to grow by 2.3%, whereas the growth is predicted to reach 2.4% by both the Global Insight and OECD.

take certain symbolic measures.[5] Inflation is not necessarily bad for economic growth; however, inflation as part of misery index is bad for public approval rate.

On the subject of declaring China as a currency manipulator, Trump refrained himself after the Trump-Xi summit in April 2017. It is almost certain that there will be no trade war between the US and China. In addition, a trade deal between Washington and Beijing was announced one month after the summit, and the deal is believed to enormously boost the US exports to China.

China's Economy and Economic Policies

Dur to its structural reform, China has had slowing growth in recent years making it no longer the leading economy in terms of GDP growth among BRIC countries. However, the economic size of China is still out weighting the other 3 BRIC countries, Brazil, India, and Russia. Destocking and deleveraging have become two very important ingredients of China's reform mainly because of its overinvestment during the most recent financial crisis. In the year of 2009, China's annual export dropped by 5.3Fred% due to shrinking world demand. In response, China issued a tremendous amount of stimulus package making its fixed gross investment grow by as much as 24.1% in 2009. The outcome was rewarding; the Chinese GDP grew by 9.4% outperforming the rest of the world during the crisis. Nevertheless, the consequences are overstocking and overbanking.

As China's structural reform must be performed to cope with the

[5] According to the US Bureau of labor Statistics, the inflation rate of US in April 2017 was 2.2% that already exceeded the Federal Reserve's target of 2%.

consequences, its economic slowing down is inevitable. However, a planned economy is having many measures to avoid hard landing. The economic growth of China stood at 6.7% in 2016, and it has been predicted to be at 6.5-6.5% in 2017. Regarding China's economic goals of 6.5% growth of GDP on 5-year average and service sector accounting for 56% of GDP by 2020, the EIU forecasts have showed that both goals would be very difficult to fulfill.

Taiwan's Economy and Policies in Response

Taiwan has long been an export oriented economy relying significantly on the external demand. As a result, most of its economic policies, long term or short term, have been designed and implemented to support Taiwan's growth in exports. Because of the plunge of crude oil price since June 2014, all East Asian countries experienced continuous decline in exports roughly during the period from third quarter of 2015 to the first quarter of 2016. However, Taiwan was the only Asian country had 3-quarter consecutive economic recession during that period because of shrinking exports. That actually indicate that export has been Taiwan's one and only growth engine. When the engine fails, the entire economic system stops functioning.

The reason is also because that Taiwan has been deeply integrated into the global value chain, and the correlation coefficient between Taiwan's and the world growth standing at 0.7811 from 2000 to 2016. Consequently, the uncertain, quivering or deteriorating global conditions can easily cause impacts on Taiwan's economy. Taiwan experienced its very first negative GDP growth in 2001 due to the internet bubble burst and the second downturn in economic growth in 2009 because of the global crisis. In contrast, Taiwan's economy used to be very resilient in coping with the oil crises in the 70s, 80s, and 90s when the correlation coefficient between Taiwan and the world was much lower.

Taiwan's exports of ICT goods (43% of total) have been facing difficulties in coping with "red supply chain" and Taiwan's exports of traditional manufacturing goods (the other 57%) have been dealing with tariff barriers because of insufficient FTA coverage. Therefore, the potential solutions are clear: a) Taiwan needs to move up supply value chain, and b) Taiwan needs to expand its FTA coverage. The idealistic FTA partners for Taiwan would be: a) trading partner that has great market potential and b) trading partner that tend to impose higher barriers. From these perspectives, Taiwan might want to sign FTAs with the US and China, because both of them have significant market demands. In addition, Taiwan could sign a FTA with China, since this economy is by comparison highly protected.

Suggested possible Solutions

Taiwan needs to adapt and adjust its policies with respect to an improving US-China relationship mirrored by the recent bilateral trade deal. As Trump has been demanding more manufacturing and jobs, Taiwan can consider to sign a BIA with the US, as signature Taiwanese companies like Foxconn and TSMC already announced their plans to invest in the US. A BIA is therefore needed to protect outbound investors' investments and further the bilateral relationship. Furthermore, a BIA is less politically sensitive compared with a FTA.

Despite that fact that Taiwan is coping with the red supply chain, Taiwan ought to realize a competition with China's supply side does not mean that Taiwan has to ignore China's demand side. Therefore, Taiwan may consider to conclude ECFA. After all, China is a big and still highly protected market.

Furthermore, Taiwan may try to apply for the status of External Economic Partner (EEP) with a concluded ECFA, whereas an EEP is a required status to join the negotiation of Regional Comprehensive Economic Partnership (RCEP). In spite of everything, expanding Taiwan's FTA coverage is indeed much needed.

(Darson Chiu is the Director General of CTPECC)

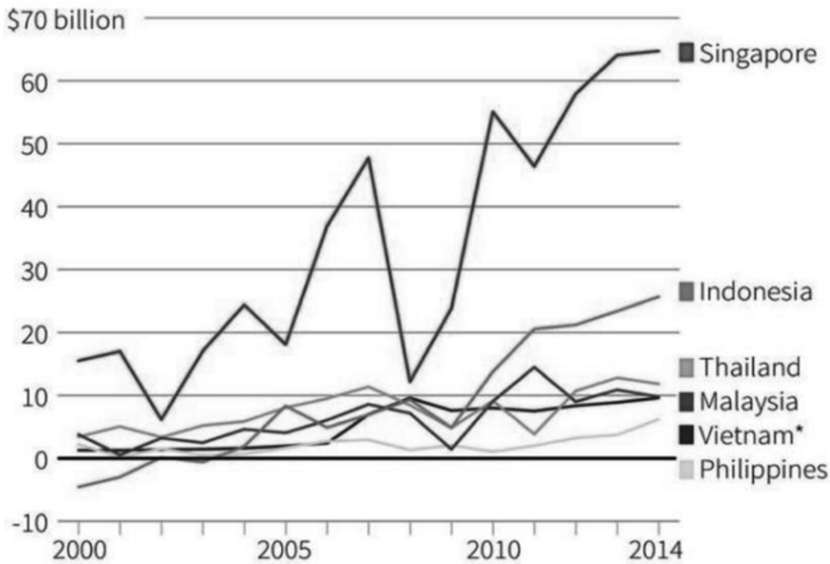
“New Southward” Is Another Political Slogan or Is a Comprehensive Strategy?

Jack Huang

ASEAN Economic Community, also known as AEC, was officially announced by the end of 2015. Most people consider it as a milestone of regional integration in Southeast Asia and it seems that the prosperous growth in near decades between member states is foreseen. In this prediction, the foreign direct investments (FDI), in terms of net inflow, intra and extra ASEAN, are increasing and therefore stimulate economic growth in the region. Furthermore, the closely cooperation of AEC also aims at creating single market and production base, achieving free flow of goods and services, reducing burdens of labour and capital movement. In a long term, it may follow up the course of European Union and many expects even assert that ASEAN will become the third-largest economy in Asia, and the sixth in the world.

In this awareness, Taiwan, as a country with high degree of dependence on foreign trade, must build connection with his fast-growing neighbours and extend bilateral partnerships among different subjects. Therefore, 'New Southward' has been initiated as a key policy since Democratic Progress Party (DPP) took power in 2016. It is different from the old 'Go South' policy launched decades ago, which mostly focused on export-oriented industries and low value-added production, such as Original Equipment Manufacturer (OEM) and primary industries. The 'New Southward' has a more ambitious

Graph 1. Foreign Direct Investment in ASEAN



Source:UNCTAD, cited from 'The ASEAN Economic Community: what you need to know', World Economic Forum.

blueprint comparing with the previous version. It wants to establish the comprehensive cooperation among many issues, not only in trade and investment, but more in education, culture, research and other types of exchanges.

In order to build a closer tie with potential ASEAN partners, the major economies around the world have shifted their attention to focus on the development in this region. Several free trade agreements (FTA) or regional trade agreements (RTA) have been signed and put into effect in recent years. Evenmore, the integration around the Pacific Basin is negotiating on the table, not the TPP, but the new-launched 'ASEAN-Pacific Alliance Framework for Cooperation' in March 2017. The new Asia-Pacific partnership combines 10

ASEAN countries on one side and another 4 countries in Latin America (the Pacific Alliance includes Chile, Colombia, Mexico, and Peru). While the acknowledgement of global transition moves toward to Asia and the Pacific, Taiwan, however, does not be involved in most of those regional frameworks. So far, the officially trade agreement signed with ASEAN states can be seen in Singapore-Taipei FTA only, and most Taiwan's exports and imports are excluded from the most-favoured nation (MFN) treatment within the region.

According to the information provided by the Bureau of Foreign Trade, ASEAN can be regarded as the second largest trade partner behind China. In January 2017, the total exports from Taiwan to ASEAN countries were about 4.5 billion USD and the imports from ASEAN were about 2.2 billion. If we check the historical data, the figures show an increasing trend even though the official relation is progressing slowly. In fact, many sectors invested by Taiwanese have been operated for decades in ASEAN area, even longer before the previous 'Go South policy' period. Why is that? One senior manager, who has been in Thailand more than 30 years, pointed out 'the business is always the pioneer and should take action before bureaucracy'. Indeed, opportunities and challenges are everywhere, not just in the media-alleged booming ASEAN, but even the advanced countries can provide a proper investment environment for doing business. 'The key points are to find a niche market initiatively and generate the irreplaceable product or service, not to rely on government policy and follow the road paved by someone else', he mentioned.

Nevertheless, the 'New Southward' policy still has its effect to give useful guideline and help for investing ASEAN. If the obstacles lay on the official channel, Taiwan still has plenty of ways to develop bilateral relationship with other trade partners. For example, the Taiwan External Trade Development Council (TAITRA) or the Taiwan International Cooperation and Development Fund (ICDF), have acted as an intermediary for a long time to contribute in some areas that government is not available to reach. The TAITRA has cultivated local market and promote foreign trade in many countries, it also provide investment consultation and collaborate closely with government. The ICDF, on the other hand, is dedicated to enhancing and supporting cooperation in not only economic development, but more in education, humanitarian assistance, agriculture and public health with many under-developed countries. Both of these non-governmental organizations can play a more active role in facilitating 'New Southward' proposal, and the civil power in Taiwan can be utilized to seize the opportunities in ASEAN region.

Besides, trading and investing in ASEAN need to think in an alternative way from the traditional strategy as well. The conservative thought focus on export processing industries and neglect the domestic demand in ASEAN. In the region with emerging middle class, the increasing require of consumption goods and services, and the a highly integrated economy for all member states, Taiwanese businesses have to expand local markets and try to target the local needs. The policy makers, then, need to have a comprehensive view to bridge network with local talents and provide more updating information. In addition of short-term economic-oriented goals, Taiwan should make more efforts in understanding ASEAN countries deeply, building a long-term development, and as a result, achieving sustainable relationship.

In sum, the civil exchange and non-official activities should pay a more important role for New Southward policy. In the past, the obsession of economic growth encouraged business to devote most of their resources in primary or secondary sectors, but these business models cannot guarantee high growth anymore. Therefore, it is utmost importance that 'New Southward' policy is implementing under the great understanding of ASEAN and both government and private sectors have to realize that ASEAN is not just a pool of cheap labour, but it needs to be respected as an emerging market with growing population and increasing knowledge-based productivity.

(Jack Huang is the Consultant in United Nations Office of Information and Communication Technology, OICT)

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The Future of Investing in Green

Shih-Fang Lo and Julia Yang

Introduction

There is a profit side and a responsible side to any business, and the two factors have to be balanced. With the threat of global warming and environmental deterioration, the government policy on environmental protection remains active from the last century worldwide. Business will face more strict restrictions on energy uses and business process in the natural resources constrained society. Governments' environmental and energy policies are stimulating grand new industries, such as energy efficiency industry, new and renewable energy industry, and new services. The policy trends have not only created green new industry, but also brought growing green investment opportunity. This article therefore aims to investigate what's been happening in green finance and its prospect.

Green Finance Starts from Corporate Responsibility

Recent financial scandals such as subprime mortgage crisis have emphasized the need for greater transparency and accountability. A more humane, ethical, and transparent way of doing business is therefore broadly discussed. Take the term 'corporate responsibility' for example, the classical view from the shareholder approach is that the social responsibility of a business is to increase its profits and value for its owner. However, the stakeholder approach points out that business is not only accountable to its shareholders, but should also consider stakeholder interests which may affect or may be affected by the operations or objectives of a business. It is gradually extended to 'corporate sustainability' defined as a business approach that creates long-term shareholder value by embracing opportunities and managing risk from three dimensions: economic, environmental, and social dimensions. A sustainable company is one whose characteristics and actions are designed to lead to a 'sustainable future state,' such as value creation, environmental management, and human capital management, etc.

Green Investment Seeks for Long-Term Performance

Companies that actively manage a wide range of sustainability (or green) indicators are better able to create long-term value for all stakeholders. 'Responsible investment' (or 'Green investment' hereafter) began appearing in the late 20th century and is an investing vehicle which reflects investors' values and concerns regarding the impact and conduct of business activities. It selects companies for investment considering the social and environmental performances as well as the financial performance. The term 'green investment' is often used interchangeably with the term 'social responsibility investment (SRI)' or 'ethical investment.' Since some investors who are not only interested in the 'maximization of shareholders' wealth but also the maximization of stakeholders welfare' will seek out those companies for an above average growth rather than a temporary outsized performance. Following several scholars' argument, it is believed that a substitution of longer-term sustainability for shorter-term volatility and risk is needed for today's businesses. Leading responsible firms are more likely to deliver predictable earnings with less negative concerns. In other words, corporate governance and the firm's economic, social and environmental performance can be effectively linked with adequate disclosure. Green investment has now been increasingly perceived as a mainstream element of good corporate governance, both from individual companies and of institutional investors, and good corporate governance can have good effects on long-term corporate financial performance.

Green Investment vs. Traditional Investment

Traditional financial theory based on rational investors, efficient market, and profit maximization; however, those theories fail to explain some market anomalies after mid-1980s. Previous empirical literatures define the so-called 'market anomalies' as the gap which cannot be priced by rational asset pricing model, such as 'size effect,' 'weekend effect,' 'dividend effect,' 'January effect,' 'P/E effect,' and 'price/book ratio effect,' etc. Moreover, there is emerging studies investigating the market anomalies about environment and energy related fields, which we call the 'green anomalies' as follows.

'Eco-Efficiency Premium': Global indexes, such as FTSE4Good Index and Dow Jones Sustainability Group Indexes, are designed to measure the performance of companies that meet globally-recognized corporate responsibility standards and to facilitate investment in those companies. Using common-used financial pricing tools, Capital Asset Pricing Model (CAPM) and Fama-French Three Factor Model, previous studies find that high ranked eco-efficiency portfolios have around 6% 'eco-efficiency premium' compared with low ranked portfolios. Using corporate eco-efficiency scores to form portfolios and use long-run buy-and-hold strategy.

High eco-efficiency S&P 500 portfolios have higher returns and lower volatility related with regular S&P 500 in the long-run. The eco-efficiency is positive with operating performance and market value, which imply that managers do not have to overcome a trade-off between eco-efficiency and operation performance.

'Climate-Change Premium': Connected to asset pricing theory, the literatures relating to climate-related investments are also emerging in the recent years. It is generally believed the climate-change premium exists in the long run, and related indexes tracking the performance can be categorized into: (1) indexes that is comprised of firms with relatively low carbon emission, such as S&P U.S. Carbon Efficient Index, HSBC Global Climate Change Index, and UBS Europe Carbon Optimized Index. etc.; (2) indexes that measure the performance of the liquid carbon-related credit plans, such as Barclays Capital Global Carbon Index, MLCX Global CO2 Emissions Index, and SGI-Orbeo Carbon Credit Index, etc. Performance of climate-related indexes shown in previous reports can be deemed as probably climate change premium. For instance, HSBC announces the HSBC Global Climate Change Index and this index has outperformed with global equities.

From Green Awareness to Green Impact

Accountability should be at the very heart of investment. Before 'the Wealth of Nations,' Adam Smith wrote 'The Theory of the Moral Sentiments (1759),' which states that a capitalist system must be based on honesty and integrity; otherwise it will be destroyed. Adam Smith understood that self-interest should be moderated by responsible so that purely selfish or exploitative behavior would be the exception and not the rule in our society. The business sector as well as financial sector has to honor the moral minimum or respect our nature and justice while making a profit. Following the business scandals and corporate failures which occurred in the past few years, works to rebuild public trust in business and in the financial markets have been discussed extensively in practice. To be impactful rather than making paper money, financial sector may re-think to serve the real economy in a greener way.

(Shih-Fang Lo is the Associate Research Fellow for Green Economy, Chung-Hua Institution for Economic Research and the Mentor of Green Impact Academy.

Julia Yang is the Founder of Green Impact Academy. Green Impact Academy acts as a Meet Market aggregator in green industries, providing talent development, marketing, and financial plumbing services to accelerate the growth of the Green Economy.)

Memo

Memo