

TAIWANESE-CHINESE INTERCONNECTIONS IN GLOBAL VALUE CHAINS¹

János, Vándor PhD. College Professor, Budapest Business School, University of Applied Sciences, Faculty of International Management and Business, Department of International Relations

Abstract

China and Taiwan are inextricably linked together. After some decades of total refusal to deal with the ‘other party’ the Mainland and the island started to collaborate in the economic field. During the last three decades rather strong, mutually beneficial cooperation has been established. Nevertheless, in the course of time it became clear that these relations could not be considered the cooperation of equal parties: Taiwan turned out to be the ‘minor partner’ whose future is significantly connected to the conformation of these ties.

China has not only become the most important trading partner of Taiwan but supplementing the traditional exchange of goods the parties established a very complex system of cooperation that extends from foreign trade to the relocation of production and services, to the mutual utilization of FDI, and to the joint participation in the most sophisticated international fragmentation of product-creation, namely the joint operation of global value chains (GVCs). Avoiding an introduction into the general GVCs issues and studies,² this paper explores the cooperation and the imbalanced importance of such collaboration over the parties – mainly from Taiwanese point of view³. It describes the major elements of Chinese-Taiwanese GVCs ties and the basic components.

Keywords: global value chains, trade, external relations, technology

¹ This paper is about a subject that is economic in nature. Though concerning China-Taiwan relations it is very difficult to avoid touching sensitive issues but the Author makes great efforts to escape such traps. The views expressed here are those of the Author and in no way should be considered as those of the Publisher.

² A separate comprehensive paper of the Author (Vándor 2018-a) deals with the economic and political interpretation of GVCs with special regard to Taiwan.

³ The China-GVCs question is a unique issue in its own right. It requires wider research and further studies, and also space that is not available here. References to the general Chinese situation will be made only as much as it is needed for the understanding of the GVCs element in the Taiwanese context.

1. Taiwanese-Chinese Interconnections in Global Value Chains

With the advent of human development economies have started to be bound together not only by trade but also by production. By the 1980s radical changes occurred in the fragmentation of international labor and the earlier practices of cooperation: partners started to divide the tasks related to the production of goods and related services. This new phenomenon labeled as Global Value Chains (or Global Supply Chains, abbreviated as GVCs) is based on the notion that in tough international competition actors must find the cheapest sources for the production of component parts, assembly and services related to certain goods. In this form of product creation and marketing the different actors and production 'phases' are so inherently interlinked that they cannot be separated from one another, just as the parties involved cannot be easily dissociated.⁴

In connection with GVCs, it must be noted that this unprecedented fragmentation of production phases across borders were the direct consequences of technological and technical development. That also implies that GVC cooperation is usually based on an above-the-average technological basis, involves sophisticated technological and production elements, substantial capital, etc. That also explains why the initiators of such cooperation expect a higher level of ability, and better-quality performances from partners to contribute to the project. Generally, it is a sign of recognition but also a responsibility to be incorporated into a GVC. GVCs strive for – and usually improve – the profitability of project participants, but there are also risks that should not be disregarded. (Myers et al 2007, p. 39)⁵ The associated hazards underline the notion that the operation of a GVC is more complex than 'simply' the realization of external trade.

⁴ The 'chain' itself spans from the emergence of an idea, then the related research, design, etc. to be followed by production, sales then any follow-up measures and includes all the technical, financial, administrative etc. components that are required by the creation of and add value to the 'product'. (Gerrefi - Fernandez-Stark 2014, p. 8)

⁵ It is imperative for actors to explore the internal and international conditions and environment within which they must operate. There is a long list of potential risks that includes the political, economic and social-cultural factors related to target-partners. Such factors as the business environment, the foreign trade policy of the partner company's government, the technological maturity of the partners, the availability of trained manpower, etc. or on the other hand, the political and social stability of the partner's government, its economic policy, etc. are just a couple of sources that might result in risks. (See also: Kildow 2011, Chapter 5)

Experiences confirm that gains are several times higher than the costs of risks. At the same time, it should be noted that participation in GVCs does not benefit all the actors on an equal basis. In general the more developed firms, actually the lead companies take advantage of their technological and financial position and let the partners do the less valuable tasks. However, this should not be considered as a 'classic way' of exploitation. First, not states or governments but enterprises are directly involved in GVCs and the real basis of cooperation is determined by economic and not by political considerations (by profitability for the parties concerned). Second, though there might be economic pressure on the weaker partner to accept the conditions set by the stronger partner(s) but still the weaker ones are not defenseless: due to the complex nature of GVCs it is not so simple to replace (or find) technologically and production-wise reliable partners. In many respects, the parties are jointly interdependent.

GVC-cooperation is more advanced in East and Southeast Asia than in other parts of the world. This can be attributed, partially, to the fact that Japan was one of the first non-European economic powers that (together with the USA) initiated the relocation of production facilities and the external assembling of products but it was also this country that laid the foundations of multinational fragmentation of production and established region-wide networks of collaboration. First South Korea, Taiwan, Singapore, and later the countries of Southeast Asia have been drawn into these webs and created networks addressed as GVCs. Examining GVCs, it can be found that today still the majority of lead firms originate from developed (American, European and Japanese) backgrounds but the newly developed, so called emerging market actors play more and more important roles. An in this sense the East and Southeast Asian companies, as well as Chinese enterprises take the lead. The People's Republic of China (PRC) plays a very special role in this process.

Because of the very special nature of Chinese-Taiwanese relationships and the peculiar participation of Taiwanese firms in the emergence of the Mainland the GVC-question related to these two actors deserve some exploration.⁶ This

⁶ The subject of Global Value Chains is much wider than has been summed up above. Many additional issues (the basic characteristics of GVCs, the measuring of participation in GVCs, the question of value-added ratio, etc.) deserve further investigation. Just as the relations, including the economic and trade ties between these two entities are, again much more complex than reflected by the subject of GVC-collaboration. Nevertheless, in this study attention will be focused on the Chinese-Taiwanese relations and any supplementary issue will be dealt with only to the extent required by the clarification of the central topic of the paper.

study is dedicated to this subject – basically through the assessment of the situation from the perspective of the Taiwanese economy.

2. Taiwan's place within the GVC-network systems

The origin of the participation of Taiwanese actors in GVCs can be traced back to the 1970s-1980s when actually Japan (re-)incorporated East and Southeast Asia into its sphere of economic interests, when it gave up or shared with South Korea, Taiwan, and some southeastern partners the less profitable industries (like textile) and applied a deeper fragmentation of production (sharing of production phases or the full transfer of production to other actors). Tokyo's endeavor met favorable responses from Taipei that reacted relatively early to globalization, introduced liberal economic policies and started to invest heavily in science, technology and R&D. Having acquired conditions for producing top quality goods at the highest technological level, it became a semi-first class developed entity and positioned itself in-between the top echelon and the less developed areas.

At the onset of GVC-proliferation Taiwanese conditions were already ripe, and the local private and public institutions and figures were ready to take advantage of the position of Taiwan⁷ and they succeeded in becoming one of the most active stakeholders of GVCs. According to the OECD database the island distinguished itself much more than the other East Asian partners and was listed with the highest level of GVC participation. (Abe, 2015, p. 6) (The so called 'participation index' in GVCs put Taiwan in the first place with a percentage rate of 76-77% in 2008. /WTR, 2014, p. 84-89/) This position indicated that Taiwan gained a lot through this presence, but – at the same time – it showed that the island has been inherently connected to international cooperation, namely it has been exposed to risks.

As far as the position of Taiwan and its companies within the GVC-networks is concerned, it can be stated that the governments tried to form lucrative national economic policies and to create a business-friendly environment, including administrative and financial conditions, and a secure political climate, etc. From the side of the enterprises the question proved to be different. It is clear how important it is to identify the best position within GVCs. According to World Trade Report (WTR) the island succeeded in

⁷Concerning the development trends of Taiwan, and especially the technological elements that played determining role in the processes, the Author wrote two further studies where references are made not only to the factors that led to the unique transformation of Taiwan but also to its incorporation into the GVC-networks. See Vándor 2017 and Vándor 2018.

attaining ODM-position in computers, bicycles, sporting equipment and shoes (Ibid, 106) but these are the rare examples for obtaining lead firm position. In many respects the governments and the companies of the island could have become real rivals to the leading competitors. They proved capable not only of attaining the ability to produce or assemble sophisticated products but also in creating the local human and industrial conditions needed for further development. It is a serious query that requires explanation why the Taiwanese – unlike the South Koreans – could not succeed in becoming determining actors in many areas where they have attested their excellence. While – in general – giving up the determination to attain the lead position the Taiwanese have proved to be excellent contract manufacturers. In this capacity they served very well the leading partners and frequently connected these major companies to lower category contributors. There are a few exceptions who could make their own brand (become an OBM = Original Brand Manufacturer) leaving behind the OEM and/or ODM status⁸ but most remained in the inferior status as contract manufacturers.^{9,10} Contract manufacturing should not be underestimated as – naturally depending on the goods and services concerned – such a status also required continuous development, involvement in R&D, improvement of production, etc. and did

⁸ OEM = Original Equipment Manufacturer, ODM = Original Design Manufacturer, terms depicting the role of individual actors in the GVCs processes.

⁹ Besides ACER, HTC some other Taiwanese companies also achieved very significant position in the trade of their own products (e.g. MediaTek, Foxconn, etc.), some even tried to join the team of lead firms but very few succeeded in this endeavor.

¹⁰ Looking for an explanation Hon Hai Precision Industry (better known as Foxconn) might provide an answer. Though it cannot be generalized the attitude of the company sheds some lights on the Taiwanese firms' positions. Foxconn is one of the largest contract manufacturers of the global electronics market. In 2018 it has some 800 thousands employees though earlier the figure was around 1.3 million (Liemt 2016, p. 49.) Within this work-force the number of laborers involved in R&D is counted by thousands. It has research centers at home, in Japan, China, and the USA. /Ibid./ It is listed as the 24th on the Fortune 500 list. /<http://fortune.com/global500/hon-hai-precision-industry/>) Though it is the 'designer' (actually the creator, the patent holder) of many original intermediate products, it has not attempted to create its own brand of finished goods and thus competing with 'established' partners. Having a very strong position among suppliers it is 'satisfied' with its bargaining power and a somewhat lower profit margin in return of closer cooperation and more reliable partnership. In spite of its relatively stable position, Foxconn exerts efforts to keep pace with demand changes and diversify the product scale. Automation is one of the prime targets. It also looks for new markets, and a central element in its strategy is the relocation of production if the profitability needs or other factors demand that. (Ibid.) (The American investment of Foxconn has been already mentioned and it is worth mentioning that the firm has subsidiaries in the Czech Republic but also Hungary.)

not even prevent companies achieving global influence and global or regional expansion.

One of the explanations for the relative reluctance of Taiwanese enterprises to venture into lead firm positions is the decisive role of SMEs played in the island's economy. SMEs have always been treated with special caution in Taiwan.¹¹ In general, their participation in international business is essential for the island's economy and not least due to their relatively early participation in external cooperation and wide international contacts. Their experiences have been gained mainly in outsourcing and FDI-implementation (mainly in China and Southeast Asia) they have already established proper contacts with external GVC-partners and joined such networks. However, they may face difficulties – some objective and some 'self-inflicted' weaknesses – in the future. Many of the Taiwanese SMEs have not acquired proper experience in international cooperation and – enjoying the security umbrella of the administration – they cannot be easily convinced of the need of 'learning'. Namely, one of the most dangerous risks they face is their own sluggishness to make adjustments to changing conditions. Additional shortcomings can be connected to labor situation and problems in the education sector. Furthermore, the intention of leading firms (frequently multinational companies who take the lead role) to find fewer but bigger, more reliable partners (suppliers) also constitutes a risk for Taiwanese companies. (Gereffi-Fernandez-Stark 2016, p. 32) In addition, and that might be the biggest risk of all, the Taiwanese position is determined by the impact of Chinese policies not simply on foreign firms but especially in connection to Taiwan.

3. Value chains and the China-Taiwan connections

One of the most distinctive features that differentiates Taiwan from all the other international actors is its unbreakable interconnectedness to China.¹² China-Taiwan relations are all-encompassing and there is a – direct or indirect – interconnectedness between different elements. In this respect it must be emphasized that the question of GVCs cannot be separated from many other elements determining the economic (and political, financial, social, etc.)¹³ ties

¹¹ On this question see the shorter paper of this Author: Vándor 2018b.

¹² This question has been explored by so many scholars that there is no need to support this remark. Therefore, in this paper only those factors and elements will be analyzed that can be related to the GVC-issue and/or assist the understanding of the substance of this bilateral relationship.

¹³ It is not a question that political and/or economic elements are very closely interrelated with social, cultural, etc. factors. In the China-Taiwan case it can be very easily proved that the

of the parties. The cross-straits economic and trade links are again so inclusive that in order to get a clear picture an observer should use holistic approaches. Still, the GVCs-question, as a relatively new phenomenon in international economic collaboration has certain unique features that make it worthwhile to separate it from the other issues and devote special time to its exploration.

Taiwan, as an 'early bird' in Chinese development did not only bring a large amount of money (FDI), knowledge and expertise to the PRC and was among the first to establish assembly and production facilities on the Mainland but also assisted China in joining GVCs in which its ('islander') companies also participated. Chinese-Taiwanese bilateral trade had been mutually beneficial for long and this compelled some to presume that – inadvertently – Beijing will continuously strengthen the position of the Taiwanese enterprises and the Taiwanese presence in China can promote the islanders' advancement in gaining better international positions.¹⁴ At the beginning this perception seemed to be correct as – looking back to the history of China-Taiwan GVCs ties – the parties together have become integral parts of global, but first and foremost USA and Japan-centered GVC-networks.¹⁵ 'Traditionally' these external partners took the role of the original masterminds, Taiwan made the second level contributor (supplier of intermediate parts) and China was the final assembler. Within this process the industrialized countries harvested the highest profit, Taiwan – thanks to its higher level of value-added – still gained relatively well from the process and the Mainland, contributing – in principle – the least value and earned less than the others. Thus in the first phase of

presence and activities of tens of thousands of Taiwanese enterprises, 1-1.5-2 million Taiwanese businessmen and laborers on the Mainland and the social (cultural, educational, ethnical, etc.) consequences of these state of affairs greatly affect the parties, naturally more the smaller one, namely Taiwan.

¹⁴ For instance, Chuang writes that 'Taiwanese contract manufacturers have found it difficult to become OBMs (Original Brand Manufacturers – VJ.), ... however, the rise of the Chinese market may create a window of opportunity for them to overcome these barriers. They have been doing so by taking advantage of the large size of the low and medium end segments and the strong pre-existing capabilities built as specialized manufacturers.' (Chuang 2016, 214) (Emphasis and italics are added by VJ.) As can be seen in the study, the development of GVC-networks involving Taiwanese enterprises did not justify this presumption.

¹⁵ Actually, Taiwan started its more complex collaboration with the developed countries much earlier but the emergence of the GVCs and their acknowledgement as such, coincided with the opening up of the PRC and the start of China-Taiwan direct and extended cooperation. It is known that even earlier there were indirect contacts between the PRC and the island mainly through Hong Kong and Southeast Asia (first of all through the overseas Chinese in the region) but the lack of direct contacts did not facilitate the expansion of clearly GVC-type cooperation.

cooperation this idea worked and Taiwan's (more precisely its companies') conditions in China had a positive spillover effect on the global – technological and GVC-oriented – standing of the island's enterprises. But there have been significant changes and the Chinese positions have been seriously upgraded. True, in this triangular (PRC-Taiwan-third party) cooperation the PRC and its firms still – usually – constitute the minor partners but they are less and less inclined to play such roles. They either prefer to create their own local (internal) collaboration networks, or increase their role and strengthen their positions within GVCs. This is clearly reflected by the 'Made in China 2025' economic and technological policy of China that envisages – in not so long-term – the 'nationalization' and 'domestication' of economic activities, which Taiwanese (but also other foreign) firms do not appear capable of preventing.¹⁶

Before interpreting the China-Taiwan GVCs question it is necessary to have a look at the bilateral foreign trade figures. From the sources available it can be seen that China has truly become the most important partner of the island, and in addition, the Mainland is the determinant source of the trade surplus (and in a sense the guarantor of the island's financial and economic stability). Though direct trade links were established only in 1985 by 2002 the PRC became the 1st export partner of Taipei.¹⁷ And the trend set by the late 20th century continued in the new millennium. In the very early years of the century China and Hong Kong represented 26-27% of the island's export and for today they gradually reached some 40%. On the import side they rose from 7% to 20% (See Tables 1, 2, 3, and 4).

It can be easily confirmed that there has been always a huge imbalance in these ties in favor of Taiwan. (Table 1) Data also affirmed that Hong Kong has never ceased to remain an important contact point between China and Taiwan, but lately the trend has shown a major shift towards direct PRC-Taiwan contacts.¹⁸ It is worth mentioning that though on the import side the ratio of

¹⁶ The international economic situation seems to be so volatile that it would be irresponsibility to come forward with a resolute prediction. The US-Chinese trade war, other international economic (and political) factors, and not least the state of the domestic economy of the PRC but also the Taiwanese economic and political events raise too many questions to allow the making of a clear and unassailable position.

¹⁷ It is a characteristic feature of China-Taiwan economic relations that between 1981 and 2002 bilateral trade increased 134 fold. (Tung 2004, p. 2)

¹⁸ Taiwan-Hong Kong relations make, again, a very unique factor in the external relations of the island. It cannot be separated from such issues as the East Asian development miracles, the question of the overseas Chinese (in historic perspective), etc., but first and foremost from

Hong Kong fell to one third (from 1.7% to 0.6%) but because of its relatively low value this decline should not be overestimated. The former colony has actually never been an outstanding mediator of Taiwanese imports.¹⁹ The weight of Hong Kong on the export side has been reduced by about 40% in its proportion (Table 1) but in gross value it grew though this increase cannot be regarded exceptional either.

Over some 15 years the Taiwanese export to (but mainly through) the city grew by 33% but in the meantime the direct exports of the island to the Mainland increased by 14.7-fold. (Table 4.) Considering the role and place of the former colony in East Asia, in general, and in the China-Taiwan economic relations, in particular, it does not make sense to separate Hong Kong and China and the two actors combined are of very great relevance. Their combined aggregate rate of 20% on the Taiwanese import side is not dangerously high (especially if one considers the global market as – in general – a buyers' market). However, close to 40% on the export side, particularly as Taiwan is a relatively small economy, can raise concerns.²⁰

(In examining the Taiwan-Hong Kong trade data an interesting question can be raised: while the Taiwanese import – as indicated – remained at a lower level, the export of the island has increased in absolute terms and its ratio has remained rather high. (13.7%, the second highest proportion. Table 4.) It can be understood that in the early years the delivery of products and transferring the majority of these goods via Hong Kong to the PRC was a kind of political precaution. But why has this international trade hub preserved its central place in bilateral – especially export-oriented – commercial ties? The question is valid if one regards the fact that companies involved in many-sided cooperation, like the GVCs are, prefer to reduce the number of 'idling' components and phases that do not create real value and reduce efficiency. In other words, in GVC networks the position of Hong Kong as an *entrepôt* base could be more a 'liability' than an 'asset'. The answer can be found more in the

the China-Taiwan 'coexistence'. In this short paper, however, the question cannot be explored as deeply as it deserves that.

¹⁹ As can be seen on Table 4 the value of the Taiwanese import from Hong Kong was ranging between US\$ 2.5 (the peak year) and US\$ 1.3 billion (as the lowest level) without indicating a straightforward line of development. The modification of the ratio is attributed to the increase in the general increase of Taiwanese turnover, including imports.

²⁰ Ever since the economic 'rapprochement' all the Taiwanese governments were aware of this issue and tried to keep some distance from the Mainland, actually without success. This question does not constitute a central element in our present study but – when it is required – references will be made in this regard.

political thinking and regulations of the Taiwanese governments than economic considerations.²¹⁾

Table 1. Foreign Trade of Taiwan (Customs Statistics)¹

Period	Value (NT\$ Million)				Value (US\$ million)			
	Total	Exports	Imports	Balance	Total	Exports	Imports	Balance
2001	7,964,018	4,270,700	3,693,318	577,382	236,200	126,612	109,588	17,024
2002	8,670,440	4,692,990	3,977,450	715,540	250,880	135,774	115,116	20,659
2003	9,686,721	5,206,099	4,480,623	725,476	281,593	151,345	130,249	21,096
2004	11,890,747	6,148,896	5,741,852	407,044	355,197	183,643	171,554	12,089
2005	12,385,931	6,427,175	5,958,755	468,420	385,199	199,761	185,438	14,323
2006	14,067,899	7,351,935	6,715,964	635,972	432,346	225,904	206,442	19,462
2007	15,497,420	8,169,680	7,327,740	841,940	471,907	248,792	223,115	25,677
2008	15,764,285	8,099,233	7,665,053	434,180	502,518	258,051	244,467	13,585
2009	12,639,969	6,784,756	5,855,213	929,543	383,260	205,663	177,598	28,065
2010	16,888,144	8,777,894	8,090,249	687,645	534,282	278,008	256,274	21,734
2011	17,654,919	9,194,198	8,460,721	733,478	600,985	312,923	288,062	24,861
2012	17,280,886	9,069,839	8,211,047	858,792	583,733	306,409	277,324	29,085
2013	17,478,564	9,235,715	8,242,848	992,867	589,438	311,428	278,010	33,418
2014	18,208,362	9,683,403	8,524,959	1,158,444	601,942	320,092	281,850	38,242
2015	16,556,704	9,042,128	7,514,576	1,527,553	522,563	285,344	237,219	48,124
2016	16,462,546	9,033,549	7,428,996	1,604,553	510,889	280,321	230,568	49,753

¹ Merchandise exports are given at f.o.b. prices and merchandise imports at c.i.f. prices in this table and the following tables in this section.

Source: The Ministry of Finance, R.O.C. Online database of Ministry of Finance, R.O.C.

NDC 2017 Table II-4, p. 215

²¹ Hong Kong – especially with the neighboring Chinese provinces – constitute one of the foremost business and technological centers of the world and it can invite high tech companies on its own right. In this respect – though collaboration at enterprise level must not be ruled out but – for the Taiwanese the local firms are more competitors than collaborators.

Table 2. Taiwanese Commodity Trade with Major Trading Partners (Exports)

Period	Total	U.S.A	Hong Kong	Japan	Singapore	Germany	Thailand	Mainland China	Malaysia	United Kingdom
Percentage (%)										
2001	100.0	22.2	22.7	10.3	3.3	3.6	1.7	4.0	2.5	2.7
2002	100.0	20.2	24.3	9.1	3.4	2.9	1.8	7.9	2.4	2.2
2003	100.0	17.6	20.5	8.2	3.5	2.8	1.8	15.3	2.1	1.9
2004	100.0	15.7	18.0	7.6	3.7	2.5	1.8	20.0	2.3	1.9
2005	100.0	14.6	17.1	7.6	4.1	2.2	1.9	22.1	2.2	1.6
2006	100.0	14.4	16.7	7.3	4.2	2.2	2.1	23.2	2.2	1.6
2007	100.0	12.9	15.4	6.5	4.3	2.1	2.1	25.3	2.2	1.5
2008	100.0	12.0	12.8	6.9	4.6	2.2	1.9	26.2	2.2	1.4
2009	100.0	11.5	14.5	7.1	4.2	2.3	1.9	26.7	2.0	1.5
2010	100.0	11.4	13.8	6.7	4.4	2.4	1.9	28.0	2.1	1.3
2011	100.0	11.7	13.0	6.1	5.4	2.2	2.0	27.2	2.2	1.5
2012	100.0	10.8	12.6	6.4	6.6	1.9	2.2	27.0	2.2	1.7
2013	100.0	10.5	13.2	6.2	6.3	1.8	2.1	27.0	2.6	1.4
2014	100.0	11.0	13.7	6.3	6.5	1.9	1.9	26.5	2.7	1.3
2015	100.0	12.1	13.7	6.9	6.1	2.1	2.0	25.7	2.5	1.4
2016	100.0	12.0	13.7	7.0	5.8	2.1	2.0	26.4	2.8	1.3

Source: NDC 2017, Tables 11-9f and 11-9g, pp. 226-227 (The data of the two tables were combined by the Author.)

Table 3. Taiwanese Commodity Trade with Major Trading Partners (Imports)

Period	Total	Japan	U.S.A	Germany	Korea Rep. of	Australia	Singapore	Hong Kong	Malaysia	Mainland China
II. Percentage (%)										
2001	100.0	23.8	17.4	3.9	6.2	2.8	3.1	1.7	3.9	5.4
2002	100.0	24.0	16.5	3.9	6.8	2.5	3.1	1.5	3.6	7.0
2003	100.0	25.4	13.7	3.9	6.8	2.1	3.0	1.3	3.7	8.5
2004	100.0	25.8	13.2	3.5	6.9	2.0	2.5	1.2	3.2	9.8
2005	100.0	25.2	11.8	3.4	7.2	2.6	2.7	1.0	2.8	10.9
2006	100.0	22.7	11.5	3.1	7.3	2.6	2.5	0.8	3.0	12.1
2007	100.0	20.9	12.4	3.2	6.8	2.8	2.1	0.7	2.8	12.6
2008	100.0	19.3	11.3	3.2	5.4	3.4	2.0	0.6	2.8	12.9
2009	100.0	20.7	10.8	3.2	5.9	3.4	2.7	0.6	2.6	13.8
2010	100.0	20.6	10.5	3.4	6.3	3.5	3.0	0.6	3.1	14.1
2011	100.0	18.5	9.6	3.4	6.3	3.8	2.8	0.6	3.1	15.3
2012	100.0	17.4	9.3	2.9	5.5	3.4	2.9	0.9	2.9	14.9
2013	100.0	15.7	10.2	3.1	5.8	2.9	3.1	0.6	3.0	15.6
2014	100.0	14.9	10.7	3.4	5.4	2.7	3.0	0.6	3.2	17.5
2015	100.0	16.4	12.3	3.7	5.7	2.9	3.0	0.6	2.8	19.1
2016	100.0	17.6	12.4	3.7	6.4	2.6	3.3	0.6	2.7	19.1

Source: NDC 2017, Tables 11-9h and 11-9i, pp. 228-229 (The data of the two tables were combined by the Author.)

Table 4. Taiwanese Commodity Trade with the Mainland and Hong Kong

Period	Total			Hong Kong			Mainland		
	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
Amount (US\$ million)									
2001	126,612	109,588	+ 17,024	28,789	1,863	+ 26,926	5,021	5,970	- 950
2002	135,774	115,116	+ 20,659	33,049	1,753	+ 31,296	10,600	8,041	+ 2,649
2003	151,345	130,249	+ 21,096	30,982	1,740	+ 29,242	23,210	11,096	+ 12,114
2004	183,643	171,554	+ 12,089	33,068	2,110	+ 30,959	36,723	16,891	+ 19,831
2005	199,761	185,438	+ 14,323	34,220	1,901	+ 32,319	44,056	20,162	+ 23,895
2006	225,904	206,442	+ 19,462	37,669	1,695	+ 35,974	52,377	24,909	+ 27,468
2007	248,792	223,115	+ 25,677	38,274	1,635	+ 36,639	62,928	28,221	+ 34,707
2008	258,051	244,467	+ 13,585	33,055	1,353	+ 31,702	67,516	31,580	+ 35,936
2009	205,663	177,598	+ 28,065	29,797	1,048	+ 28,749	54,843	24,554	+ 30,289
2010	278,008	256,274	+ 21,734	38,270	1,567	+ 36,704	77,950	36,255	+ 41,694
2011	312,923	288,062	+ 24,861	40,726	1,586	+ 39,141	85,244	44,095	+ 41,150
2012	306,409	277,324	+ 29,085	38,495	2,585	+ 35,910	82,666	41,431	+ 41,235
2013	311,428	278,010	+ 33,418	41,183	1,585	+ 39,598	84,122	43,345	+ 40,777
2014	320,092	281,850	+ 38,242	43,795	1,735	+ 42,060	84,738	49,254	+ 35,484
2015	285,344	237,219	+ 48,124	39,130	1,468	+ 37,663	73,410	45,266	+ 28,144
2016	280,321	230,568	+ 49,753	38,398	1,331	+ 37,067	73,879	43,991	+ 29,888

Source for Table 4: The Ministry of Finance, R.O.C. Online database of Ministry of Finance, R.O.C.

Table 3: NDC 2017 Table 11-8, p. 220; Table 4: NDC 2017, Tables 11-9a and 11-9e, pp. 221-225 (Data of tables combined by the Author.)

It is clear that from the 1950s to the 1980s-1990s the major trading partners of Taiwan were the developed countries, however later on a significant reorientation occurred and the East Asian states have come to the fore. And among them China came up to the top. The reorientation of the export and import markets was accompanied by a change in the product structure of foreign trade. Though the island still considered the developed countries as the prime target-group for finished goods, more and more intermediate items (and capital) goods were sent to the emerging actors. (Liu-Shih, 2013). In the early phase of these bilateral ties the composition of Taiwanese export was not totally different. Before the turn of the century the export of the island was

concentrated in four sections: plastic and rubber; textiles; base metals; and machinery, mechanical appliances, electrical parts and accessories (Tung, 2004, p. 2.) These categories by 1998 reached 80% of exports and this ratio has been reserved, but by the passing of time, the weight of the first two sections has decreased (Tung, 2004; Liu-Shih, 2013).

Table 5. Taiwanese Exports by Countries of Destination - Mainland China
Unit: US\$ million

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	67,516	54,843	77,950	85,244	82,666	84,122	84,738	73,410	73,879
Live Animals; Animal Products	67	33	73	170	212	258	222	231	193
Vegetable Products	20	27	38	46	51	77	84	135	139
Animal or Vegetable Fats and Oils and their Cleavage Prod.	11	13	18	22	27	25	15	12	11
Prepared Foodstuffs; Beverages, Spirits and Tobacco Prod.	68	100	138	217	302	472	513	450	450
Mineral Products	291	82	92	95	1,228	1,230	1,612	1,486	1,316
Chemicals	8,345	7,170	10,070	12,094	10,868	11,227	10,568	8,098	7,547
Plastics & Articles Thereof; Rubber & Articles Thereof	6,354	5,984	8,226	8,830	8,622	9,130	8,540	6,963	6,489
Fur and Articles Thereof	253	178	225	208	219	229	303	164	139
Wood and Articles Thereof	29	28	30	35	44	48	55	41	40
Pulp, Paper and Printing Products	362	322	403	418	413	345	346	321	308
Textiles and Textile Articles	2,109	2,061	2,545	2,797	2,551	2,558	2,306	2,057	1,849
Footwear, Headgear, Umbrellas, Artificial Flowers; Etc.	66	66	83	80	76	85	81	71	54
Articles of Stone, Plaster, Cement, Ceramic Products; Etc.	309	322	500	978	1,178	1,006	1,146	966	999
Pearls, Precious Stones, Precious Metals; Etc.	33	28	55	89	92	70	108	136	133
Base Metals and Articles of Base Metal	5,606	4,333	5,363	5,847	5,189	5,012	5,057	4,675	4,511
Machinery & Electrical Equipment	23,929	20,652	30,167	34,499	33,921	35,449	38,338	36,069	39,648
Vehicles, Aircraft, Vessels & Associated Transport Equip.	257	400	862	660	746	1,051	947	1,011	896
Optical, Precision Instruments; Clocks and Watches; Etc.	16,437	11,961	17,687	16,736	16,311	15,140	13,518	9,715	8,431
Others	319	313	455	542	616	709	790	788	736

Source: NDC 2017, Table 11-13e, pp. 242

Table 6. Taiwanese Exports by Countries of Destination – Hong Kong
Unit: US\$ million

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	33,055	29,797	38,270	40,726	38,495	41,183	43,795	39,130	38,398
Live Animals; Animal Products	35	69	72	62	75	78	86	92	79
Vegetable Products	24	26	34	47	50	57	65	67	65
Animal or Vegetable Fats and Oils and their Cleavage Prod.	16	13	15	17	16	20	8	3	2
Prepared Foodstuffs; Beverages, Spirits and Tobacco Prod.	110	119	145	177	203	229	248	228	227
Mineral Products	396	434	1,009	1,349	2,297	3,000	2,390	1,664	611
Chemicals	922	599	799	815	661	705	742	712	652
Plastics & Articles Thereof; Rubber & Articles Thereof	2,892	2,306	3,066	2,758	2,201	1,955	1,781	1,450	1,238
Fur and Articles Thereof	253	179	211	203	207	187	190	166	91
Wood and Articles Thereof	14	10	6	4	4	4	6	3	3
Pulp, Paper and Printing Products	186	152	169	150	153	145	127	117	106
Textiles and Textile Articles	1,747	1,269	1,461	1,468	1,176	1,039	925	855	700
Footwear, Headgear, Umbrellas; Artificial Flowers; Etc.	86	46	53	54	46	40	35	27	25
Articles of Stone, Plaster, Cement; Ceramic Products; Etc.	103	80	173	283	281	311	269	271	214
Pearls, Precious Stones, Precious Metals; Etc.	1,170	1,835	1,979	3,024	1,289	747	1,062	1,350	528
Base Metals and Articles of Base Metal	2,663	1,713	1,884	1,807	1,322	1,161	1,061	800	653
Machinery & Electrical Equipment	19,793	18,843	24,461	25,608	25,927	28,545	31,796	28,569	30,600
Vehicles, Aircraft, Vessels & Associated Transport Equip.	253	336	260	436	277	104	135	232	133
Optical, Precision Instruments; Clocks and Watches; Etc.	1,888	1,396	2,056	2,078	1,962	2,494	2,487	2,157	2,114
Others	504	371	415	386	348	362	383	367	356

Source: NDC 2017, Table 11-13e, pp. 242

Table 7. Taiwanese Imports by Countries of Origin – Mainland China
Unit: US\$ million

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	31,579.7	24,554.4	36,255.2	44,094.8	41,431.4	43,345.5	49,254.4	45,266.0	43,990.8
Chemicals	3,383.2	2,679.9	4,127.9	4,924.8	4,234.0	4,459.1	5,019.5	4,574.5	4,387.1
Textiles & textile articles	784.4	738.9	948.8	1,159.3	1,204.7	1,315.4	1,486.8	1,525.0	1,432.8
Base metals & articles of base metal	4,190.7	1,324.1	2,761.8	4,475.9	3,640.1	4,465.0	5,740.2	4,345.9	4,093.2
Parts of electronic product	3,906.5	4,147.3	6,789.4	6,886.7	7,378.9	7,676.8	9,246.6	8,752.4	9,228.7
Machinery	1,797.7	1,577.6	2,302.1	2,620.4	2,530.2	2,805.1	3,193.9	3,094.1	3,328.6
Electrical machinery products	2,976.4	2,442.9	3,585.4	4,495.0	4,247.9	3,706.5	3,396.3	3,234.3	3,045.5
Information, communication audio-video products	5,639.2	5,014.9	6,920.0	8,635.3	8,099.4	8,670.9	9,386.9	9,199.2	8,637.1
Others	8,901.5	6,628.8	8,819.8	10,897.4	10,096.1	10,246.8	11,784.1	10,540.6	9,837.8

Note: ¹From Jan. 2016, the Compilation of Customs Trade Statistics adopts the United Nations' International Merchandise Trade Statistics (IMTS)

Compilers Manual, 2010. Under IMTS Criteria, all figures are compiled according to the general trade system. The historical data since 2011 have been revised on this table.

² Source: The Ministry of Finance, R.O.C. Online database of Ministry of Finance, R.O.C., NDC 2017, Tables 11-16a / B

Analyzing Table 5 it becomes clear that in textiles, mineral products, etc. decline or at most stagnation can be observed, the greatest developments can be seen in the sphere of machinery and electrical equipment. Considering this element, it should not be forgotten that during this course of time the island has turned from a relatively underdeveloped economy into a high-tech oriented, quasi-developed 'dragon' whose foreign trade clearly demonstrates the transformation of the economy. From the developed countries Taiwan imported not only finished goods but technologies, knowledge, and not least human resources, towards third partners it partially communicated the newly acquired knowledge and the also newly based productions' outcome. Gradually the most important vanguard industries and those that created commodities for export became the driving force of the economy.

The extension of bilateral economic relations was not confined to the traditional exchange of goods but very quickly has been spread to capital investment, the relocation of production facilities and other type of industrial and service cooperation. All these contributed to the dramatic strengthening of bilateral ties.²² The PRC gradually has become the most important partner in trade, in the area of foreign direct investment (FDI) and all the related spheres. It is also an important indicator of this relationship that the government in Taipei, in general, did not promote, instead tried to keep back the private sector from rushing to the Mainland. In other words, the sharp increase in pouring capital into China (and professional labor, knowledge, technology, actually everything that can accompany such moves) could be attributed to Taiwanese companies, mainly small and medium-size enterprises who make up the bulk of Taiwanese companies. These SMEs – but the bigger firms, too – set up joint ventures with local partners, private and public ones, but also others coming from third countries. The significance of the Chinese connection was further underlined by the fact that from zero the ratio of Taiwanese outward FDI rapidly rose to 40-43% by the turn of the

²² The radical changes having occurred in China-Taiwan relations can be proved by many elements. Here this remark is supported by one single fact: in 1991 Taiwan's outward investment in China reached only US\$ 17 million. However, in 1993 the same figure was US\$ 3.2 billion! (Tung, 2004, p. 4).

century, then in mid-2003 51.7% of the cumulative outward Taiwanese FDI was directed to the PRC and later on the ratio still climbed further. (Tung, 2004, p.6) It can be stated that though Taiwan was not the only actor in China – on the contrary, practically all the major economies tried to exploit the ‘gold mine’ opened up by the PRC – but it was one of the first and contributed to the acceleration of Chinese transformation and development. China could have also received similar stimuli from other partners but probably not so quickly, so easily and among so positive conditions.²³

Though reciprocal FDIs cannot be equated as the Taiwanese capital in the PRC is many times higher than the Chinese presence on the island, still it would be a mistake to consider the cross-strait relations (and the GVC-question) only from the side of the Taiwanese investments in China. The attitude of the parties in this respect can shed some lights on their general approach to bilateral relations. Theoretically the presence of PRC capital (both public and private) might have importance as this FDI can a.) link up the two parties ever closer both in positive and negative terms; b.) extend the GVC-relations between the business communities of the parties especially in the fields of high tech industries; c.) facilitate the penetration of the Mainland companies into the (usually sensitive) economic and technology spheres of the island; d.) can mirror the intentions of the two actors and forecast the future. Mutual FDIs could indicate a reciprocal and two-way channel of relations. Facts, however, do not fully support such remarks. The volume of Chinese FDI in Taiwan is far below the level of Taiwanese FDI in China. Since the opening of the Taiwanese market to Chinese investors in 2009 up until 2016 more than 800 projects were approved by the Taipei authorities (Lee, 2017, p. 3) but the amount of Chinese investment up until 2017 only reached an accumulated

²³ By using the adjective ‘positive’ reference is made to the social, cultural, linguistic and not least economic closeness that bound the parties together and assisted the two sides to understand each other.

amount of US\$ 1.7 billion.²⁴ At the same time the Taiwanese investments in 2017 alone amounted to US\$ 9.3 billion.²⁵

The ratio of Chinese FDI in Taiwan constitutes a very small portion in bilateral commercial ties. However, regarding Chinese participation in GVC-networks on the island – though it cannot be ruled out totally but considering the general conditions of the two sides – it is difficult to presume that this relatively limited amount of FDI can be decisively connected to value chain networks.²⁶ Neither the number of projects nor the value concerned indicate that – at present – the Taiwanese should be afraid of the widespread penetration of Chinese companies into the technologically vanguard industries of Taiwan. This should not be interpreted as if the mainland firms were not interested in gaining access to local high-tech

²⁴ The Author's calculations are based on the data published by the Investment Commission of the Ministry of Economic Affairs of the Republic of China. Note: the figure mentioned does not contain the data for the early period of 2018. (Table 8)

It should not be forgotten, however, that in the earlier decades of Chinese-Taiwanese relationship significant role was played by the overseas (mainly Southeast Asian) Chinese who channeled capital both to the Mainland but also to the island either directly or indirectly. Thus exact figures cannot be easily obtained. But since the authorization of capital movements from Taiwan such backchannel investments became less meaningful.

²⁵ As can be seen from Table 8, the figure for 2017 was the second lowest in this decade. At the same time, for the last three years a declining trend can be observed showing that the political relations between China and Taiwan have their impact on this situation.

²⁶ In the course of this research no information or data could be collected that proved that Mainland companies have taken the lead in local GVC-networking.

Table 8. Outward and (from the PRC) Inward Foreign Investments of Taiwan (Amount: US\$ 1,000)

Year	Outward investment ¹	Overseas Chinese and Foreign Investment ²	Investment From Mainland China ³	Investment to Mainland China ⁴
1952-1979*	59 810,00	2 282 915,00		
1980-1990*	3 017 251,00	10 999 180,00		
1991	1 656 230,738	1 778 419,00		174 158,00
1992	887 259,00	1 461 374,00		246 992,00
1993	1 661 045,90	1 213 476,00		3 168 411,00
1994	1 616 844,00	1 630 717,00		962 209,00
1995	1 356 878,00	2 925 340,00		1 092 713,00
1996	2 165 404,00	2 460 836,00		1 229 241,00
1997	2 893 826,00	4 266 629,00		4 334 313,00
1998	3 296 302,00	3 738 758,00		2 034 621,00
1999	3 269 013,00	4 231 404,00		1 252 780,00
2000	5 077 062,00	7 607 755,02		2 607 142,00
2001	4 391 654,00	5 128 517,885		2 784 147,00
2002	3 370 046,00	3 271 749,123		6 723 058,00
2003	3 968 588,00	3 575 673,716		7 698 784,00
2004	3 382 022,00	3 952 147,878		6 940 663,00
2005	2 447 449,00	4 228 067,886		6 006 953,00
2006	4 315 426,00	13 969 247,048		7 642 335,414
2007	6 469 977,989	15 361 172,625		9 970 545,292
2008	4 466 491,363	8 237 114,471		10 691 389,81
2009	3 005 553,603	4 797 891,219	37 486,00	7 142 593,288
2010	2 823 451,242	3 811 565,409	94 345,00	14 617 872,247
2011	3 696 827,042	4 955 434,76	51 625,00	14 376 624,484
2012	8 098 641,182	5 558 981,459	331 583,00	12 792 077,116
2013	5 232 265,904	4 933 451,104	349 479,00	9 190 090,319
2014	7 293 683,098	5 770 024,163	334 631,00	10 276 569,656
2015	10 745 194,74	4 796 846,803	244 067,00	10 965 485,345
2016	12 123 094,00	11 037 061,00	247 628,00	9 670 731,597
2017	11 573 208,00	7 513 192,00	265 705,00	9 248 862,143
2018 (up to November)	12 814 513,00	8 509 603,00	215 007,00	7 929 797,00

Note: The Table is compiled by the Author.

* Figures for the years indicated were computed by the Author based upon the data provided by the source mentioned.

Sources: All data originate from the website of MOEAIC (Ministry of Economic Affairs Overseas Chinese and Foreign Investment Commission). Direct sources are indicated below.

¹ https://www.moeaic.gov.tw/business_category.view?lang=en&seq=2

Downloaded: 18th September, 2018.

² https://www.moeaic.gov.tw/business_category.view?seq=0&lang=en

Downloaded: 18th September, 2018.

³ https://www.moeaic.gov.tw/business_category.view?lang=en&seq=1

Downloaded: 18th September, 2018.

⁴ https://www.moeaic.gov.tw/business_category.view?lang=en&seq=3

Downloaded: 18th September, 2018.

knowledge²⁷ but the Taiwanese government strictly limits their scope of movement in this area, and – not least due to these preventive administrative measures – the Chinese prefer to approach the American (and Japanese, European etc.) developed partners directly. Another reason could be that Taiwan’s know-how is not at the high-end, nor is it particularly innovative. ... Taiwan has only served as a “transmission belt” between Western countries’ advanced design and China’s low skilled production.’ (Lee, 2017, p. 7) Though the picture is definitely more complex, and the Taiwanese ‘deserve’ technological acknowledgements in their own right, but it is correct to assume that the Chinese can achieve their goals easier with their traditional developed partners. On the island, however, they are very interested – and rather efficient – in recruiting skilled and trained manpower, mainly from the technology industries. (Ibid, 9-10)

²⁷ Lee makes an interesting observation that the Author can confirm from other sources. Lee states that ‘Taiwan’s know-how is at not the high-end, nor is it particularly innovative. ... Taiwan has only served as a „transmission belt” between Western countries’ advanced design and China’s low skilled production.’ (Lee, 2017, p. 7.) Though the picture is somewhat more complex than that but in general it is correct that the Taiwanese could not fully exploit their decade old advantage and lead in technological development.

4. The value-added components in these bilateral relations

Statistical data are very useful to get a clear insight into the external ties of a political entity but for observers of GVCs it is also evident that regular foreign trade statistics distort the real (actual) values of international trade as these data cannot filter out the multiplicative effects of general trade figures. Considering the basic element of the added-value (or value-added – VA) components of Chinese-Taiwanese trade, it can be seen that its value will be – naturally – lower than that of the gross figures. According to the relevant Taiwanese data, its export to the Mainland shows a significantly smaller value.²⁸ (It is clear that not every movement that creates ‘new’ (added) value can be considered as element in a GVC-process. Just as the difference between gross trade and the VA-calculated trade can be directly equaled with intermediate goods that serve the basis of GVCs. On the other hand, however, there is a high level of correlation between these elements) Based on this outcome it can be claimed that – the new figures somewhat, but not radically, modify the ratios of China-Taiwan trades but do not contradict the assumption that China is the most important trading partner of the island.

Though a great bulk of the components of the products exported to China originates in third countries and thus those parts cannot be considered of Taiwanese origin and thus only partial earnings (and profits) can be attributed to Taiwanese companies, still the value-added ratio is high enough to prove the importance of these relations. Just as, at least from an economic point of view, data confirms the value of this cooperation. Applying the GVCs-oriented calculations it is clear that the Taiwanese trade surplus will also differ from the original figure. Actually it shrinks. (65.2% – Liou et al.) In spite of this, Taiwanese foreign trade surplus – that can be attributed mainly, essentially fully, to the Taiwanese-Chinese gross trade – will be also lower but these findings do not refute the presumption that the Mainland serves as the prime source of foreign trade surplus for the island.²⁹

²⁸ The figures for VA foreign trade turnover would be 64.3% smaller than the gross value, according to Liou et al.

²⁹ According to the relevant statistical data surplus earned from the Taiwan-China direct trade – in itself – made 60% of all of the surplus gained by the island in 2016. If Hong Kong is also taken into consideration then Hong Kong earned 75% of the surplus, and China and Hong Kong together took 134,6% of Taiwanese positive balance. It should be understood that the city is one of the major gateways to the PRC and the greater bulk of the export and import goods reaching the former colony quickly passes through and leaves for the final destination. These figures clearly demonstrate that without China (and Hong Kong) Taiwanese external trade showed very significant deficit. (The author's calculations are based upon different tables attached to the study.)

The significant difference between the gross trade and GVCs data stems from the fact that the overall ratio for the value-added components in the exports and imports is rather high in comparison to gross exports and imports. In 2011 these were 52.2% and 45.0% respectively³⁰ while the same ratio vis-à-vis China was significantly lower. This fact can be supplemented by another one according to which the increase in value-added export to China was lower than the general growth rate of the Taiwanese export to the PRC. (Between 1995 and 2011 the multiplier for gross exports was 7.95 while for value-added exports it stood at 5.52) Considering the development levels of the two parties it could be suspected that the island could have provided much more value-added and intermediate goods to the Mainland. If, however, we take into consideration that a very great number of Taiwanese companies moved their production and service lines to the Mainland (in order to assemble or produce intermediate parts or finished products in more favorable conditions) then the situation might become clearer. The trend is also more understandable if it is considered that for several years, or at least in the first 20-25 years of these relations, the more developed Taiwan could provide more products (consumer and industrial goods), know-how, technology, etc. to China that gradually strived for increasing the local contribution – and decreasing the level of external components. On the other hand, the disparity between the value-added exports and imports still points to the fact that Taipei could offer higher level products but also intermediate goods for further or final processing and/or assembling. (Unfortunately, the data available is not sufficient enough to draw further reliable conclusions.)

Perhaps the value-added import figures reflecting the goods coming from or through China can be considered more surprising as these data indicate – relatively – significant VAX³¹ on the Chinese side. Liou and colleagues try to explain that ‘... mutual processing is becoming common between both sides ...’. However, in the absence of further reliable data and considering the qualitative differences between China’s and Taiwan’s industrial development – in general and at ‘national’ but also specific industrial branches level – and further the labor situation (namely the shortage and high price of Taiwanese

³⁰ The Researcher – as it frequently happens – is not in an easy situation to work with available data. Having no access to primary sources, the Author attempts to rely on the conclusions that can be drawn with relative safety and tries to extrapolate trends and connections that shed light on the points concerned. The data and the personal extrapolations of the Author used here and the following pages – unless indicated otherwise – originate from the tables attached.

³¹ VAX stands for the value-added exports to gross exports ratio. It is a measure of the level of international production sharing. (Liou et al. 2016, p. 4)

work force) it is not easy to correctly interpret this statement. Definitely it cannot be outrightly denied that there is a two-way system of moving intermediate goods.

Table 7 shows that the island really imports a significant amount of such products. Furthermore, import figures indicate that the two largest groups of goods have been for years the 'Parts for electronic products' and 'Information, communication audio-video products.' While the first group can be easily identified as intermediate products, the second implies more finished goods than parts.³² However, unfortunately, the precise composition of this group is not known. The denomination of the first group allows the supposition that these are intermediate goods (re)imported by the two computer companies (ASUS and Acer) and indicates that Taiwanese firms still add value to these products. This kind of cooperation can materialize – with the highest probability – if Taiwan's relevant companies are either lead firms who take possession of certain finished goods in order to market them or create additional values before forwarding these products to their final destination (before marketing or transporting them to customers). Second, though such a movement of intermediate goods also cannot be totally ruled out at 'lower' levels, it is difficult to presume that Taiwanese enterprises act as minor actors (subordinate contractors, e.g. as assemblers) by a great number vis-à-vis their Chinese partners.³³ (This issue is further clarified in the next subchapter.)

While a kind of 'mutuality' cannot be totally ruled out, looking at the composition of Taiwanese value-added export (Figures 2 and 3) it is expedient to look at the trend that indicates a continuous decline in the intermediate export-proportion in Taiwanese export towards the PRC. The ratio is still high, and it still shows a more or less favorable situation but the downward trend – together with the decline of value-added content – implies the weakening of Taiwanese position in longer perspectives.

The negative or pessimistic scenario should not be based on one single source (like the tables and their mentioned authors). In the absence of additional reliable data it would be too risky to make speculations. The topic, however, has raised the interest of scholars, economists, and moreover political actors

³² According to Table 7 'Parts of electronic products' was worth US\$ 9,228 million in 2016 and that was 21% of the total imports. The figure for the other group was US\$ 8,637.1 million. It is not known whether the other statistical items contained additional value-added elements or not. As the first group takes one-fifth of the import it can be considered significant in itself.

³³ This table itself does not allow further – reliable – assessment of the figures available. For deeper analysis the real composition of Chinese value-added import could offer some clues.

of not only Taiwan but other relevant economies and several research projects have targeted these issues.³⁴ The central question raised is whether it is correct to presume that the threat originating from China's attempt to replace external product suppliers with the participants of 'domestic supply chains'³⁵ is real and relevant, or not. Most studies came to the conclusion – not surprisingly as the 'attempt' fully corresponds with the essence of the 'Made in China 2025' strategy – that there is a Chinese government position to encourage and facilitate such replacements. Here an additional question can be raised: Although it can be corroborated that such a Chinese strategy exists, but can Beijing successfully implement it? Chu and Ou, correctly, refer to the complexity of this query and emphasize that the fulfillment of such a strategy is not a simple issue connected to import-substitution or export promotion (in case of intermediate products) but depends on several other factors. However, while they carry out an econometric analysis to assess whether the 'second-stage import substitution industrialization of China'³⁶ has made a significant contribution to the growth of the PRC's economy, they refrain from making an evaluation of its real danger to the other East Asian economies, including Taiwan. Thus, we still lack concrete and precise economic arguments 'pro and con' for the Chinese 'threat'.

³⁴ Chu-Ou 2018 mentions some of the relevant papers.

³⁵ This phenomenon has been labeled as 'red supply chain'. (Chu-Ou, 2018, p. 4.)

³⁶ Chu and Ou use as a base of comparison the import-substitution and development policies of South Korea and Taiwan. Their numerical results cannot be questioned in themselves but these are irrelevant for us here as they simply cannot tackle the basic contradiction of the Chinese situation. And this contradiction – as also stated in the main text – is that China cannot be compared either to South Korea or Taiwan or to any other economy and not only because of its size but mainly due to its unique political system. As in the political system that has been sustained in China economic rationality and interests are very frequently overwritten by political considerations. Namely, if the political leader(s) make(s) a decision then – regardless of the costs or losses incurred the policy must be implemented. As it happened also in the past.

Figure 1. Decomposition of Taiwan and China's Gross Exports (in %) ³⁷

(a) Decomposition of Taiwan's gross exports

	DVA	RDV	FVA	PDC
2011	52		32	16
2010	53		30	17
2005	56		28	16
2000	63		27	9
1995	67		27	6

(b) Decomposition of China's gross exports

	DVA	RDV	FVA	PDC
2011	76		17	6
2010	76		17	6
2005	72		20	6
2000	82		14	
1995	84		14	

Note: DVA represents share of value-added content earned from abroad. RDV represents share of value-added content returned home country. FVA represents share of value-added content grabbed by foreign countries. PDC represents share of pure double-counted parts.

Source: Liou et al. (n.d.) Figure 4, p. 21

Author's note: original figures are rounded by the Author according to the relevant rules. Where data is not indicated – as it happens in relationship to RDV but also in some cases regarding PDC – the value is to be considered insignificant.

The situation is further complicated by some recent scholarly papers that raise doubts concerning both the value of global value chains and its relative stagnation, and they point at the negative consequences of GVCs in case of under- or less-developed countries. (Rodrik 2018) The usual outcome of the

³⁷ Figures 1, 2 and 3 were reshaped by the Author of this paper but they are based on the original data of the source mentioned with the rounding off as indicated.

debates is that foreign trade, including GVC-activity – provides profits mainly for the advanced partners and for those whose environment is business-friendly. Another element that is frequently mentioned in relationship with GVCs is that international economic (namely free trade) agreements result in the decrease of domestic value-added. The polemics surrounding these questions are interesting as in the China-Taiwan relations the PRC – if assessed in a simplified manner – could be considered the less developed partner and Taipei could enjoy the benefits of being a ‘superior class’ economy. But that is not the case. Regarding the differences in size and power, considering the latest and very fast development of the PRC – in spite of certain advantages in some areas – Taipei is not the determiner anymore. As far as the reference to FTAs is concerned, theoretically it could be a promising sign for the island but in reality, the decrease of VA-content could be contributed more to the strengthening of the internal position of the participants than to any kind of (new) internal obstacle.

Figure 2. Decomposition of Bilateral Trade between Taiwan and China
(in %)

(a) Decomposition of Taiwan's gross exports to China

	DVA	RDV	FVA	PDC
2011	51		30	19
2010	52		28	20
2005	53		25	21
2000	62		28	10
1995	65		27	9

Decomposition of China's gross exports to Taiwan

	DVA	RDV	FVA	PDC
2011	57	13	10	21
2010	58	12	10	21
2005	59	8	13	20
2000	74		6	9
1995	80			10

Note: DVA represents share of value-added content earned from abroad. RDV represents share of value-added content returned home country. FVA represents share of value-added content grabbed by foreign countries. PDC represents share of pure double-counted parts.

Source: Liou et al. (n.d.) Figure 5, p. 22

Author's note: original figures are rounded by the Author. Where data is not indicated – as it happens in relationship to RDV but also in some cases regarding PDC – the value is to be considered insignificant.

Figure 3. Share of Valued-Added Contents in Gross Exports (in %)

(a) Share of value-added contents in Taiwan's gross exports

Year	Gross share	Share/intermediate exports	Share/final goods exports
1995	66.6	37.2	29.4
2000	63.4	38.4	25
2005	55.7	41.2	14.5
2010	53.2	40.8	12.4
2011	52.2	40.3	11.9

(b) Share of value-added contents in Taiwan's gross exports to China

Year	Gross share	Share/intermediate exports	Share/final goods exports
1995	64.6	48.8	15.8
2000	62.1	50.2	11.9
2005	53.3	46.8	6.5
2010	51.7	45.6	6.1
2011	50.8	45.6	5.2

Source: Liou et al. Figure 6, p. 22

Note of the Author: the original figure was redrawn by the Author but Figure 3 contains the data of the paper quoted.

5. The unique role of the electronic sector

Despite the differences of the methodologies applied in the course of gathering and evaluating data on the topic of this study, researchers are in full agreement that there is one economic sector that plays a decisive role in the economic life of the island, in general, but in its relationship with the Mainland too, and that is the area of high level technology, more precisely electronics. While the fast development of the island cannot be separated from the production, technological development, and finally the trading of technologically advanced electronic products (mainly intermediate goods and equipments) Taiwan's external connections cannot be understood without knowing the role of this sector's exceptional significance, being more concrete, the island's heavy dependence on it. This can be made visible through the evaluation of this sector's question within the China-Taiwan framework.

It has already been pointed out that the reliance on China and Chinese trade constitute a risk for Taiwan. However, if this fact is supplemented with the Taiwanese over-reliance on one single electronics sector, then the

vulnerability of the island becomes even clearer. Statistics prove that a very big segment of Taiwan's exports to China is labeled as electronic goods and equipment, basically intermediate/part elements that are exported either for assembling or simply for production purposes or for subsequent (re)export from China. While Reilly talks about roughly 60%, regarding the concentration on electronic goods Liou et al calculate that in 2011 these products accounted for 59.6% and 45.7% in Taiwan's export to and import from the PRC. The gross values were US\$ 75.8 and US\$17.9 billions respectively. While it is not surprising that close to two thirds of the island's export to China was composed of these – supposedly – high tech products, the relatively high ratio of these groups of goods in Chinese exports might need further exploration – and explanation. True, the significant difference between the export and import figures indicates that there is a still bigger discrepancy between the respective figures.³⁸ A further element that deserves attention is the comparatively low level of domestic value-added component in these industries (24.3%).

As the data available is relatively old – and due to the latest changes can be partially regarded as irrelevant – in the absence of fresh information it is difficult to make a correct judgment on the overall state of affairs. All in all, keeping in mind the Chinese government's policies the situation does not seem to be very promising. Especially, as the technological and related industries do not only constitute important but also sensitive areas. Understanding that a political entity's security position today, and especially in competition-ridden East Asia, is determined by its technological excellence – and in certain ways – its self-reliance or at least a balanced inter-dependence, it was comprehensible that China earlier intended to stand on its own feet – and in its relationship with the island – wanted to have as close a working relationship as possible in high tech areas. It can explain why Beijing is still welcoming the arrival of vanguard technological companies (either in the form of single investors or GVCs partners).

Naturally, this concentration of trade in a very few specific groups of products could mean a less dangerous factor if the parties concerned were equally bound to cooperation, it was a balanced power relationship between the actors. It is interesting to note that Reilly – in a relatively recent writing – claims that ‘... the Chinese government will be careful not to impose restrictions on trade with Taiwan – it needs Taiwan at least as much as

³⁸ However, the Chinese electrical and optical equipment export should not be underestimated and perhaps it makes sense to explore why Taiwan accepted or needed so big an amount of Chinese goods.

Taiwan needs it ...' (Reilly, 2016) Though the latest trade statistics (see Table 4) indicate a decline in bilateral trade on both sides, this assumption cannot be easily accepted. Not so much, or not primarily the political opposition rather than the medium-term economic and industrial policy of Beijing leads to the presumption that external electronics firms will lose ground *vis-à-vis* with their local competitors. The position of the Taiwanese companies is further complicated by the general political attitude of Beijing and considering the endeavor of private companies it cannot be ruled out that they will 'domesticate' themselves in China and in case of need fully or partially give up their Taiwanese 'nationality'. Such an outcome might seriously weaken the general international and internal position of the island.³⁹

As long as this high concentration remains, technological vulnerability is also maintained. Diversification might seem a long-term solution but it does not happen quickly and without setbacks. Data indicate some shifts from manufacturing (and technological) industries towards non-manufacturing

³⁹ Researchers are usually inclined to make categorical statements and are rarely admit that situations they are to describe are very complex and contradictory. All this makes predictions – still done with the most serious scholarly endeavor – contestable. A proof of such complexity is provided by real life developments. Though the position expressed in the main text still seems to be valid and, in general, reflects the probable trends in international development, but news – having arrived in the course of completing this study – plainly contradicted the context.

It was reported on 22 August 2018 that Qualcomm's powerful 7nm 'Snapdragon' chip that will serve as the central part of the first mobile 5G networks is approaching the production phase. According to the reporter '(T)he real surprise may revolve around the choice of manufacturer. Qualcomm has been leaning on Samsung for production lately, but it's reportedly returning to TSMC (Taiwan Semiconductor Manufacturing Company- VJ.) for this generation. TSMC is believed to be months ahead of Samsung in making chips based on a key 7nm process and may build the accompanying 5G modems as well. If Qualcomm is going to launch as quickly as possible, it'll want to minimize even the slightest chance of a delay.' It can be added that TSMC, this Taiwan-based firm is perhaps the world's largest semiconductor foundry, producing many widely sought after products, including own designs. (Though these are still considered intermediate goods!) TSMC proudly claims to be the first foundry to produce 7nm chips. If the deal will be concluded then it will be a great victory for the firm but for Taiwan, as well.

Definitely, one single case can neither prove nor fully contradict a judgment. The 'sample' mentioned here is used mainly to call attention to the vulnerability of research predictions but also the unpredictability of the Taiwanese events and trends.

The article appeared at: <https://www.engadget.com/2018/08/22/qualcomm-7nm-snapdragon-chip/?yptr-yahoo>

businesses⁴⁰ but the results are meager in comparison to the high level of concentration, and it is doubtful that in non-manufacturing areas (e.g. services, financial sector, etc.) Taiwanese companies and the administration can withstand the growing and ever more determining power of China. In addition, local conditions do not favor domestic cooperation. According to findings the Taiwanese electrical and optical companies are more interested in direct exporting than facilitating networking with other local enterprises. (Liou et al, 2016, p. 20). This factor weakens the position both of the companies of Taiwan but also the competitive capabilities of the island, in general.

Against this background the government of President Tsai makes attempt to diversify technological excellence (and advantages over its competitors) and introduced a development strategy that aims at standing the Taiwanese economy on several feet. However, most of the areas incorporated into this 5 + 2 initiative⁴¹ are connected to high tech innovations. Nevertheless, the new policy could somewhat widen the industrial scope of Taiwanese enterprises and this element, together with the geographical reorientation attempts might somewhat reduce the dependence on electronic industries, and – partially – China.⁴²

⁴⁰ Chuang refers to studies that claim that between 1990 and 2010 the high level of Taiwanese firms' investments in manufacturing (91.6%) decreased to 74.2% while the non-manufacturing ratio increased from 3.4% to 18.8%. (Chuang, 2016, p. 214) In spite of the seemingly and mathematically considerable changes the situation cannot be regarded as significantly transformed.

⁴¹ In this respect the policy of the present Taiwanese government – with the so called 5 + 2 priorities, namely Internet of Things, biomedical, green energy, smart machinery and defense industries, plus the renewal of agriculture and the 'circular economy' – could be considered as correctly targeting development but the real results could not be regarded as convincing. (See: Vándor, 2017, p. 13)

⁴² Again, it must be stated that the situation of Taiwan depends less on its own aspirations than on external actions. For instance, observers can speculate about the (positive?) outcome of President Trump's China, but also Taiwan policy (from Taiwanese perspective) but sticking firm on scientific postulation probably no one can predict in a reliable manner the near future of the island. There is one single factor that can be stated without hesitation: whatever happens, the island will remain the party to these bilateral ties who must swim with the tide instead of setting the direction of the trends.

6. Conclusions

The aim of this paper was not to provide a comprehensive analysis of the Taiwanese (and China-Taiwan) GVCs situation but more to introduce the role and significance of GVCs cooperation from the perspective of Taiwan with special regard to China. The lack of reliable first hand information on this topic prevented the author from exploring as widely as he wished this area, but the information collected served as a proper basis for making a more than rough assessment and painting a more or less objective picture on the China-Taiwan ties, the (inter)dependence of the parties, and not least the positive, but also the negative implications.

It is not difficult to come to the conclusion that the island gained a lot thanks to this bilateral cooperation, but after a while it became clear that the time has come to pay the price of earlier gains. The situation cannot be described in simple terms, as the China-Taiwan relationship is extremely complex and is affected by too many additional factors. Observers should not dare – not to be able but should not dare – to make strict predictions on its future. The only statement that can be made with certainty is that these ties remain vital for the island in the years to come and the handling of relevant issues by China will be determined more by political (and not particularly Taiwan-related economic) considerations.⁴³ In the economic field China probably will not abruptly cut ties as this might be also – not unbearable but at least – painful for itself and its economic actors. The PRC can also benefit from this cooperation, and not least it can calculate with the long-term positive political and social impacts of economic bonds tying the two parties.⁴⁴

⁴³ The high level tension between President Tsai and President Xi supplemented by the unpredictable China (and Taiwan) policy of President Trump, the uncertainty of USA-China trade disputes and many other political elements make it difficult to foresee even the coming years. Through a political analysis it can be stated that the evolution of these bilateral ties depends more on external (non-Taiwanese) components than the internal policies of Taipei. To make it clear: the Taiwanese governments can exacerbate – or somewhat calm down – the China-Taiwan situation but any kind of long-term solution depends on Beijing.

⁴⁴ China could see that – in spite of the reservations of any previous Taiwanese government – economic interests compelled Taipei to accept, furthermore, to strengthen and widen economic cooperation with the Mainland. The governments of the island can come and go but Taiwan is so strongly attached to the Mainland that it will not be in the position to disrupt or significantly reduce dependence. The latest local elections could arouse the hope that in two years' time – when general elections come – there might be a change again. (Though President Xi follows a more pro-active Taiwan-policy than his predecessors but he still assumes that time is on the Mainland's side.)

Considering the economic sphere in general, it can be stated that in spite of the efforts of the present Taiwanese government the level of dependence on the PRC cannot be easily and quickly mitigated.⁴⁵ Neither local (cross-Strait) nor global factors seem to be causes for optimism in this respect. Statistical figures (presented also in the attached tables) show a meager decline in the value of bilateral foreign trade turnover and these data might offer basis for certain forecasts but no concrete figures can substitute the unpredictable political and global economic factors that can drastically override mathematical calculations. At present there seems not to be any partner or partners who were capable to substitute the Mainland. A further uncertainty factor is the US-China trade dispute that might have both rather positive but also quite adverse consequences. The failure of these talks might induce Washington to show its displeasure and get closer to Taipei (that, at the same time, could trigger Beijing to adopt harsher measures) while their success can lead to the subordination of Taiwan's interest to the 'America First' policy.

Politically there are strict limits within which the American – but any other formidable partner, namely Japan, Europe or the ASEAN states – was ready to sacrifice their China-connections.⁴⁶ On the other hand, China is in the position to create such a level of tension that might withhold potential partners to cooperate – not with the administration of the island but – also with local companies.

Looking beyond the politically motivated (political and economic) factors the situation in and of Taiwan do not give cause for optimism either. Risks, again, can be connected to internal economic conditions and the volatile external conditions. First of all the impact of factors originating from China can be mentioned. On the internal side such elements can cause hazards – and it must be emphasized that not simply for the government of the island but for local enterprises – like the international acceptance of Taiwan as an independent economy (and its incorporation or exclusion from wider international cooperation organizations, its inclusion into free trade zones (or higher level schemes like ASEAN). The denial of the advantages of trans-border productions (like the prevention of enjoying the positive consequences of free trade, of the elimination of customs, of the benefits of 'rules of origin', etc.)

⁴⁵ The New Southbound Policy of the government has achieved some results, but these are more superficial than real ones.

⁴⁶ It must be acknowledged that all these economic or political scenarios mentioned in the text can be considered as 'simple speculations' in the sense that while any of the options referred to cannot be fully excluded but none of them can be predicted with high level of probability.

might divert possible partners. It is a question how and how long can the government compensate for and/or counterbalance these handicaps for local companies? There are risks related to the inability of local firms – especially the SMEs – to adapt to new conditions and requirements. Taiwanese enterprises are not as rigid as e.g. the Japanese, but they are also infamous for their inflexibility. On the other hand, it can be presumed that Taiwan will remain a high tech economy and for some time to come it can be in the lead position in technology circulation and transfer. Thus, some partners – especially in the less developed ASEAN countries – can still find this cooperation profitable. (Here the question also arises, when China – but also some other competitors like South Korea, Singapore or India – enters the scene and can push back the Taiwanese firms.)

Overall, in spite of the rather dire conditions specified here, there is no cause for imminent concern. The economy of the island is strong⁴⁷ and while it cannot be said to be on the solidly growing path but still – it is not facing immediate and unmanageable situation. The island still hosts many outstanding companies that have direct contacts with the most important international firms engaged in the highest level of technological and other types of businesses, including GVCs. Its economic policies set proper targets in the area of development, including R&D, technology expansion, vanguard industries and the flagship projects of our century.

Nevertheless, in the global value chain-system the position of Taiwanese firms is not guaranteed. As has been shown, local enterprises rarely take the lead position and most frequently they constitute the middle section that create significant values in the process of production or services, but they are not necessarily the finishing actors. Closing phases are usually handled by less developed (and cheaper) partners. This comfortable position can be upheld as long as the lead companies from the developed countries – or in the rare cases from Taiwan itself – find local partners reliable and useful. However, this might change if the Taiwanese are crossed by competitors (from China, India or from other countries). The risk that might arise here is not only related to external competition but also to the possibility that local firms – in order to overcome those restricting elements that do not concern their competitors move out of the island and relocate their activities to third partners. These

⁴⁷ Naturally 'strength' is also a subjective element and depends on the perception of the individual scholars. Most observers state the long-standing weaknesses and hindrances of the Taiwanese economy (e.g. low growth rate, high public debt, several social security related challenges from labor shortage to aging, to pension policy, etc.). These hazards are real and demand solutions in the long run but – at present – these do not seem to be inextricable and impossible to avoid.

cannot be totally ruled out also in case of the few Taiwanese lead or ODM companies. These big firms also locate their production and/or service centers to third parties where the same value can be created cheaper. It would be a very negative scenario (actually a downgrading) for making Taiwan a venue of wide-scale finishing phase production, but if it cannot maintain the present – intermediate – position then it will face stagnation and decline.

Within the world of the GVC-networks Taiwan might strive for extending its production capabilities mainly in Southeast Asia or South Asia (India) but there it must face up to – just like in other regions – the competition of China, South Korea and other partners. At home, though it has the administrative and technological capabilities to expand, but the internal shortcomings that have been mentioned impose limits on the development of GVCs, especially in the industrial and production area. It is less deeply explored but bigger opportunities seem to appear in non-production, first of all service areas and GVCs. There are new approaches to test, but it must be kept in sight that the most important element that can assist Taiwan to manage challenges is the flexible adaptation to continuously changing internal, but mainly external conditions.

References

Abe, S. 2015: Global Value Chains in East Asia. Think-piece prepared for MCTI conference, East-West Center, January 2016. First Draft: January 2015. <https://www.eastwestcenter.org/sites/default/files/filemanager/pubs/pdfs/1-3Abe.pdf> Downloaded: 13th March, 2018.

Antràs, P. – Chor, D. 2018: On the Measurement of Upstreamness and Downstreamness in Global Value Chains. NBER Working Paper 24185, National Bureau of Economic Research, January 2018, Massachusetts, USA. <http://www.nber.org/papers/w24185> Downloaded 14th June, 2018.

Baldwin, R. 2014: Multilateralising 21st-century regionalism. VOX CEPR Policy Portal 20 January 2014, <https://voxeu.org/article/multilateralising-21st-century-regionalism> Downloaded: 14th June, 2018.

Barua, A. – Gruner, D. – Bandyopadhyay, S. 2015: Global value chains: More a development strategy than a mere process. In: Global Economic Outlook, Q4 2015. <https://www2.deloitte.com/insights/us/en/economy/global-economic-outlook/2015/q4-global-value-chains.html> Downloaded: 18th May, 2018.

Branstetter, L. – Chen, J.-R. – Glennon, B. – Yang, Ch.-H. – Zolas, N. 2017: Does offshoring manufacturing harm innovation in the home country? Evidence from Taiwan and China. <http://www.cerna.mines-paristech.fr/Donnees/data14/1431-Branstetter.pdf> Downloaded: 15th June, 2018.

Chen, T.-J. 2016: Supply Chain Positioning and Innovation: Taiwan's Challenge. (Think piece for the Mega-Regionalism – New Challenges for Trade and Innovation workshop, east-West Center, Honolulu, Hawaii, January 20&21, 2016) <https://www.eastwestcenter.org/sites/default/files/filemanager/pubs/pdfs/7-3Chen.pdf> Downloaded: 29th August, 2018.

Chiou, E. 2014: Huge potential in GVC for Taiwan. Taipei Times, Oct. 22, 2014 <http://www.taipeitimes.com/News/editorials/archives/2014/10/22/2003602612/1> Downloaded: 18th June, 2018.

Chow, P. C.Y. 2009: The Impact of the Financial Tsunami on Taiwan's Economy. In: Bryce Wakefield (Ed.): Taiwan and the Global Economic Storm

Chu, Y.-P. – Ou, Y.-P. 2018: Assessing the Rise of China's Domestic Supply Chain: A Macroeconomic Structural Decomposition Approach. Working paper 15 October 2018

http://bigdata.scu.edu.tw/sites/default/files/china_paper_1015.pdf

Downloaded: 19th December, 2018.

Delautre, G. 2017: The distribution of value added among firms and countries: The case of the ICT manufacturing sector. ILO Research Department Working paper No. 16, January 2017. Geneva, ILO.

Doing Business 2017 Equal Opportunity for All. Economy Profile 2017. Taiwan, China. Washington, DC. The International Bank for Reconstruction and Development / The World Bank.

Drysdale, P. – Xu, X. 2004: Taiwan's Role in the Economic Architecture of East Asia and the Pacific. Pacific Economic Papers No. 343, 2004 – The Australian National University, Australia-Japan Research Centre – Asia Pacific School of Economics & Government.

<https://openresearch-repository.anu.edu.au/handle/1885/43123?mode=full>

Downloaded: 14th June 2018.

Escaith, H. 2017: Accumulated trade costs and their impact on domestic and international value chains. In: World Bank: Global Value Chain Development Report 2017. Measuring and Analyzing the Impact of GVCs on Economic Development. pp. 97-117.

Escaith, H. – Inomata, S. – Miroudot, S. 2017: The evolution of production networks in the Asia Pacific

<http://www.eastasiaforum.org/2017/04/04/the-evolution-of-production-networks-in-the-asia-pacific/> Downloaded: 13th March, 2018.

Gangnes, B. – Assche, V. A. 2010: Global Production Networks in Electronics and Intra-Asian Trade. LICOS Discussion Paper No. 257/2010

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1587978 Downloaded:

17th March, 2018.

Gereffi, G. – Fernandez-S., K. 2016: Global Value Chain Analysis: A Primer. Center on Globalization, Governance & Competitiveness at the Social research Institute. July 2016, Duke University.

https://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/12488/2016-07-28_GVC%20Primer%202016_2nd%20edition.pdf?sequence=11

Downloaded 13th April, 2018.

Gereffi, G. 2016: Global value chains, development and emerging economies. UNIDO, Inclusive and Sustainable Industrial Development Working Paper Series WP18/2015
https://www.unido.org/sites/default/files/2016-01/WP_18_0.pdf Downloaded: 17th March, 2018.

Gilley, B. – Diamond, L. (Eds.) 2008: Political Change in China. Comparisons with Taiwan. Boulder & London, Lynne Rienner Publishers.

Hong, D. S. 2015: SMEs in Global Value Chains.
<https://www.pecc.org/resources/trade-and-investment-1/2184-smes-in-global-value-chains/file> Downloaded: 14th July, 2018.

Hu, S.-C. 2013: Taiwan's Next Phase of Economic Development.
https://fsi.stanford.edu/sites/default/files/evnts/media/CDDRL-TPP_and_TW_1309.pdf Downloaded: 18th June, 2018.

Kee, H. L. – Tang, H. 2015: Trade and FDI liberalization help China move up the global value chains. 9 December 2015 <http://voxeu.org/article/china-and-global-value-chain-new-evidence> Downloaded: 19th June, 2018.

Kiyota, K. – Oikawa, K. – Yoshioka, K. 2016: The Global Value Chain and the Competitiveness of Asian Countries. RIETI Discussion paper Series 16-E-080 August 2016 <https://www.rieti.go.jp/jp/publications/dp/16e080.pdf> and CEPR Policy Portal, 09 October 2016. <https://voxeu.org/print/61169> Downloaded: 15th June, 2018.

Kwan, C. H. (2014) Looking at China's Foreign Trade from the Perspective of Value Added. <https://www.rieti.go.jp/en/china/14010802.html> Downloaded: 18th May, 2018.

Lee, C.-Y. – Yin, M.-X. 2017: Chinese Investment in Taiwan: A Challenge or an Opportunity for Taiwan? In: Journal of Current Chinese Affairs, Vol. 46, No. 1. pp. 37-59.

Lee, C.-Y. 2016: Chinese Investment in Taiwan. Danger or Opportunity? Lau China Institute Policy Paper Series, Volume 1, Issue 4. London, King's College.

Lee, H.-H. – Park, D. – Shin, K. 2016: Effects of the People's Republic of China's Structural Change on the Exports of East and Southeast Asian Economies. ADB Working Papers Series No. 492, July 2016. Manila, Asian Development Bank.

Lee, J. – Kim, J.-C. – Lim, J. (Lee et al) 2016: Globalization and Divergent Paths of Industrial Development: Mobile Phone Manufacturing in China, Japan, South Korea and Taiwan. In: Journal of Contemporary Asia, Vol. 46, Issue 2, pp. 222-246.

Liemt, G. 2016: Hon Hai/Foxconn: which way forward? Chapter 2. In: Drahoukoupil – Andrijasevic – Sacchetto (Eds.) Flexible workforces and low profit margins: electronics assembly between Europe and China. pp. 45-66.

Lin, H.-C. – Hsu, S.-H. – Liou, R.-W. – Chang, C.-C. 2016: A value-added analysis of trade in Taiwan and Korea's ICT industries. In: Journal of Korea Trade, Vol. 20 Issue: 1, pp.47-73, <https://doi.org/10.1108/JKT-03-2016-004> Downloaded: 18th May, 2018.

Liou, R.-W. – Lin, H.-C. – Chang, C.-C. – Hsu, S.-H. 2016: Unveiling the Value-Added of Cross-Strait Trade: The Global Value Chains Approach. In: China Economic Review, october 2016
<https://www.gtap.agecon.purdue.edu/resources/download/7300.pdf>
Downloaded: 15th July, 2018

Liu, D.-N. – Shih, H.-T. 2013: The Transformation of Taiwan's Status Within the Production and Supply Chain in Asia.
<https://www.brookings.edu/blog/order-from-chaos/2017/07/10/global-value-chains-shed-new-light-on-trade/> Downloaded: 15th July, 2018.

Lu, P. (2015) Taiwan: Escaping the China Trap. In: Commonwealth Magazine, Vol. 581, 2015-09-18 <https://english.cw.com.tw/article/article.action?id=192>
Downloaded: 15th July, 2018.

Moldicz, CS. (Ed.) (2018) Economic Development Strategies of Changing East-Asian Countries after 2009. Budapest Business School, Budapest. ISBN: 978-615-5607-45-5
National Development Council (NDC) (2017) Taiwan Statistical Data Book 2017, NDC R.O.C.
(Taiwan) [file:///C:/Users/V%C3%A1ndor%20J%C3%A1nos/Downloads/Taiwan%20Statistical%20Data%20Book%202017%20\(1\).pdf](file:///C:/Users/V%C3%A1ndor%20J%C3%A1nos/Downloads/Taiwan%20Statistical%20Data%20Book%202017%20(1).pdf) Downloaded: 12th August, 2018.

OECD – WTO OMC – UNCTAD 2013: Implications of Global Value Chains for Trade, Investment, Development and Jobs. 6 August 2013. Prepared for the g-20 Leaders Summit, Saint Petersburg (Russian federation) September 2013
<http://www.oecd.org/trade/G20-Global-Value-Chains-2013.pdf> Downloaded 27th August, 2017.

OECD 2013: Interconnected Economies: Benefiting From Global Value Chains. Synthesis Report. Paris, OECD ISBN 978-92-64-18956-0 – https://read.oecd-ilibrary.org/science-and-technology/interconnected-economies_9789264189560-en#page4 Downloaded: 22th August, 2018.

Reilly, M. 2016: The Real Trade Challenge for Taiwan and Tsai Ing-wen. In: The Diplomat, June 30, 2016 <https://thediplomat.com/2016/06/the-real-trade-challenge-for-taiwan-and-tsai-ing-wen/> Downloaded 18th June, 2018.

Rodrik, D. 2018: New Technologies, Global Value Chains, and Developing Economies. Working Paper 25164, NBER (National Bureau of Economic Research) Working Paper Series, October 2018, Cambridge, Mass. <http://www.nber.org/papers/w25164> Downloaded: 7th January, 2019.

Tiezzi, S. 2018: A Cross-Strait Chill? You Wouldn't Know It From Taiwan's Economic Data. In: The Diplomat. February 16, 2018 <https://thediplomat.com/2018/02/a-cross-strait-chill-you-wouldnt-know-it-from-taiwans-economic-data/> Downloaded: 18th May, 2018.

Toh, M.-H. 2015: Singapore's Participation in Global Value Chains: Perspectives of Trade in Value-Added. ERIA (Economic Research Institute for ASEAN and East Asia) Discussion Paper Series – 2015-50, July 2015.

Toh M.-H. (n.d.) Singapore's Trade in Value-Added: Importance and Implication of Information from the OECD-WTO TiVA Database. https://www.iioa.org/conferences/24th/papers/files/2582_20160412091_Singapore_TiVA.pdf Downloaded: 15th August, 2018.

Vándor, J. 2017: The Role of Technology in the (Near) Future of Taiwan. With special regard to the New Southbound Policy. Manuscript.

Vándor, J. 2018a: International Trade and Its Environment. On the Sidelines of the Changing East-Asian Region. The case of Taiwan. In: Moldicz (Ed) Economic Development Strategies of Changing East-Asian Countries after 2009. pp. 125-154.

Vándor, J. 2018b: Taiwan's Penetration into the Global and Asian Value Chains. (A political science-oriented analysis). Manuscript.

Vándor, János 2018c: The Taiwanese-Chinese Interconnections in Global Value Chains. Manuscript.

Wakefield, B. (Rd.) 2009: Taiwan and the Global Economic Storm. Woodrow Wilson International Center for Scholars. Asia Program. Special Report, October 2009.

<https://www.wilsoncenter.org/person/bryce-wakefield>

Downloaded: 13th March, 2018.

World Trade Report, 2014:

<https://www.wto.org/english/ress e/booksp e/wtr14-2c e.pdf>

Downloaded: 23rd July, 2018.

Xing, Y. 2011: China's High-tech Exports: Myth and Reality. Discussion papers, Report No. 11-05, June 13, 2011. Tokyo, National Graduate Institute for Policy Studies.

Yamaguchi, A. 2018: Global Value Chains in ASEAN. In: Newsletter 2018.0104 (No. 1, 2018) Institute for International Monetary Affairs.

Ye, Y.-L. 2008: Taiwan's Response to International Trade Challenges in the Face of the Free Trade Waves in Asia. Taiwan institute of Economic Research

http://english.tier.org.tw/eng_analysis/fs001.asp#

Downloaded: 18th May, 2018.