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A Stitch In Time

Opportunities and Challenges for Taiwan's Textile Sector

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Opportunities and Challenges for Taiwan's Textile Sector

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Executive Summary

Taiwan occupies a strategic position in the global textile production chain; it has evolved from a mass producer to a world-leading textile innovator with a wide variety of functional and eco-friendly textiles, many manufactured from man-made fibres. Today, approximately 70% of outdoor sportswear products sold around the world are manufactured using functional fabrics made in Taiwan[1].

But this dominance is by no means assured. Emerging markets with competing comparative advantages are striving to increase the contribution of the textile/garment sector to their respective economies. The sector itself is constantly changing and evolving; new players emerge, investment climates are reconfigured, and industry leaders are forced to adapt.

Taiwan's textile industry today finds itself at a "stitch in time". A confluence of global trends are forcing a mature industry to think hard about its future: China's rapid ascent up the skills ladder; the opportunities and threats arising from a fluid, evolving global trade regime; the rise of high-tech man-made clothing; and the advent of fast fashion and its attendant pressures for vertically-integrated processes. These are only some of the key developments shaping the pace and the breadth of change.

Shifting environments naturally bring up a series of questions: Where is the most cost-efficient production location? Is industry consolidation and/or integration necessary for firms to survive? Are further R&D investments essential for Taiwan to stay ahead of the competition? Can strategic trade alliances be woven with competing Southeast Asian markets and economies? For Taiwan's textile stakeholders, decisions made today on these and other questions will have long-term implications.

Some key trends that are set to challenge Taiwan's place in the global textile industry include:

1. **China moving up the value-chain threatens Taiwan.** China's transition from low-cost to more capital-intensive activities is nudging leading downstream garment companies to lower-wage destinations such as Bangladesh and Vietnam. In their place, China's nascent upstream textile producers, innovating in areas such as synthetic fibres, will grow to challenge Taiwanese incumbents.

2. **The evolving global trading regime presents opportunities and threats.** The evolution of the trade environment affects the way brands and companies reach Taiwan. Trade agreements and duty-free/quota-free trade access, for instance, can significantly impact costs, production processes, and potential revenues. To qualify for such advantageous access, yarn forward rules and other Rules of Origins (RoO) will either maintain this division between the capital- and labour-intensive member economies or accelerate the transition from downstream to higher up the chain. However, due to geopolitical issues, Taiwan may very well be left out of this process.

3. **Harnessing the advent of fast fashion may be very beneficial to expanding Taiwanese textile players.** The logic of moving downstream production to more cost-competitive countries is complemented by purchasers' need to respond quickly to market demands and fashion trends. The rise of fast fashion is prompting a shift toward more integrated production chains. This "Local to Local" purchasing trend favours bigger fabric suppliers able to invest overseas and integrate supply chains. SMEs typically have financial constraints that prevent them from doing so. It is crucial for them to get financial support in order to increase their capacity in overseas production bases and meet the global procurement strategies set by major international brands.

4. **Taiwanese textile manufacturers are ideally positioned to benefit from the man-made fibres boom.** The convergence of athletic clothing and casual wear has resulted in a phenomenon that apparel professionals call "athleisure", which is fashionable clothing designed to be worn both for exercising and casual social occasions. More broadly, the rising popularity of man-made fibres can be traced to their practical advantages over cotton. The two main trends in fibres are "functional" fabrics and "eco" fabrics. Functional fabrics focus on ergonomics, safety, and fashion while eco-fibres are focused on low-pollution and recyclability. Taiwan's long-standing experience in developing high-tech products from high-value materials can be a priceless advantage over competing markets.

"Approximately 70% of outdoor sportswear products sold around the world are manufactured using functional fabrics made in Taiwan"

Overview of Taiwan's Textile Industry

Garment-making is a labour-intensive activity while textile production is more capital-intensive. As countries develop, economic activity tends to shift from labour- to capital-intensive. Countries such as Ethiopia and Kenya are still focussed on the former; Bangladesh and Vietnam are beginning the transition process from one to the other; and parts of China are well on their way to the latter[2]. Most of these economies, especially the developing ones like Bangladesh and Vietnam, do not have local cotton industries and rely heavily on imported yarn and fabrics. This was also the case for Taiwan, where the textile industry has played an integral role in economic development for the past 70 years.

Background

Post-World War II, Taiwan and other developing economies took advantage of two major comparative advantages — the availability of surplus labour and relatively lower costs in the labour-intensive garment industry. It was during this key developmental period that Taiwan focused on moving beyond just garment manufacturing and into the more technical and capital-intensive upstream manufacturing of fabric and yarn.

A series of protectionist export quotas enacted by the US in the 1960s (Long-term Agreement on Cotton Textile Products) and in 1974 (Multi-Fibre Agreement) dampened Taiwan's focus on cotton-based products. Taiwan began innovating in man-made fibres and value-added textile manufacturing, causing the value of textile products to grow at an average annual rate of 22.7% and sowing the seeds of its current strength and expertise in man-made fibres[3].

By 1970, 16 artificial-fibre-producing companies had been set up. Textiles and apparel represented 31.7% of total exports in 1970 and were the top industrial exports until they were surpassed by electronics in 1987[4]. From then on, rising labour costs started eroding margins, particularly for the downstream labour-intensive garment manufacturing sector. This forced the industry to focus less on labour-intensive economies of scale to more capital- and technology-intensive economies of scope.

The Taiwanese experience, mirrored in other textile- and garment-producing economies, accounts for the geographically disperse production chain we see today, where the upstream part is dominated by more technologically-advanced economies (Taiwan, South Korea), while the downstream aspects of cutting, trimming, and assembling are concentrated in relatively low-wage locales (Bangladesh, Cambodia, Vietnam, etc.).

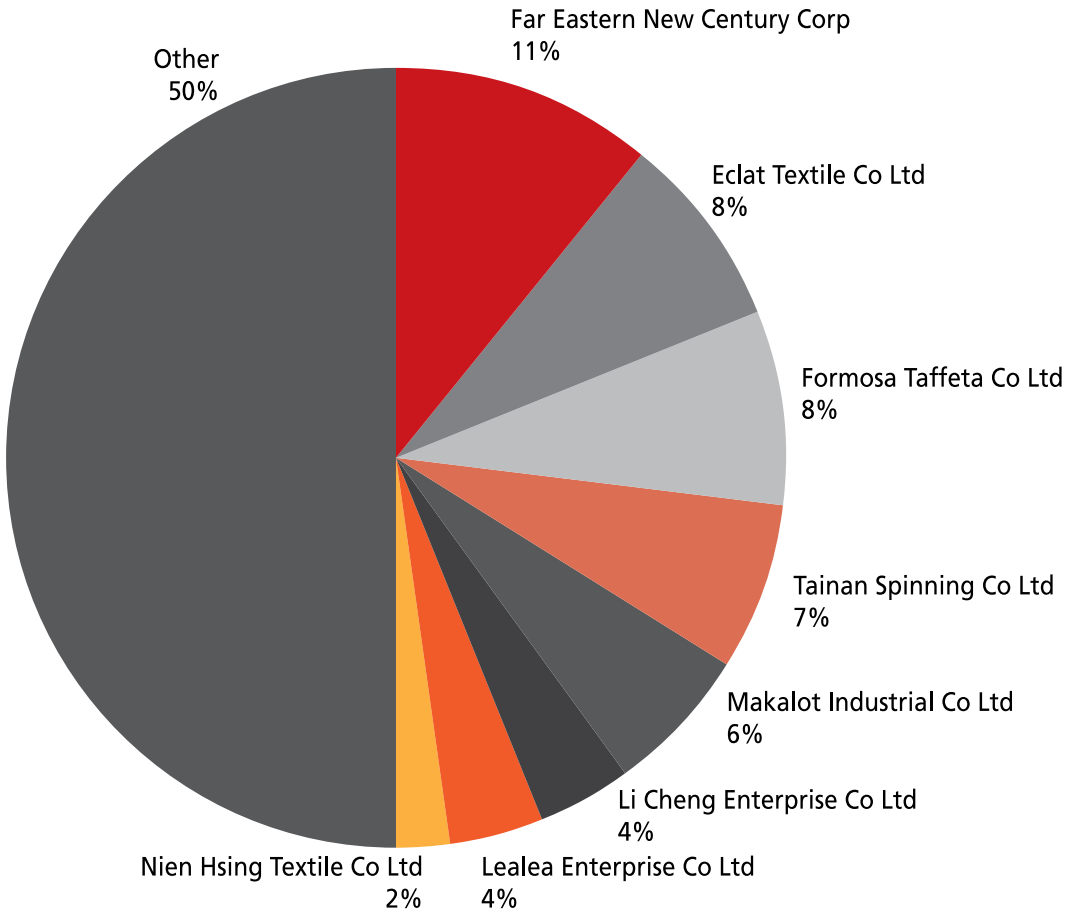
Against that backdrop, Taiwan's textile players have pursued two thrusts of development. First, the expansion of capacity in relatively cheaper locations in China and Southeast Asia. Second, moving up of the value chain in terms of providing higher-tech, value-added materials and functional fabrics.

Structure and Value

As Taiwan's textile industry grows through product differentiation and economies of scope, small- and medium-size enterprises (SMEs) play a key role in the field. SMEs (enterprises with less than 200 employees) comprised 98.8% of textile enterprises and 55.6% of export value in 2005[5]. As of 2014, there were more than 140,000 people employed by over 4,200 registered textile manufacturers, of which over 98% are SMEs[6].

While the textile and apparel industry has thousands of SMEs, the top eight companies account for half of the market share (Diagram 1).

Diagram 1 - Textile industry market share, 2014



Source: Bloomberg, Company, Taiwan Ministry of Economic Affairs

The largest company in the sector is Far Eastern New Century Corp (1402.TW), followed by Eclat Textile Co. (1476.TW), and Formosa Taffeta Co. (1434.TW). The industry is highly fragmented due to the massive variety of product types. An examination of some key players can shed light on the current state of the textile industry.

Company Profiles of Key Players in Taiwan's Textile Industry

Far Eastern New Century Corp.

Founded in 1954, Far Eastern started as a manufacturer of cotton and synthetic fibres. Over the years, the company turned its focus on increasing its synthetic fibre capability by creating a vertically-integrated supply chain from yarn spinning, weaving, dyeing, fabric finishing, and apparel production. Far Eastern is a leading player in the Asian polyester and nylon industry, providing products to multinational apparel customers such as Columbia, Abercrombie & Fitch, Nike, Levi's, J.Crew, and many others.

Listed on the Taiwan Stock Exchange in 1967, the company has since diversified its activities into telecommunications and real estate, but chemical fibres and textiles remain a key contributor to the company's bottom line.

Eclat Textile Co.

Founded in 1977, Eclat focuses on knitted jerseys and clothing (respectively 36% and 64% of revenues in 2014). Key clients include sportswear companies such as Adidas and Nike and international retailers such as Chico's and JCPenney. The company has a vertically integrated structure, as its operations involve knitting, dyeing, finishing, and garment-making.

Eclat has had a long history of innovation. In 1994, it developed Ecolon®, a mix of nylon and fabric that provides comfortable applications in sports and sleepwear. In line with other Taiwanese firms, Eclat's innovations in functional fabrics include "ColdBlack", which guarantees Ultraviolet Protection Factor (UPF) 30 protection to textiles, and the water-repellent "3XDRY". The company also uses a variety of eco-fabrics, ranging from organic cotton to rayon fibres. With such innovations, Eclat's revenues have risen 244% between 2010 and 2014 to NT$20.84 billion. Of note is Eclat's collaboration with Canadian brand Lululemon, which has flourished recently off the back of the boom in yoga apparel[7].

Makalot

Founded in 1990, Makalot derives 81.3% of its revenues from top US brands Kohl's, Target, and Gap. In 2014, these three companies accounted for 66% of Makalot's total revenues from the US, closely linking its performance to US consumption. Makalot focuses on OEM (original equipment manufacturing) / ODM (original design manufacturing) capabilities, producing ready-to-wear, sportswear, and sleepwear apparel.

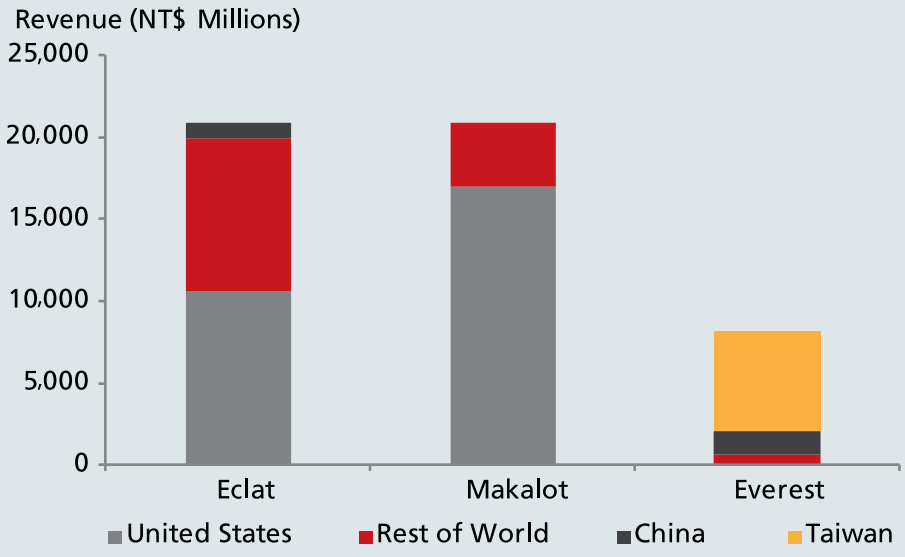
In a bid to lower labour costs, many textile companies have expanded production to Southeast Asia, where monthly wages are up to half those of China's. At the time of its founding, Makalot's production facility was in the Philippines. In 2014, 8% of its apparel was produced in China while the rest of its production was spread between Cambodia, Vietnam, Indonesia, and the Philippines[8].

Everest

Founded in 1988, Everest and its functional technologies serve both upstream and downstream segments of the textile industry. It has developed nano-silver technologies for yarn spinning while its "soft-shell" fabric, with anti-abrasive and water repellent features, has multiple end-use applications from horse riding apparel to skiing garments.

Through its nationally recognised Everest Technology Research Centre, the company has registered 21 patents in the US, Germany, and Japan[9].

Diagram 2 – Eclat, Makalot, and Everest revenue by region, 2014



Source: Company data

In 2014, Taiwan's textile industry was worth US$14.31 billion (NT$439.2 billion), down 1.1% from US$14.47 billion (NT$444.2 billion) in 2013 as a result of slower-than-expected economic recovery in Europe and the US[10]. Although the industry's production value and number of manufacturers/employees have shown a declining trend over the past ten years, per-capita productivity has increased 1% from NT$3.03 million in 2005 to NT$3.07 million in 2014, a sign of the shift to higher-value products (Diagram 3).

Diagram 3 - Taiwan textile production value, number of manufacturers and employees

Year	2005	2013	2014	2005	2009	2013	2005	2013	2014
	Production Value (Billion NT$)			Manufacturers			Employees		
Textile	452.6	421.6	416.3	3,614	3,200	3,143	125,378	109,938	109,847
Apparel	46.2	22.6	22.9	1,244	1,179	1,129	39,228	31,152	33,252
Total	498.9	444.2	439.2	4,858	4,379	4,272	164,606	141,090	143,099

Source: Compiled by Taiwan Textile Federation (TTF) with data from Directorate General of Budget, Accounting and Statistics, Executive Yuan Department of Statistics, Ministry of Economic Affairs

Just like the rest of its economy, Taiwan's textile industry is export-oriented. In 2014, the export and import values of Taiwan's textile production were US$11.56 billion and US$3.43 billion respectively, generating a trade surplus of US$8.13 billion, the fourth largest among all of Taiwan's industrial sectors[11]. In fact, the textile industry has, on average, contributed over US$8.5 billion annually over the past decade (Diagram 4).

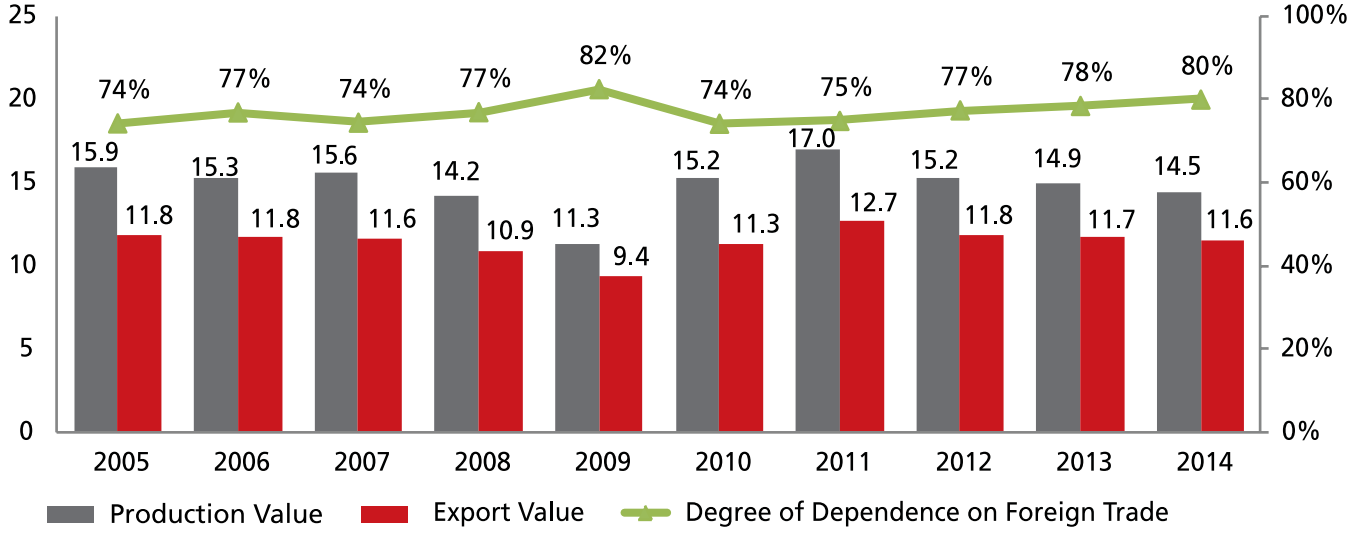
Diagram 4 - Export and import value/trade surplus of textile & apparel industry (Billion US$)

Item / Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Production Value (A)	15.91	15.30	15.59	14.17	11.34	15.24	17.00	15.28	14.92	14.46
Export Value (B)	11.81	11.76	11.60	10.90	9.35	11.30	12.72	11.82	11.70	11.56
Import Value (C)	2.61	2.70	2.65	2.70	2.19	2.91	3.57	3.32	3.30	3.43
Trade Surplus (D)=(B)-(C)	9.20	9.06	8.95	8.20	7.16	8.39	9.15	8.50	8.40	8.13
Degree of Dependence on Foreign Trade (B)/(A)	74%	77%	74%	77%	82%	74%	75%	77%	78%	80%

Sources: Compiled by Taiwan Textile Federation with data from Taiwan Customs Statistics, Department of Statistics, Ministry of Economic Affairs

Facing mounting challenges from regional peers such as China, who possess lower cost structures, Taiwan's textile industry has nevertheless remained resilient chiefly thanks to changing product focus (Diagram 5).

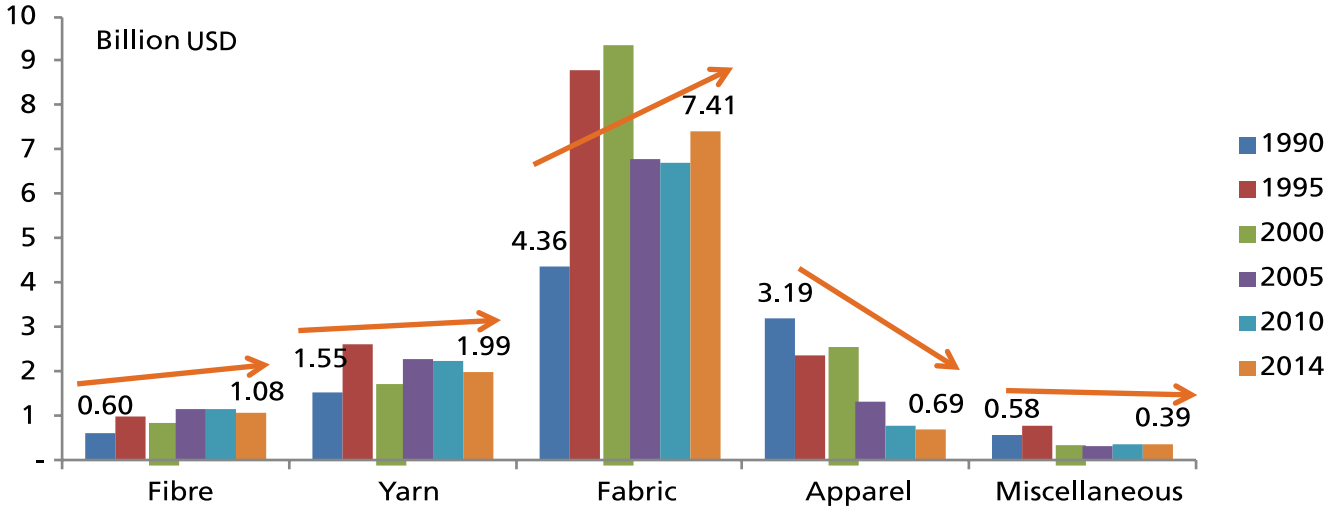
Diagram 5 - Production and export value/degree of dependence on foreign trade of textile & apparel industry (Billion US$)



Sources: Compiled by Taiwan Textile Federation with data from Taiwan Customs Statistics, Department of Statistics, Ministry of Economic Affairs

In 2014, Taiwan's total textile export value declined to US$11.56 billion, down 1.1% from 2013. Bucking the trend, the fabric industry managed to grow despite unfavourable economic conditions, pointing to Taiwan's competitive advantages in this sub-segment. The export value of fabric reached US$7.41 billion in 2014, up 1.3% from US$7.32 billion in 2013, accounting for 64% of all textile exports (Diagram 6).

Diagram 6 - Taiwan textile exports trend



Source: Compiled by Taiwan Textile Federation with data from Taiwan Customs Statistics

The Taiwan Stock Exchange Textile Index, a weighted average of 45 textile companies in Taiwan, has grown by 46% since July 2010. Comparatively, the main Taiwan Stock Exchange Index (TWSE) posted only 18% growth in the same period.

Where We Are Now

Taiwan's textile industry has established itself as a trusted OEM/ODM producer for the global value chain of textile, as evidenced by its long-term relationships with global sportswear brands such as Nike, Adidas, Under Armour, and other multinational entities.

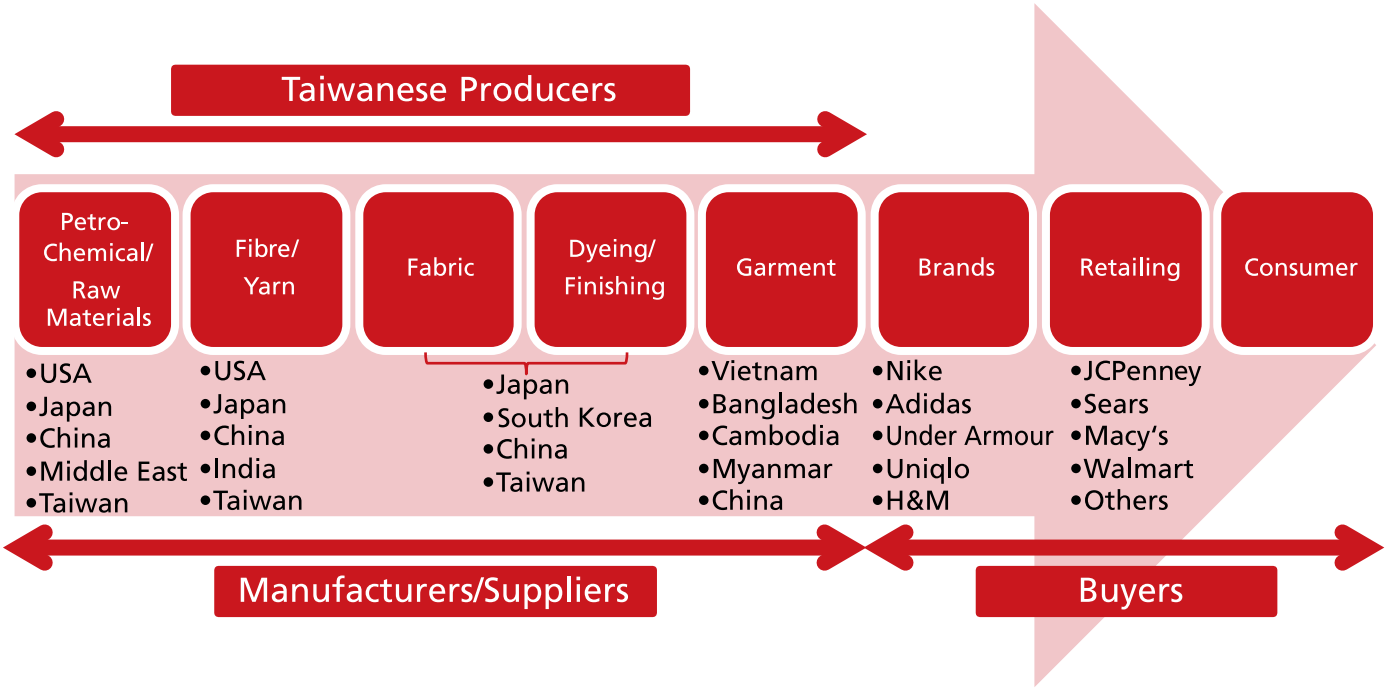
"The primary competitive advantage of Taiwan's textile industry lies in the full integration of its upstream and downstream supply chains"

As specialised OEM/ODM suppliers, Taiwanese firms are under constant pressure by global brands to reduce costs. Two events — wage inflation in the 1980s and the removal of the prohibition to enter China in 1991 — drove global brands to adjust their sourcing strategies. Many Taiwanese garment and knitting manufacturers relocated to Southeast Asia and China. The labour-intensive parts of the production system, dominated by SMEs, were particularly pressured to move overseas to neutralise rising domestic labour costs.

As a result, Taiwan's original textile industry value chain was broken, and those who remained in Taiwan started to focus extensively on upstream technological upgrading, facilitating the shift toward high-end synthetic fibres and specialised fabrics to serve higher-value demand in Europe and the US.

By 2014, the industry's export share of fabrics increased to 64%, while that of garment dropped to 6% compared to 31% and 42% in 1990, respectively. This transition indicates that Taiwan's textile industry has shifted toward capital-intensive and technology-intensive sectors in the global textile value chain (Diagram 7).

Diagram 7 - Taiwan and the global textile industry value chain



Source: DBS Vickers, compiled from Cheng Kai-Fang, *The Big Future of Taiwan Textile Industries*, Taiwan Textile Research Institute (TTRI)

The primary competitive advantage of Taiwan's textile industry lies in the full integration of its upstream and downstream supply chains, including petrochemical raw materials, fibre manufacturing, spinning, weaving, dyeing, finishing, and garment-making. This supply chain integration allows the industry to develop diverse and higher value-added products (Diagram 8a. For company details please refer to Diagram 8b in Appendix).

Diagram 8a - Taiwan textile supply chain & its listed companies

Supply Chain Segment	Number of Listed Companies
UPSTREAM	
Petrochemicals	4
MIDSTREAM	
Synthetic Fibre	21
Natural Fibre	3
Chemicals	5
Spinning	22
Weaving	24
DOWNSTREAM	
Dyeing & Finishing	21
Garment-Making & Others	25

Source: Taiwan Value Chain Information Platform, http://ic.tpex.org.tw

Current Trends and Developments in Global Textiles

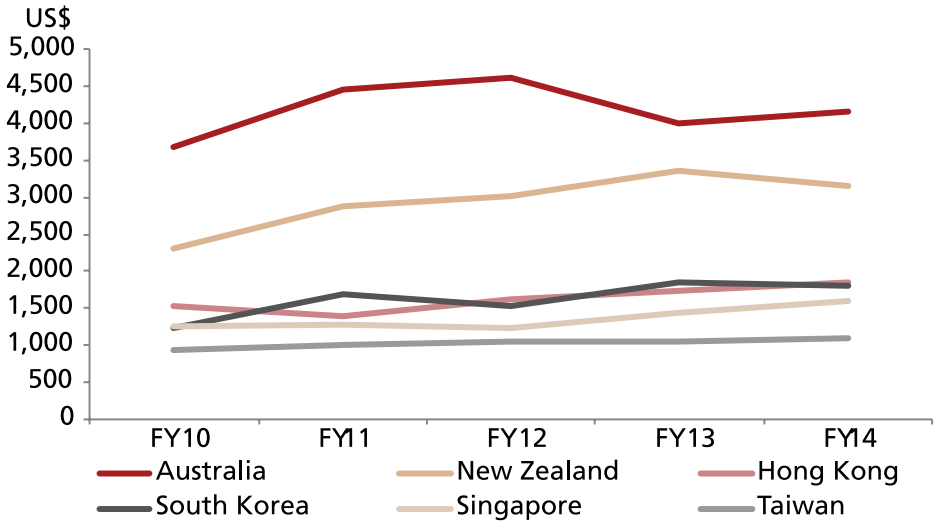
The global textile industry has been subject to numerous disruptive forces over the past 15 years. The rapid rise of China from a labour-intensive garment producer to a higher value-added textile innovator, for instance, has accelerated the number and pace of transformative imperatives. Some players within the global textile industry have easily adapted to this and other changing operating conditions by re-examining their cost-efficiencies, expanding their manufacturing capabilities, or taking part in strategic trade deals. Others — such as Taiwan — have had to implement all of these solutions while simultaneously balancing delicate geopolitical relations.

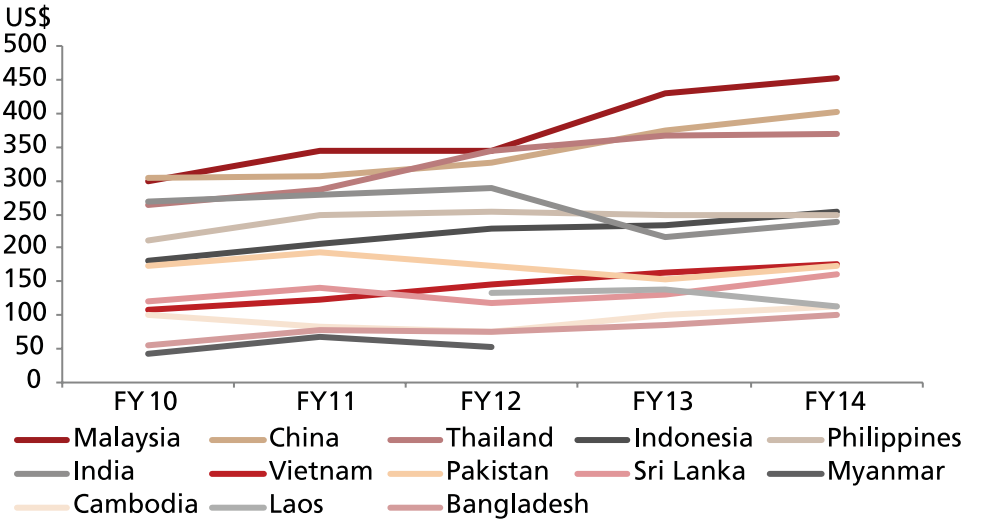
Regional Expansion

Expansion in overseas markets is motivated by a number of factors including lower production costs, customers' wish to diversify their production base, and advantageous tariff conditions from existing and upcoming free trade agreements. Since the early 2000s, investments from Taiwan, South Korea, and China have spurred a steady expansion of manufacturing capacity in Southeast Asia, predominantly focused on labour-intensive garment manufacturing, which require only basic factory premises and relatively inexpensive sewing machines. Typically, labour costs are a key cost component for manufacturing, sometimes as much as 30% depending on the item.

Generally speaking, wages follow an upward trend across most Asian markets, but wage gaps between industrialised and emerging economies remain wide. This means that targeted geographic expansion to lower income areas is still a strategic way to lower overall production costs (Diagrams 9 and 10). General overhead and utilities expenses also tend to be lower in Southeast Asia compared to Taiwan, South Korea, and some parts of mainland China.

Diagrams 9 and 10 - Wage movements across selected markets, 2010-2014

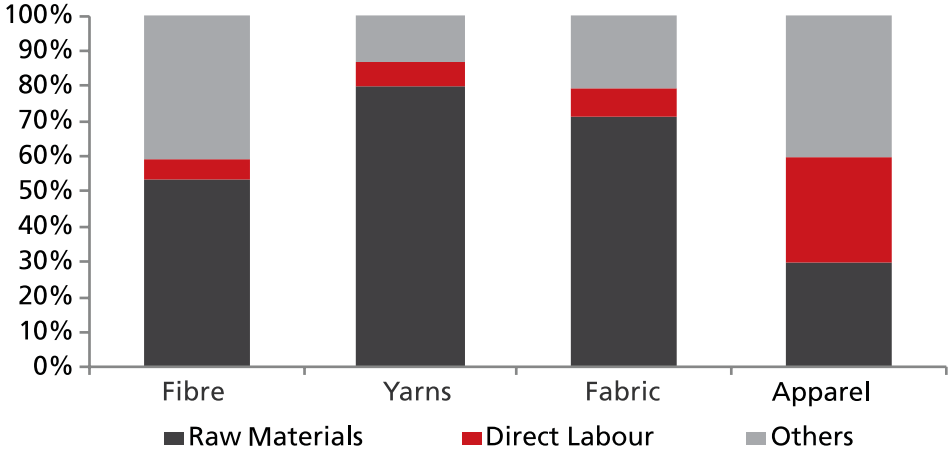




Source: Japan External Trade Organisation (JETRO)

There has been an acceleration in the production of midstream and upstream materials for yarn spinning and fabric making in recent years. Expansion in the upstream segments typically requires substantial capital due to higher machinery requirements, waste water treatment facilities, and more demanding power equipment. The immobility of installed plant equipment also increases the risk profile of these investments; investments for fabric mills typically reach between US$50 million and US$150 million, depending on size and scale (Diagram 11).

Diagram 11 - Typical cost structures across the textile supply chain, 2014



Source: DBS Vickers, Rocky Mountain Institute

In terms of raw materials procurement, there are various advantages to relocating activities into new countries. Domestic yarn makers, for instance, suffer from higher cotton prices due to protectionist restrictions on cotton imports into China. ASEAN countries such as Vietnam and Cambodia, however, have no substantial domestic cotton industries to protect. The absence of such tariffs have thus made Vietnamese-made cotton yarns more cost-competitive than the ones made in China.

Another way ASEAN countries attract foreign textile manufacturers is to offer tax benefits. Investments in Vietnam of over US$300 million, for instance, qualify for lower tax rates (15% instead of the statutory 25%), plus four years of tax exemption followed by nine years of tax reductions[12]. To make the country an even more attractive destination for foreign investors, regulations that used to favour local state owned enterprises (SOEs) have been amended to level the playing field for private enterprises. In this sense, Vietnam seems particularly friendly toward foreign SMEs, whereas Indonesia has favoured a system based on cooperation with bigger multinational companies[13].

Despite their many financial and fiscal advantages, textile operations in ASEAN suffer from various shortcomings that may inhibit further expansion if they remain unaddressed. Many foreign investors note lower productivity levels among ASEAN workers, mostly due to their lack of technical experience[14]. Infrastructure and transportation systems are also subpar compared to more industrialised parts of Asia, which impact the efficiency and complexity of the overall supply chain; more complex products still have to be imported. These constraints significantly limit the type, quantity, and variety of products that can be manufactured in emerging production bases.

Rising Costs in China and Southeast Asian Countries

According to *The Economist*[15], hourly manufacturing wages in China have increased by an average of 12% a year since 2001. Wage inflation has forced multinational companies to relocate manufacturing units to Southeast Asian countries as a way to enhance cost efficiencies. But Southeast Asian countries' current economic growth is also quickly leading to rising wage levels and living costs that impact industrial cost efficiencies. In response to wage inflation, existing Taiwanese manufacturers are slowly starting to set up new production units in suburban areas and second-tier cities across Southeast Asian countries in search of ever-cheaper labour (at the moment, Bangladesh and Vietnam are the two main beneficiaries of this movement).

Some of the biggest global brands are seeking to diversify their raw material sourcing not only across different companies, but also from different locations to maximise flexibility, efficiency, and bargaining leverage. Such a shift may create some competition for Taiwanese textile manufacturers who up until recently led the manufacture of synthetic functional fabrics, while Chinese manufacturers focused on cotton-based, mass market, and high volume products.

This general distinction still holds true for the most part, but the lines have started to blur as many Chinese manufacturers have started to produce synthetic fabrics and may soon enter this niche area firmly controlled by Taiwanese manufacturers. South Korea and Japan, meanwhile, continue to be strong competitors in terms of higher value-added products.

Chinese Players Eyeing Synthetic Fibres

Taiwan has long been recognised as one of the leading suppliers in the field of synthetic fibres; it currently ranks 3rd in the world in terms of total production of artificial fibre (after the US and China) and 2nd in polyester fibre production. Taiwan has some competitive edges over China, regarding for instance quality and diversity of nylon-related products, but its advantages are quickly disappearing. China has been able to utilise its massive domestic market to attract international fibre producers to set up factories or R&D centres. Invista recently set up a nylon 6,6 polymer plant at the Shanghai Chemical Industry Park and is expected to start production in 2015.

"Taiwanese fibre makers need to continue investing in the development of differentiated products and focusing on value creation"

In response to the intense competition, Taiwanese fibre makers need to continue investing in the development of differentiated products and focusing on value creation instead of trying to compete with Chinese producers' prices.

Historically speaking, the biggest competitors to Taiwan's textile and yarn manufacturers have been South Korean firms, whose focus on higher quality fabrics and functional fabrics overlaps with that of Taiwan's. Both economies compete in terms of innovation and quality. In June 2010, Taiwan gained the upper hand by signing the Economic Cooperation Framework Agreement (ECFA) with China, thus exempting close to 140 textile products from duty and increasing the competitiveness of yarns and fabrics made in Taiwan[16].

The agreement conferred a real but temporary advantage to Taiwanese players; in June 2015, the China-Korea Free Trade Agreement (FTA) was signed to effectively exempt most South Korea textile exports to China from duties. According to the Taiwan Textile Federation, South Korean manufacturers benefiting from the FTA could replace 30% of Taiwanese textile exports, to the tune of some NT$10 billion per year[17]. This constant competitive push-and-pull between economies shows just how important free trade agreements are to the strategic advancement of entire national industries.

Free Trade, the Decisive Factor

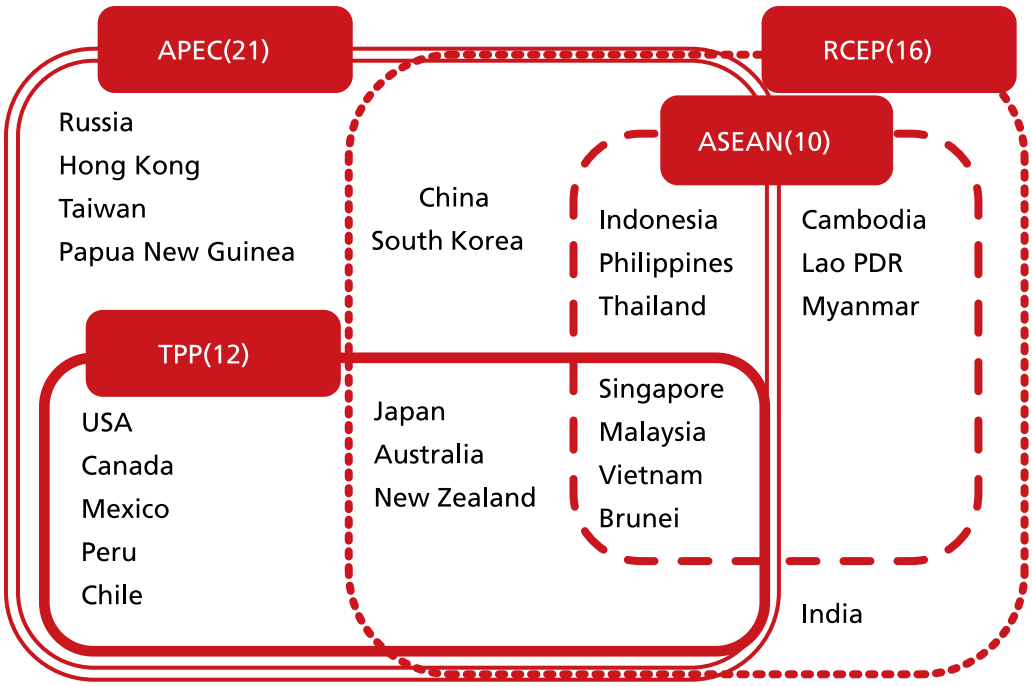
Free trade agreements (FTAs) between economies reduce and in most cases, completely eliminate import tariffs. This is arguably the most important factor in the decision to move production and supplier bases to new countries, even more so than the above-mentioned cost reductions and product diversifications. Trade agreements have been and will continue to be the key determinant shaping the landscape of the global textile and garment manufacturing supplier base.

Consider the various reshuffles that brands have undertaken to shift their product sourcing to better take advantage of favourable duty arrangements following the Multi-

Fibre Arrangement (MFA) and the various recent FTAs. Such manoeuvres make perfect financial/fiscal sense, as savings on garment prices can range from about 10% to over 30% for certain products, far exceeding any labour cost reductions.

The failure of the World Trade Organization (WTO) to lead large-scale agreements in the past ten years has prompted economies to seek ad hoc bilateral or multilateral agreements with competing and/or complementary interests. Asia Pacific is a particularly fruitful region for such arrangements, a trend that is unlikely to change anytime soon (Diagram 12). This is good news for economies that can shift their industries and priorities according to ever-changing trade patterns, but a major disadvantage for Taiwan, whose geopolitical situation limits the number of potential trade partners it can engage on a bilateral basis.

Diagram 12 - Regional free trade partnerships



ASEAN = Association of Southeast Asian Nations
RCEP = Regional Comprehensive Economic Partnership
Source: DBS Vickers

Taiwan's special situation with mainland China has generally meant it is left out of many of the discussions, negotiations, and advantages brought on by FTAs. To remedy this, Taiwan and China signed the Economic Cooperation Framework Agreement (ECFA) in 2010; the ECFA not only removes some of the previous disadvantages from a lack of FTAs with China, it also allows Taiwan to compete on fair terms with other economies.

Trans-Pacific Partnership and Other FTAs

China is Taiwan's largest textile export market, accounting for 21.6% of its total value of exports. The US and the European Union, meanwhile, represent 7.7% and 5%, respectively[18].

"The TPP agreement would give Taiwan duty-free access to the US and keep it on a level footing with textile rivals such as South Korea"

China's sizeable market and special ties with Taiwan make the ECFA a very strategic agreement. However, the biggest FTA currently being negotiated is the Trans-Pacific Partnership (TPP), an agreement spearheaded by the US and 11 other Pacific Rim economies (including Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Europe, but excluding China). The TPP countries account for about 40% of global GDP and close to a third of global trade – effectively making it the most significant trade pact conducted outside the WTO framework.

Taiwan expressed interest in joining the TPP in 2014. It is important for Taiwan, as the agreement would give it duty-free access to the US and keep it on a level footing with textile rivals such as South Korea.

Indeed, if concluded as currently planned, the TPP could potentially go beyond just eliminating trade barriers and tariffs among member economies; this "21st century agreement" would also address challenges pertaining to state-owned enterprises, intellectual property, and even privacy. Unsurprisingly, the agreement's breadth and scope – in terms of countries and products – mean consensus is harder to reach. Though the talks have dragged on for years, recent discussions nevertheless suggest that the TPP could soon be ratified.

Aside from the TPP, the other key economic trade deal being put forward in the Asia Pacific region is the Regional Comprehensive Economic Partnership (RCEP), an agreement that includes ten ASEAN economies plus China, Japan, South Korea, India, Australia, and New Zealand. The RCEP is competing with the TPP to establish a regional free trade zone. It is paramount for Taiwan to position itself with either the TPP, the RCEP, or both; failure to do so may jeopardise its ability to compete on an equal footing with economies that are de facto participants in the trade deals.

The recent FTA signed between China and South Korea also poses a significant threat to Taiwan manufacturers. According to the Taiwan Textile Federation, 85% of South Korea's textile products going into China will be granted duty-free status. Both South Korea and Taiwan ship fibres, fabric, and yarns to China and compete in the production of higher-end products. The FTA between China and South Korea puts Taiwan at a

disadvantage[19] as South Korea already has a number of advantageous FTAs with ASEAN, the US, and the European Union[20].

Vietnam, once an emerging player in the simple assembly of textile products, is growing as a key player in, and market for, the global textile supply chain. Many FTAs are mooted or in the works: six multilateral FTAs with ASEAN (Australia/New Zealand, India, South Korea, Japan, Canada, and China), two direct bilateral FTAs (Japan and Chile), and seven regional agreements (TPP, RCEP, ASEAN-EU, Vietnam-EU, Vietnam-South Korea, Vietnam-Eurasian Economic Union, and Vietnam-European Free Trade Association). Taiwanese firms need to prepare for both the opportunities and the threats that will emerge from such strategic positioning.

For now, however, current FTAs require or include fabric forward arrangements, which means much of the current production in ASEAN cannot enjoy duty-free benefits. For the TPP, it is said that the duty-free arrangement will require yarn forward rules, which would require that not only garment, but the fabric and yarn be made in a TPP economy. This has spurred a significant step up in investments in this area, especially for countries such as Vietnam. There is a significant window of opportunity for upstream Taiwanese players to stake a meaningful share within Vietnam's supply chain, as quality upstream materials are Taiwan's traditional strength area.

Taiwanese firms with more financial resources can also address the challenge by setting up garment factories in Vietnam. Smaller operators can partner with other suppliers or downstream partners to establish vertically-integrated supply chains. Finally, potential acquisitions in the Vietnamese market could also be another way to get a head-start in this up-and-coming market. According to *Vietnam Economic News*, Taiwanese businesses invested US$28.4 billion in 2,368 investment projects in Vietnam between 1988 and 2014. Taiwan is Vietnam's fourth largest source of foreign direct investment (FDI), accounting for 11.3% of its total FDI, and Taiwanese firms employ a total of 1.4 million Vietnamese workers[21].

Looking Forward: Where Are the Opportunities?

Consumer demand trends are throwing up interesting opportunities as they are forcing industry changes. Chief among these are the advent of fast fashion, which is fostering greater "Local to Local" purchasing behaviour; as well as growing consumer demand for "athleisure" and other varieties of high-technology products.

1. Fast Fashion and Athleisure

The logic of moving downstream production to more cost-competitive countries is complemented by purchasers' need to quickly respond to market demands and fashion trends. The rise of fast fashion, in the form of brands such as H&M and Zara, is particularly central in prompting a shift toward more integrated production chains. In fact, more than 65% of the orders from international brand names require "Local to Local" purchases[22]. For example, garments produced in Vietnam need to use fabrics purchased in Vietnam, before shipping to target markets.

This "Local to Local" purchasing trend favours bigger fabric suppliers with the financial wherewithal to invest overseas and integrate supply chains. SMEs, meanwhile, have financial constraints that prevent them from doing so. However, the majority of fabric manufacturers in Taiwan are SMEs. It is crucial for them to get the financial support they need to increase their capacity in overseas production bases and meet the global procurement strategies set by major international brands.

"Taiwanese textile manufacturers are ideally positioned to ride on the rising boom of athleisure apparel"

Taiwanese textile manufacturers, strong players in the high-performance fabrics and fibres segment, are ideally positioned to ride on the rising boom of "athleisure" apparel. The convergence of athletic clothing and casual wear has resulted in a phenomenon that apparel professionals call "athleisure", which is fashionable clothing designed to be worn both for exercising and casual social occasions. The idea is that "gym clothes are making their way out of the gym and becoming a larger part of people's everyday wardrobes"[23].

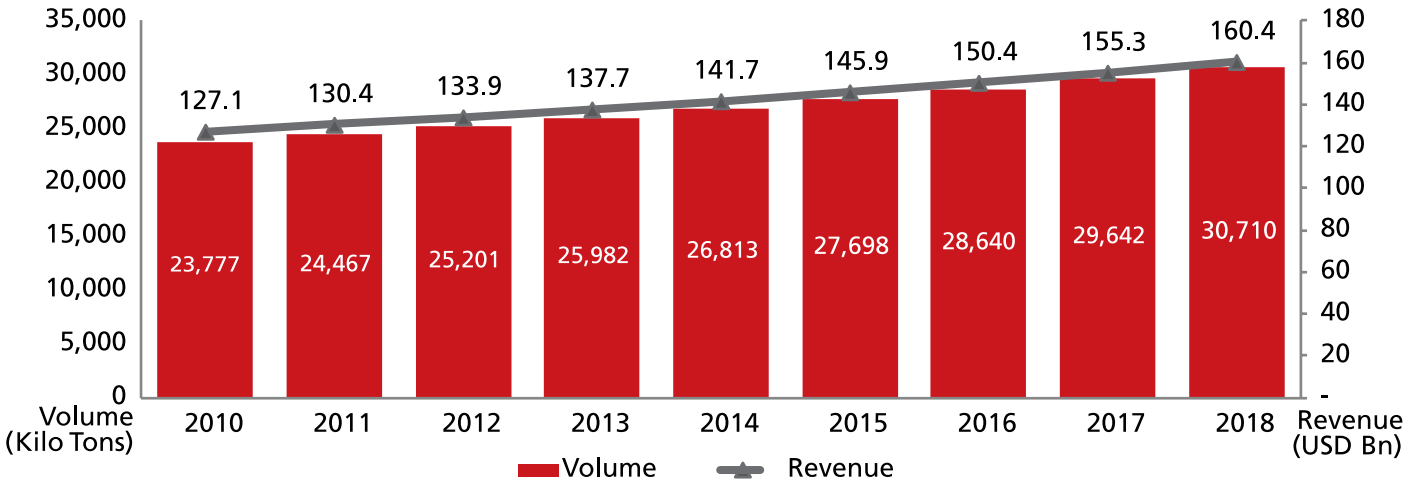
Top athletic brands are thus adjusting their strategies to blend fashionable elements into their sportswear, while lifestyle fashion brands are moving in the opposite direction: creating athletic-inspired but fashionable designs. Companies such as H&M, Uniqlo, Nike, and Under Armour are trying to cash in on the trend through the launch of athleisure product lines. According to reports by the *Wall Street Journal* in 2014, some estimates predict the US athletic apparel market will increase by nearly 50% by 2020[24].

2. Soaring Demand for High-End Functional Apparel

Taiwanese textile makers have focused on high value-added functional textiles and are capable of completing small orders with high diversity. According to Transparency Market Research, by 2018, the global technical textiles market will reach a market value of US$160.38 billion from US$133.93 billion in 2012, indicating a compound annual

growth rate of 3.3%[25]. Given the growing demand in tandem with the US economic recovery, the growth of Taiwanese functional textile makers is expected to remain strong (Diagram 13).

Diagram 13 - Global technical textiles market outlook, 2010-2018



Source: Transparency Market Research (2013)

Additionally, the upcoming 2016 Olympic Games are expected to generate a huge demand for functional textile products. As sponsors and partners, high-profile sportswear companies such as Nike, Under Armour, Lululemon, and Adidas are preparing to associate their brands with the Olympic spirit, an opportunity that Taiwanese functional textile makers must be able to seize.

"The rapidly growing Asian market presents a promising opportunity for Taiwanese firms looking to upgrade or consolidate their market positioning"

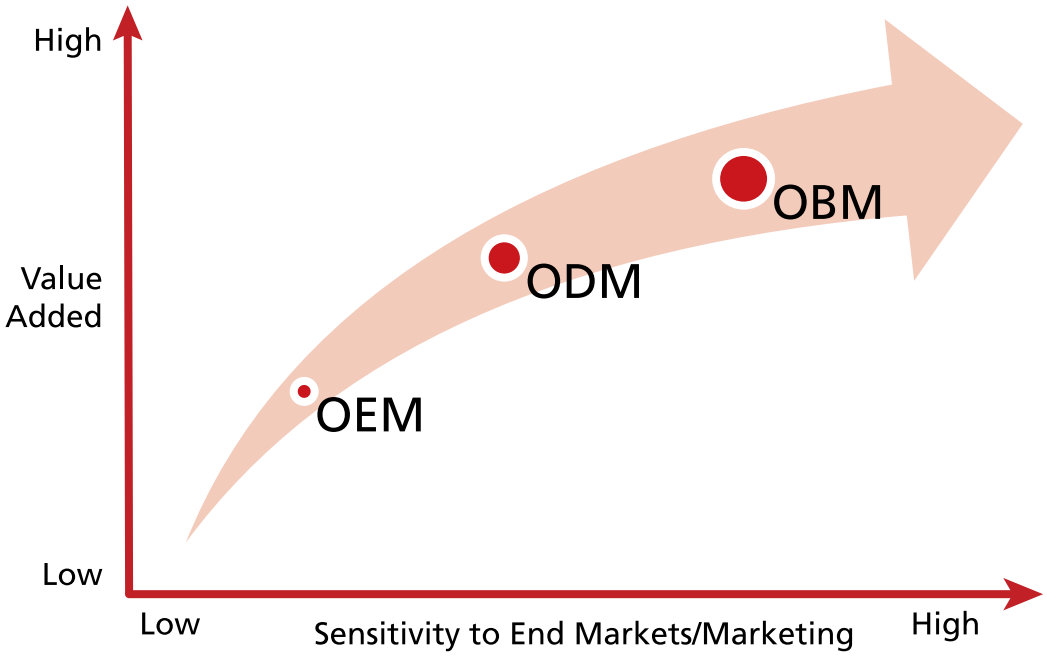
3. Asia's Booming Middle-Class Consumers

The rapidly growing Asian market presents a promising opportunity for Taiwanese firms looking to upgrade or consolidate their market positioning; moving from OEM/ODM to original brand manufacturing (OBM) in the textile supply chain is within reach of companies that manage to tap into the demand from Asia's growing middle class.

Asian markets have become the engine of global economic growth and thus present new opportunities for Taiwanese firms to develop their own brands. However, the Taiwanese textile industry lacks strong global brands that can be leveraged to penetrate massive regional markets in Asia, unlike global apparel brands from the US, Japan, and Europe. Taiwanese companies have positioned themselves as OEM/ODM manufacturers for too long. They have become highly dependent on the name, reputation, and performance of international brands, losing the opportunity to expose their own brands and know-how to the final consumer.

At the moment, if the demand for a particular international brand drops dramatically, so do Taiwanese firms' revenues. This excessive dependence on global brand leaders is a serious business risk. In order to survive in an increasingly competitive global textile industry, Taiwanese textile makers must move away from low-cost OEM manufacturing and toward higher value-added production for home-grown brands (Diagram 14).

Diagram 14 - Transformation within the supply chain



Source: DBS Vickers, compiled from Cheng Kai-Fang, *The Big Future of Taiwan Textile Industries*, Taiwan Textile Research Institute (TTRI)

One important way in which Taiwanese textile players can position themselves as recognisable brands within the current global textile industry is with better technology and higher value-added functional fabrics.

Providing higher value-added products is what Taiwanese manufacturers do best. Ever since its decision to wean itself off natural, cotton-based products, Taiwan has innovated in the areas of functional fabrics and synthetics. Over the years, Taiwanese functional fabrics have competed with South Korean ones, a virtuous cycle that has led to continuous innovation in fibre materials. Chinese players are also quickly moving away from simply copying technologies and designs to developing their own innovations, a trend that increases the urgency for Taiwanese manufacturers to continue to innovate and improve their products.

4. Production Integration

Vertical integration has been spurred by, among other things, the relative shortage of local materials. Even yarn companies are moving downstream while garment-only companies are moving upstream to take advantage of this phenomenon. Many of these investments are made by larger listed companies as many smaller companies do not have the financial resources or the localised knowledge to make the move. For smaller companies with strong technical expertise, partnering with those that possess local knowledge or sizeable capital is a viable option.

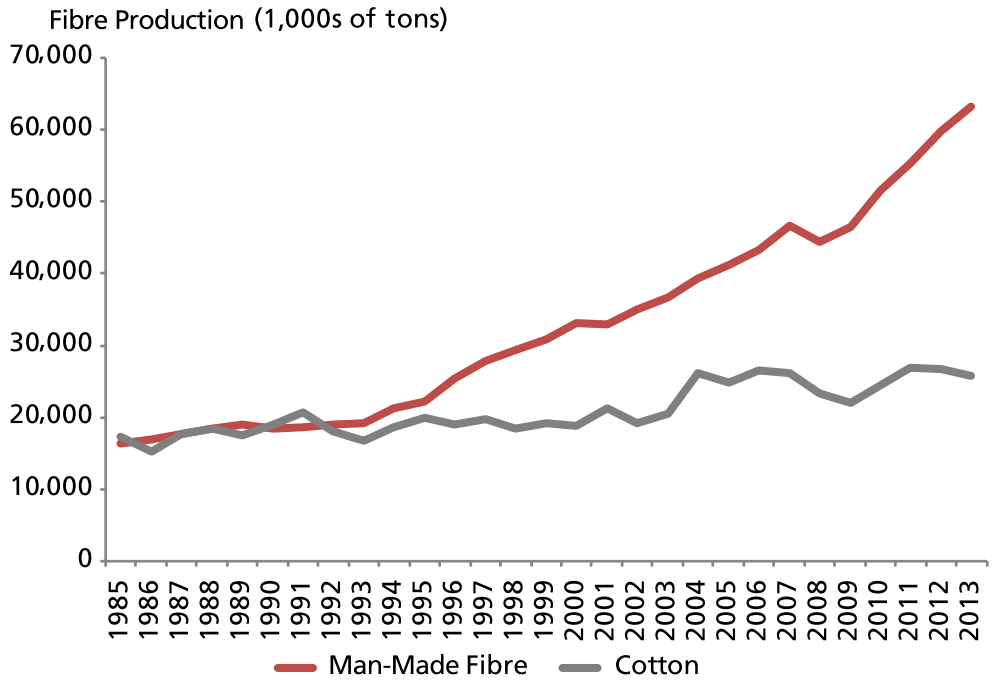
The building of virtual vertically-integrated supply chains would typically involve pulling together both upstream and downstream capabilities and perhaps housing them in a single integrated industrial park. A number of such partnerships already exist in this area; companies from different segments are co-located in order to create a vertically-integrated supply chain that is physically close for each entity.

According to Vietnam's Ministry of Planning and Investment, the number of FDIs into the textile industry amounts to US$12 billion out of the total US$20 billion FDI in 2014[26] . Among listed companies, some of the more prominent names in the industry include Shenzhou International, Pacific Textile, Texhong Textile, Luen Thai, Bros Eastern, Hwafu, Eclat, Makalot, and others. Taiwanese garment players have long been investing in ASEAN, including in knitted fabrics manufacturing, which has higher technical barriers.

5. Growing Demand for Man-Made Fibres

World production of man-made fibres has far exceeded raw cotton production since 1985. Between 1985 and 2013, global production of cotton rose by 48% to 25.7 million tons, while man-made fibre production rose by 287% to 63.1 million tons. Currently, over 70% of fibres are man-made (Diagram 15). There is a wide variety of man-made fibres, including polyester, cellulosic, acrylic, and nylon. Invented in the 1940s, polyester is the leading man-made fibre, comprising 73.4% of the market share. Polyester, made from the same PET (polyethylene terephthalate) used in plastic bottles, is regarded as versatile, cheap, and durable.

Diagram 15 - Global fibre production



Source: Yarns and Fibres (YNFX), *World Fibre Report*, 2013.

Since man-made fibre is a substitute for cotton fibre, the two different fibres generally have a strong price correlation with each other. However, government intervention in the cotton market through price support and subsidies has caused a divergence in prices. Ever since 2008, polyester prices have hovered around half the price of international cotton prices, and a quarter of Chinese cotton prices, which are aggressively supported by the Chinese government. Additionally, the raw materials for polyester production are oil-based products such as PTA (purified terephthalic acid), MEG (mono ethylene glycol), and DMT (Dimethyl terephthalate). Hence, 50% of the cost of polyester comes from oil prices, and the dramatic fall of oil prices in the second half of 2014 has contributed to a 20-25% decrease in polyester fibre prices[27].

Polyester production is concentrated in Asia, with China accounting for 69% of production. PCI Fibres, a fibre consultancy firm, has forecast polyester production to rise from 46.1 million tons to 70 million tons by 2030, dominating both cotton and other man-made fibres[28]. Apparel companies are increasingly mixing man-made fibres into their products to cut costs after the 2008 financial crisis. In the year ending May 2015, apparel created with man-made fibre comprised 51.9% of imports to the US.

The rising popularity of man-made fibres can be traced to their practical advantages over cotton. The two main trends in fibres are "functional" fabrics and "eco" fabrics. Functional fabrics focus on ergonomics, safety, and fashion while eco-fibres are focused on low-pollution and recyclability. Functional fabrics have made their way into a wide range of apparel; sports teams who require moisture-wicking athletic gear, yoga pants that need the elasticity of nylon and spandex, firefighters who need fire-resistant materials, etc.

Another developing trend is eco fabrics as a part of the "circular economy"'. The circular economy emphasises the eradication of waste across the whole supply chain. In the textiles industry, the fact that polyester is derived from PET means that recycled water bottles can be a source of raw materials. Additionally, used clothing can be shredded and turned back into yarns. The advantage of man-made fibre is that there is little difference in using reprocessed and freshly-made polyester.

Conclusion

Overall, the textile industry is both robust and dynamic and continues to evolve at breakneck speed. Competition is fierce and there is no place for complacency. The industry leader today can easily become the laggard of tomorrow.

Finding favourable environments and expanding overseas in optimal conditions remain challenging yet necessary strategies to lower costs and take advantage of duty-free benefits. Beyond geographic expansion, differentiating products via higher value-added products and feature-driven functional fabrics are also vital in ensuring the long-term sustainability of the industry.

The next few decades will be pivotal for Taiwan's textiles industry, as it will have to focus on developing R&D and technological development while shifting production away to lower-wage countries. If done properly, such a strategy could be a boon for man-made fibres, which require innovation and technology, a comparative advantage Taiwan already possesses. Innovations such as nano-textiles, water-proof and water-repellent textiles, flame resistance, moisture absorption, and far infrared are some past achievements that have led the Taiwan Textile Federation to push for Taiwan to transition away from "Made in Taiwan" to "Designed in Taiwan" and "Branded in Taiwan".

Product excellence and forward-thinking processes are deeply-rooted values of the Taiwanese textile industry. But in an ever-changing and fast-adapting landscape, such values are no longer enough. In order to truly transform current challenges into future opportunities, Taiwanese players will have to stitch together global strategies that respond to equally globalised markets in a way that genuinely sets them apart.

To truly transform current challenges into future opportunities, Taiwanese players will have to stitch together global strategies that respond to equally globalised markets

APPENDIX

Diagram 8b - Taiwan textile supply chain & names of its listed companies

Supply Chain Segment	Listed Company Name (TWSE & TPEx)
UPSTREAM	
Petrochemicals *Ethylene Glycol (EG)* *Caprolactam (CPL)* *Acrylonitrile (AN)* *Pure Terephthalic Acid (PTA)*	Formosa Plastics Corp. (1301) Nan Ya Plastics Corp. (1303) Formosa Chemicals & Fibre Corp. (1326) Far Eastern New Century (1402)
MIDSTREAM	
Synthetic Fibre *Nylon* *Rayon* *Polyester*	Nan Ya Plastics Corp. (1303) Formosa Chemicals & Fibre Corp. (1326) Far Eastern New Century (1402) Hung Chou (1413) Tong-Hwa Synthetic Fibre (1418) Tainan Spinning (1440) Lealea Group (1444) Lipeng (1447) Hong Yi Fibre (1452) Zig Sheng (1455) I-Hwa (1456) Yi Jinn (1457) Lan Fa Textile (1459) De Licacy (1464) Wisher (1465) Acelon (1466) Chang-Ho (1468) Triocean(1472) Fu Ta (4402) Hsinsin (4406) Chainlon (4427)
Natural Fibre *Cotton* *Wool*	Reward Wool (1423) Chuwa Wool (1439) I-Hwa (1456)
Chemicals	Chang-Ho (1468) Cathay Chemical (1713) Chung Hwa Chemical (1727) Jintex (1787) Coremax (4739)

Supply Chain Segment	Listed Company Name (TWSE & TPEx)
MIDSTREAM	
Spinning	Formosa Chemicals & Fibre Corp. (1326) Hung Chou (1413) Tong Ho (1414) Formosa Taffeta (1434) Tainan Spinning (1440) Tah Tong (1441) Lily (1443) Universal (1445) Lipeng (1447) Chia Her (1449) Nien Hsing (1451) Ta Jiang (1453) Taiwan Taffeta (1454) I-Hwa (1456) Yi Jinn (1457) Everest (1460) De Licacy (1464) Lilon Tex (1469) Tainan Enterprise (1473) Toung Loong (4401) Metaltech (4419) Chainlon (4427)
Weaving	Formosa Chemicals & Fibre Corp. (1326) Shinkong Textile (1419) Formosa Taffeta (1434) Universal (1445) Hong Ho (1446) Lipeng (1447) Chia Her (1449) Nien Hsing (1451) Taiwan Taffeta (1454) I-Hwa (1456) Everest (1460) De Licacy (1464) Wisher (1465) Chang-Ho (1468) Triocean(1472) Honm Yue (1474) Eclat (1476) Li-Cheng (4426) Shinih (9944) Freepowergroup (4413) Metaltech (4419) Kwang Ming Silk Mill (4420) Singtex (4433) Mytrex (4431)

Supply Chain Segment	Listed Company Name (TWSE & TPEx)
DOWNSTREAM	
Dyeing & Finishing	Nan Ya Plastics Corp. (1303) Formosa Chemicals & Fibre Corp. (1326) Far Eastern New Century (1402) Nang Yang Dyeing and Finishing (1410) Shinkong Textile (1419) Taroko (1432) Formosa Taffeta (1434) Lipeng (1447) Chia Her (1449) Nien Hsing (1451) Yi Jinn (1457) Everest (1460) Chyang Sheng Dyeing and Finishing (1463) De Licacy (1464) Texray (1467) Chang-Ho (1468) Evertex (1470) Triocean (1472) Sumagh (1475) Toung Loong (4401) Jetbest (4741)"
Garment-Making & Others	Tah Hsin (1315) Far Eastern New Century (1402) Kwong Fong (1416) Carnival (1417) Hong Ho (1446) Nien Hsing (1451) Taiwan Taffeta (1454) Everest (1460) Texray (1467) Chang-Ho (1468) Triocean(1472) Eclat (1476) Makalot (1477) Roo Hsin (4414) Nan Liu (6504) Shinih (9944) Topbi (2929F) Paiho (8404F) Jinli (8429F) King Chou Marine Technology (4417) Gfun (4429) Hackers (4432) Singtex (4433) Shuang Bang (6505) Kwong Lung (8916)"

Source: Taiwan Value Chain Information Platform, http://ic.tpex.org.tw

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