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# The Japanese Model of High Growth and its Transformation

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*Abstract:* Remarkable success of Japanese economy after WWII has been an intriguing topic for many researchers. In relation to the theory and previous research this study proposes a different explanatory model of Japanese growth after WWII. The model proposed here relies upon a contribution of two key features of the Japanese economy- subcontracting as a type of organizational form of conglomerates and industrial policy that represents government-business relations. This paper further explores when and in what direction this proposed model was transforming. This study will provide the reader with a different view on the Japanese model of economic growth. By analyzing the evolution of subcontracting and industrial policy after the WWII up to present times this study will demonstrate current trends in the model. It will also throw light on what actions Japan is taking to adjust to a volatile economic surrounding.

*Key words:* the Japanese model, subcontracting, industrial policy, transformation

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|------|--|
| LDC  | Less developed country                                 |
| METI | Ministry of Economics, Trade and Industry              |
| MITI | Ministry of International Trade and Industry           |
| M&A  | Mergers and Acquisitions                               |
| OECD | Organization for Economic Co-operation and Development |
| PPS  | Priority Production System                             |
| R&D  | Research and Development                               |
| SME  | Small and Medium Enterprises                           |
| US   | The United States                                      |
| WWII | World War II   |

## 1. INTRODUCTION

Remarkable success of Japanese economy after the WWII has been an intriguing topic for many researchers. In such a short period of time Japan succeeded to recover its economy and position itself very high in the world markets. The Japanese economy rested its achievements on peculiar mechanisms that many were trying to explore and explain.

In relation to the theory and previous research this study proposes a different explanatory model of Japanese growth after the WWII. Some authors proposed models focusing on industrial policy as the main cause of growth, others were emphasizing managerial structure in Japanese firms and some were focusing on an industrial structure with unique internal relations among employees. This study suggests a different focus of the model. The model proposed here relies upon a contribution of two key features of the Japanese economy- subcontracting as a type of organizational form of conglomerates and industrial policy that represents government-business relations. These characteristics form the two main pillars the model is based on. It is argued that these two pillars had the crucial importance in the period of high growth of Japanese economy.

During the last twenty years Japanese economy started lagging behind other industrialized countries in terms of rates of economic growth. These trends are followed with criticism of Japanese characteristics that once were claimed to be the basis of Japanese competitive advantage. This paper further explores when and in what direction this proposed model was transforming. Therefore questions this study aims to answer are: *“Is the Japanese model of economic growth changing its main features under the globalization forces of modern times? If so, what is the time and the direction of those changes?”*

In order to get answers to these questions and explore the dynamic processes of both pillars of the model secondary data on subcontracting and industrial policy will be used. As for the first part of the model which refers to subcontracting the expectations are changes in direction of liberalization. Since Japanese subcontractors lost their cost effectiveness in 1990s it is reasonable to assume that larger companies started searching for more payable solution. Especially with the expansion of other Asian countries that offered good quality and lower prices it can be assumed that Japanese large companies started outsourcing to foreign countries. These trends can result in a decrease in number of domestic subcontractors in an

exclusionary relationship with large firms. It may also lead to an increase of numbers of customers subcontractors are supplying, both in Japan and in abroad.

As far as the second part of the model is concerned, expectations are to discover some indications that government-business relations are changing as a result of the process of globalization. Nowadays when countries are focusing on encouraging innovative and entrepreneurial initiatives with the belief that those are potential sources of growth, it can be assumed that Japanese industrial policy is also trying to follow these trends in order to regain competitiveness. Globalization and liberalization in international markets could possibly induce loosening constraints posed by the government's policies on international collaborations. It can also result in an increase of the number of foreign firms penetrating the Japanese markets.

This study will provide the reader with a different view on the Japanese model of economic growth. By analyzing the evolution of subcontracting and industrial policy after the WWII up to present times this study will demonstrate current trends in the model. It will also throw light on what actions Japan is taking to adjust to a volatile economic surrounding.

The paper is structured as follows. Next section "Theoretical Background and Previous Research in the Field" will first present theoretical background for the both pillars of the model and then give an overview of the previous studies on the Japanese model. Following section is "Data and Methods" where secondary data used in this study will be presented along with used methods. Then comes section about the model proposed in this paper with the title "The Japanese Model of High Growth". After that empirical analysis will be presented in the section "Empirical Research of the Transformations of the Model". Finally, the last section belongs to conclusions.

## **2. THEORETICAL BACKGROUND AND PREVIOUS RESEARCH IN THE FIELD**

### **2.1.Theoretical Background on the First Part of the Model- Subcontracting**

According to the Law on the Promotion of Subcontracting Small and Medium Enterprises subcontracting relations are described as “manufacturing or fabrication of products, parts and accessories, or manufacturing or repair of facilities and equipment used for manufacturing products, under commission by an enterprise with a larger capital of a larger number of employees than the subcontractor (Bala Subrahmanya, 2008). Subcontracting can also be defined as “a contractual relationship in which a large firm asks small firm to conduct a commissioned work (producing parts, components, or finished products) under a dominant position”(Kimura, 2002). Subcontractors are small and medium enterprises (SME) that according to Japanese Small and Medium Enterprise Basic Law are companies with capital stock of less than 300 million yens and under 300 employees. (SME Agency, 2005) In official statistics in Japan subcontractors are usually described as firms that sell more 50% of their production to one large client (Schaeede, 2009).

Theories behind occurrence of subcontracting after WWII and its expansion can be summarized in five basic approaches. The first theory is known as “dual structure” hypothesis. It is one of the first theories in the research work on subcontracting relations. The underlying logic for the theory is existence of two layers in the industrial structure. The top layer refers to the big manufacturing firms who were exploiting smaller firms that belonged to down layer using them as a “business cycle buffer” (Aoki, 1990). In situations when demand for the final product was decreasing it was believed that big firms were canceling contracts with smaller firms.<sup>1</sup> It was also asserted that a dual structure existed in labour and capital a market which was highlighted as one of the triggers for emergence of subcontracting relationships (Kimura, 2002).

The second theory refers to game theory approach. According to this theory long-term business collaboration between subcontractors and big firms exists because of the repeated games (Schaeede, 2009). The relationship between big downstream companies and small

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<sup>1</sup> In 1960s there was criticism in media about these practices, so government introduced a particular law to prevent unfair treatment of parent companies such as, for example, postponements in payments of subcontracting fees. (Kimura, 2009)

upstream are described in a game theoretic framework. The third approach refers to the transaction cost approach. Bearing in mind that transactional environment is unsure as well as rates of transactions, company makes a decision about internalizing some of the transactions. This theory also assumes that humankind is prone to taking advantages from given opportunities to achieve goals, so they would engage into subcontracting relations to save some transaction costs. Furthermore, the interests of both subcontractors and large companies were joined together when they had mutual investments in technology and R&D. This also decreased the threat of holdup and resource dependence (Schaede, 2009).

The fourth approach is called the network approach. According to this approach relation among Japanese firms is “interpreted as an intermediate organization (chuukan soshiki) in which the market principle and the organizational principle coexist” (Kimura, 2002). It can also be inferred from this theory that under suitable economic conditions these relations between firms will result in a proficient set of coordination and competition. The last approach is based on the economics of information theory. The core of the theory is actually contract theory. To be more specific in the case of subcontracting it refers to principal-agent model. Long-term relationship is established between subcontractors and large firms in order to share the risks in case of incomplete information. Subcontracting arrangements were usually observed as an example of effectively dealing with the “potential for cheating that often destabilize outsourcing relations and problems of asymmetric information” (Schaede, 2009).

From these theories it can be inferred what were suitable characteristics of industries that allowed establishment of subcontracting relations. Some theories (network and transaction cost approach) imply that subcontracting is suitable way of collaboration when there is high degree of specialization (for example, if productions process needs specialized machines or some specialized technology). It is more cost-effective for the firms to buy customized elements from the subcontractors than to buy them in the market outside of subcontracting agreement. The game-approach advocates “stability and path-dependent nature of subcontracting arrangements” (Kimura, 2002). As it can be inferred from these different approaches technological characteristics of a country are potential driving forces for establishment of subcontracting relations.

When internal organization of firms is concerned the underlying theory is that Japanese firms have different type of inter-firms organization compared to Western countries. The traditional Western H-mode of hierarchies is characterized by a vertical coordination in the firms where employees are clearly separated by the function they have in the firm. Features of the H-mode can be summarized in two basic ones: hierarchical separation between planning and implemental operation and the emphasis on the economies of specialization (Aoki, 1990). In contrast the Japanese, or J-mode, type model is characterized by horizontal coordination among working units “based on the sharing of the ex post on-site information (learned results)”. So, the basic difference is that employees from different Japanese firms that cooperate are having closer relations with information sharing and quick implementation of urgent information. Hence, comparative advantages of both models could be influenced by factors such as “the learning ability of personnel, the ease of communication among operating units and the degree of economies of specialization with regard to the variety and volatility of market demand” (Aoki, 1990). In case where circumstances in the international markets are very turbulent requiring fast adaptation, H-mode will show superiority. On the other hand, if changes in the environment are incremental rather than sudden and volatile, J-model will have the advantage. Since Japanese manufacturing firms proved to be better with process rather than product innovation, it is asserted that this type of internal organization was contributing more in large and growing sectors of industry.

## **2.2.Theoretical background on the Second Part of the Model- Industrial Policy**

The concept of industrial policy is still vague and lacks a well defined, universally accepted definition. For example, Itoh, cited in Okuno-Fujiwara, defined industrial policy as “any policy that attempts to achieve the economic and noneconomic goals of a country by intervening in resource allocation across industries or sectors, or in the (industrial) organization of an industry or sector” (Okuno-Fujiwara, 1991). It can be inferred from this definition that industrial policy is focused on resource allocation both among industries and within industry. One more definition that would be interesting to mention is by Kaizuka: “With little sarcasm, I would define industrial policy to be the policy that MITI implements” (Okuno-Fujiwara, 1991). Some authors (for example, Buigues and Sekkat) claim that instead of term “industrial policy” “public support” can be used, so in their book they use both terms alternately (Buigues&Sekkat, 2009). They also argue that industrial policy can be defined as “a sort of a complement to market forces that reinforce or counteract the allocation that market forces would otherwise produce” (Buigues&Sekkat, 2009).



Since there has been long lasting debate about the importance of industrial policy and whether it is good or not, theories can be divided into two main groups, the ones which argue that industrial policy can help with correction of market failures and the other which claim that markets should be without any government intervention believing it is almost impossible to properly address market failures and efficiently deal with them. In arguments against industrial policy there is usually doubt about the ability of bureaucrats to address market failures. In theory there are two main reasons for doubting in government's ability to do proper allocation of resources. The first one is information issue that advocates the belief that bureaucrats do not have capacity to process all decentralized informations as efficiently as markets. The second refers to incentive problem. The incentives bureaucrats have are very often unclear. (Hausmann&Rodrik, 2006). Some studies showed that government faces lots of difficulties to find the right tool for accomplishing established goals causing the smallest possible disturbances in the markets (Buigues&Sekkat, 2009).

On the other hand, theoretical foundation that supports industrial policy as a proper way of dealing with market failures and encouraging growth states that in case when market forces and initiatives in private sector are not sufficient to encourage technological development and promote restructuring of industry government can act as mediator helping by creating strategies to overcome the problems. When actions in private sector are well combined with government policies they can be important contributors to economic development and growth (Rodrik et al., 2008). Theories supporting industrial policy also argue that industrial policy can have significant role in addressing market failure of a country. When a country starts its process of development it is reasonable to expect that it has market failures. It is also believed that industrial policy can accelerate the pace of structural changes with the aim of achieving increased productivity in a developing country. In theory, three different market failures for which industrial policy is needed are recognized. The first one is called "self-discovery externalities" and refers to discovering what kind of product can be produced and in what way to enhance the productivity. The second is "coordination externalities". This market failure occurs because decentralized markets in developing countries are not successful in coordinating simultaneous investments upstream, downstream and in parallel forks which are results of new economic activities (Rodrik et al., 2008). The last one is defined as "missing public inputs". This is when a country is developing and private firms need public inputs such as legislation, R&D, transport, accreditation etc. for their production. And government is not always able to anticipate the need for public inputs. (Rodrik et al., 2008)

According to the theory in the Japanese case there can be a distinction on two sub-types of industrial policy - strategic and corrective. There is also theoretical explanation about conditions for efficiency of each of them. Strategic policies are described as actions designed by government with aim of promoting particular industries. There are two potential situations where this type of policies might be effective and suitable. One case is where externalities exist and the other where monopoly rents may be shifted (Okuno-Fujiwara, 1991). Starting point for his explanation is existence of Marshallian externality. Some authors demonstrated that Marshallian externality may appear in case that a few industries are interconnected and in case of oligopolies (Okuno-Fujiwara, 1991). If it exists potential outcomes are multiple equilibria-“ one where the industry produces no output because average cost is too high compared with the demand price, and the other where positive production takes place using (industry level) economies of scale” (Okuno-Fujiwara, 1991). Furthermore, these equilibria are Pareto ranked. A potential outcome of policy interventions in this case is transfer from economy from Pareto-inferior to Pareto-superior equilibrium in the economy.

The other arguments provided in theory to support claims about potential effectiveness of strategic policy is related to performance of the firm faced with international oligopolistic competition. If a country using strategic policies provides subsidies for domestic enterprises engage in international markets with oligopolistic competition the country may benefit. As the reason for this it is explained that subsidies change behavior of the firm making it more aggressive and this change is notable for their competitors. If a domestic subsidized firm succeeds to increase its production, it affects foreign competitor transferring the monopoly rent from foreign firms to domestic ones (Okuno-Fujiwara, 1991).

On the other hand, corrective policies are described as policies designed with the aim of improving economic performance by correcting market malfunctions. Again, two different types are recognized-one created with aim of promoting private R&D and another are policies to assist structural adjustments. (Okuno-Fujiwara, 1991) According to the theory a spillover that occurs with R&D activity within a firm causes lack of incentive to invest in R&D. Corrective industrial policy is supposed to change this trend by providing support to these activities. As previously mentioned another type of corrective policy refers to helping industries to overcome problems posed by external surrounding (for example increase in oil prices). Some industries require specific resources and in case of external crisis they are experiencing lower returns. In this case there needs to be shift of resources from declining to growing industry in order of a country to regain its competitive advantage. Other used

corrective measures are for example removing market failures that cause unemployment and cartelization.

### **2.3.Previous Research on the Japanese Model of High Growth**

One of the first authors who gave a thorough research about Japanese model of growth was Chalmers Johnson. He was a pioneer in this field trying to explain features of the Japanese model of development and its effects after the WWII. His thoughts and findings are summarised in the book “MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975”. Even though time span for his research was until 1975, this book is still widely used as a source in this field. He described political and economic arrangement of Japan as “developmental government”. The main difference with the Western type of arrangement was that government had significant role in the process of development and growth. Market forces were very restricted, especially in the period immediately after the war. He puts enormous emphasis on the role of bureaucrats working for the government. They are seen as crucial for the growth since they were in charge of creating and implementing growth policies. Later on he was criticized for focusing mostly on the heavy industries in his research because these types of industries were highly dependent on help provided by government and especially MITI.

In his view Japanese economic model of high-growth had 4 main elements. The first one he called “existence of small, inexpensive, but elite bureaucracy staffed by the best managerial talent available in the system” (Johnson, 1982, p. 315). This depicts how much emphasis he was putting on the role of bureaucrats. Second element is “a political system in which the bureaucracy is given sufficient scope to take initiative and operate effectively” (Johnson, 1982, p. 315). As a third element Johnson describes “perfection of market-conforming methods of state intervention in the economy” (Johnson, 1982, p. 317). Finally, the fourth element is “a pilot organization like MITI” (Johnson, 1982, p. 319). He also adds that one should bear in mind that this model of political economy he proposes is not adopted from other countries, rather inherited from the system before WWII.

Some authors, like Bernardette Lanciaux, were observing the Japanese model as an additional type to two basic models. The explanations she gives relates to the Cold War and its influence. The aftermath of the Cold War was the main categorization on the two basic types of economies- Western style capitalism and Soviet style communism (Lanciaux, 1997). She

argues that after the Cold War and Japanese success in the meantime, differences of Japanese model compared to two mentioned were obvious. Japan could not fit its model in neither of the two basic types. She argues that the main characteristic of Japanese model is a “dynamic concept of comparative advantage”. This means that areas of competitive advantages of Japan can be modified by government actions of directing resources, rather than taking resource endowments as given and fixed (Lanciaux, 1997). Restriction in market forces made the model vulnerable to trade negotiations with United States. This shortcoming of the model made Japanese government think about altering the model in a more open market way.

Another author dealing with the question of a Japanese model is Fukunari Kimura. He was exploring Japan’s model of economic growth with regard to elements of the model that might or might not be relevant for other developing countries. Japan is observed as the first country from the outside of the western world to have successful industrialization. In his work he claims that the role of industrial policy is overstressed. He also argues that Japan’s model is unique but in its development process it had common issues developing countries face nowadays like achieving macroeconomic stability, human resource development and establishment of economic infrastructure (Kimura, 2009). He focuses mainly on the economic model of Japan with the aim to draw some conclusions that might be helpful and applicable to other less developed countries (LDC). He argues that the difference in growth processes between LDCs and Japan is that they are developing within the process of globalization when it is easy to reach foreign capital. It is of crucial importance to use the globalization forces effectively. Japan was buying and importing technology and that helped its industrial development. It started with big shortages of capital, without foreign directed investments it managed to establish high saving rates with self-financing to accumulate capital.

In the research about the Japanese model, Schaeede states that Japanese growth was based on producer-oriented policies and social contract that developed around this system (Schaeede, 2004). Furthermore, he claims that government’s support in the shape of industrial policy was directed towards large firms. These governmental programs provided benefits for large firms and their workers both directly and indirectly. On the other hand, small firms and industries that were not part of the growth model were compensated through special policies or subsidies (Schaeede, 2004). The second half of his model is the social contract with lifetime employment as its main characteristic. He argues that the government was putting much more emphasis on support to industries that were exporting and compensating domestic ones

leaving the welfare system in a shadow. Schaeede compares the Japanese postwar social contract with the one in West Germany stating that Japanese was based more on highly heavy industry and was more growth-specific. Hence, it is hard to change this part of the model and adjust it to changes after the 1990s. After asserting that Japan's model does not have anything fundamentally wrong he questions whether it will be possible to change it according to circumstances in the world markets. According to Schaeede the focus of industrial policy should shift to supporting modern industries, especially the service sector that is lagging behind. He also states that it would be a big problem to undertake structural changes in industry without a welfare system to handle potential increase in unemployment rates (Schaeede, 2004).

Cowling and Tomlinson presented the model of Japanese growth based on two key features: interventionist industrial policy and unique institutional system founded around The Japanese Firm (Cowling & Tomlinson, 2011). They argue that these two characteristics were crucial for outperforming foreign competitors. The Japanese model is also seen as an alternative to Communism in Soviet Union and the neo-liberal model in US. They claim that there was a contribution from state interventions to business development of large Japanese firms. For example, in the high growth period the devotion to growth maximizing and also favoring internal growth over acquisitions provided many opportunities for employees to be more involved (Cowling & Tomlinson, 2011). Moreover, development of big enterprises supported by the state allowed Japan to have good economic status. They have also noticed that the Japanese model and US model have similarities in the long run failures which are connected with establishing the growth on high performance of giant corporations. The underlying logic is that large corporations have played an important role in both types of the model for a long time. However, in the short run their corporate goals can be in accordance with country's development, but in long run there is a slight possibility that corporate goals will harmonize with wider public interest. One of their findings is that changes in the part of the model that refers to The Japanese Firm contributed to "hollowing out" of Japan's industrial base (Cowling & Tomlinson, 2011). They conclude by stating that in current times there is a need for new ways in economic management. Therefore, policy-makers can look into the Japanese model in how to join interests of corporate sector with needs in public sector.

When it comes to previous research about the transformation of the model in the present times, it is important to mention research work of Hyeong-Ki Kwon. He was interested to see if the Japanese model was changing and why arguing that other countries, like US and

Germany were implementing some characteristics of the Japanese model in order to enhance productivity. Kwon criticizes the attitude of neoliberalism which advocates that the best model is the market-driven model of Western countries arguing that perfect model does not exist. In addition, he proposed a new conception for the national models called “mutual learning by reflexive agents”. The essence of the model is the belief that nowadays when countries are engaged in international markets they learn and adopt policies from each other. To be more specific, he argues that actors in the international markets get inspired by their competitors and if competitors are performing better they will reassess their own institutions and mechanisms. Furthermore, they will try to apply some characteristics of the competitors’ model and adjust it to their industrial and institutional framework.

Kwon claims that the dynamic processes that the Japanese model has been going through since the crisis in 1990s challenges neoliberal theory and institutional approach. He argues that the national economies of Japan, US and Germany are neither directing their changes to “one best practice” nor persist in their path-independent track (Kwon, 2005). Actually, the reason for the US getting back its competitiveness is seen as the result of applying some characteristics of Japanese model. With this claim Kwon is strongly opposing the neoliberal view that all markets should be converging towards a one best practice. As for the Japanese changes, he argues that the model is undergoing modifications inspired by both international actors in the markets and experiences of its own companies abroad. In his viewpoint “mutual learning by reflexive agents” concept is suitable for the current trends in international markets. Nowadays firms are engaged in big international market introducing their own characteristics and practices, so competitors are showing tendency to reconsider their own structure inspired by them (Kwon, 2005).

### **3. DATA AND METHODS**

This is an explorative study with the quantitative character. By studying what has been done so far in the same field this paper intends to give a different insight in what was considered to be Japanese major strengths after WWII. Based on the previous research in the field and a theoretical foundation a different focus of the model of Japanese economic success will be proposed. Subsequently, with the help of descriptive statistics it will be examined whether there were changes in the key parameters of the proposed model. First, by combining available data from various studies about subcontracting arrangements and then analyzing them it will be explored whether relations between subcontractors and large manufacturers is

showing signs of modification. Afterwards, the same approach will be used with the aim of discovering if new trends occurred in the concept of industrial policy.

As it was previously mentioned, secondary data will be used. The first part of the empirical study is to explore current trends in the subcontracting relations. Data on number of domestic subcontractors compared with numbers from 3 years ago by overseas production ratio was provided by SME Agency of Japan. The figure shows how increased production abroad affected number of domestic subcontractors large firms were using. Since it was noticed that trends in overseas production can have an effect on subcontracting relations data on overseas production ratio are used as an addition. These data are joined with data on rates of outward-bound investments and import penetration in the same figure. With the aim of getting more detailed picture of subcontracting relations within industries data on industrial level were used. The table containing these data depicts percentage of subcontractors per industry. In this paper the source is a study on subcontracting, but the data were collected by SME Agency in Japan and METI/MITI. Since METI has transformed to MITI certain amount of older data is either unavailable or in Japanese. Data presented in the tables are based on a survey that covers 176 industries and 11 employment sizes. The survey was conducted every 5 years and the last year was 1998. In order to explore intensity of subcontracting arrangements data of range of output sold under subcontracting arrangement are used. The data are as well collected in industrial level and are the result of surveys by SME Agency. Finally, in order to get an impression of potential changes within an industry data on automotive industry will be used to show flows in that particular industry. Data in the table involve number of assemblers per supplier, number of supplier per assembler and percentage of suppliers that supply to both Toyota and Nissan.

For the second part of the empirical analysis data related to industrial policy were used. Since manufacturing sector was the biggest beneficiary of public expenditures in order to explore how policies were designed and what was the focus data on reported expenditures and programmes by policy objectives were utilized. Data are gathered by OECD in a research on industrial policies published in 1998. Afterwards, data on numbers of M&A are presented. Since M&A were rare appearance in Japan these data were used in order to determine if industrial policy was changing towards being less rigid. The figure depicts trends in numbers of M&A with three possible types of transactions-M&A among Japanese firms, Japanese firms having M&A abroad and foreign countries with M&A in Japan. To show the need of changing the policy and to see if newly created policies for SMEs have any effect so far data

on percentage of change start-up and closure rates is employed. The data are provided by SME Agency.

#### **4. THE JAPANESE MODEL OF HIGH GROWTH**

The issue of Japan's economic model of high-growth was addressed from many viewpoints. For example, Johnson (1982) advocated that industrial policy created and implemented by bureaucrats was the core of the outstanding success of Japanese economy. Lanciaux (1997) based her model on similar features emphasizing importance of government's resource directing for creating competitive advantages. Schaeede (2004) combined industrial policy and social contract in the model. Aoki (1990) stated that Japanese success was due to J-mode type of internal management. Cowling and Tomlinson (2011) joined Aoki's J-mode and industrial policy to construct the model.

In contrast with previously mentioned models this paper proposes a model based on different combination of unique characteristics of Japanese economy. With regards to the theoretical foundation presented in one of the former parts, this model relies upon two basic pillars:

- 1. organizational form of conglomerates with focus on subcontracting and*
- 2. government-business relationship in the form of industrial policy.*

With the respect to studies that put industrial policy in the front row claiming that it was the crucial source of growth this paper argues that industrial policy by itself was insufficient to induce such high rates of growth after the WWII. Both social contract and internal management organization in firms are as well seen as inadequate to contribute to economic growth in such scope. In contrast in this study it is stated that joined forces of industrial policy and subcontracting arrangements were able to encourage and support remarkable growth of Japanese economy after the WWII. Both industrial policy and subcontracting are peculiarities of Japanese industrial organization and were playing very important role in the process of economic recovery and development.

##### **4.1.Pillar 1- Organizational Form of Conglomerates (Subcontracting)**

Michael Porter explains subcontracting as follows: "Larger Japanese firms frequently have networks of small and medium sized subcontractors and suppliers. With firms located close to each other, information flows freely, service is superb and change is rapid. Larger companies sometimes have equity stakes in their suppliers, opening information flow further.



At the same time as they cooperate with their suppliers, however, Japanese companies bargain vigorously” (Porter 1990, p. 407). Since it is one of the unique characteristics of the Japanese economy it was often seen as one of the competitive advantages of Japan compared to other Western countries in the high-growth period. To be more specific, subcontracting was observed as essential cause of efficiency of big industrial sectors such as automobiles, machinery, textiles etc.<sup>2</sup>

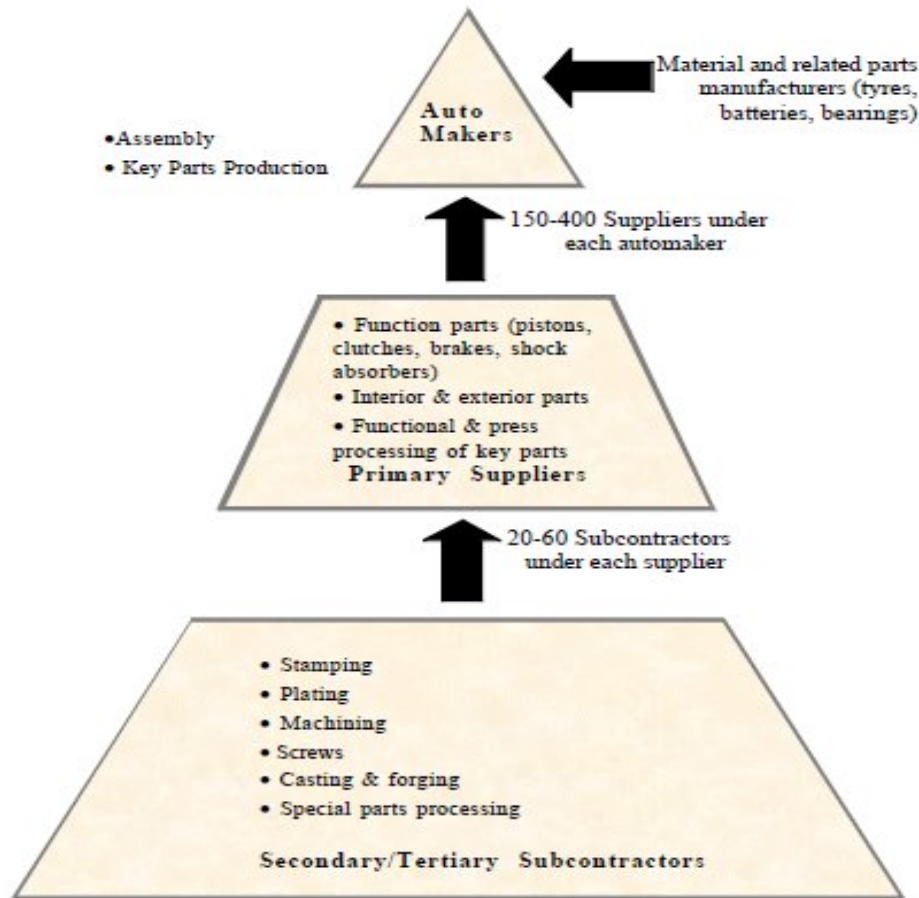
Despite of existence of various definition of this concept (some are mentioned in the theoretical part) it seems that there is agreement in a few aspects of the subcontracting. First, the big manufacturing firms buy parts of the product from smaller firms which they have a contract with. Second, subcontracting refers to long-term relationships. A onetime operation between firms cannot be called subcontracting. As one potential cause for the long-run relationship are ownership links between the two parties-prime manufacturers and subcontractors. The ownership relation varies from full ownership to the minority holding of independent firms. The indicator of the closer relationship that develop between the parties is that big manufacturers show the tendency to rely on small number of suppliers even though they are indirectly connected with the wider network of suppliers through a “hierarchy of suppliers” (Aoki, 1990). The hierarchy was constituted of subcontractors from different tiers. Figure 1 depicts how these relations were in automotive industry. The first-tier subcontractor could supply more than one customer and had significant bargaining power due to their technological know-how, while fourth-tier firms had the worst position depending on their buyers for survival (Schaede, 2009). Furthermore, these relations can at times include technology diffusion mechanisms, risk sharing elements and distinctive subcontractor control such as “*kanban* system”<sup>3</sup> (Kimura, 2002). It is also important to mention that subcontractors can have several customers. Third, it is sometimes believed that there is existence of unfair relationship between big downstream firms and small upstream firms. This can be true for the period after the WWII when small and medium sized companies were not in a favorable position having a hard time to find capital and improve technology, but with liberalization it is expected that this trend is not greatly expressed.

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<sup>2</sup> Japan was not unique for having subcontracting system, since some authors (for example Kimura) claim that Taiwan and Korea also had subcontracting in their history. Patterns of models are different due to dissimilar conditions for its occurrence. Furthermore, Japanese subcontracting model proved to be more efficient contributing to the high growth of the national economy.

<sup>3</sup> An inventory control system usually related to just-in-time and lean production. The meaning of *kanban* is “card” or “ticket” in Japanese.

Figure 1: Subcontracting Structure in Automotive Industry (Traditional Pyramidal Structure)



Source: Hisano, 2000

#### 4.1.1. Development of Subcontracting and its Significance

To be able to understand why subcontracting system in Japan is unique and why it developed in the way it did, it would be useful to see what the conditions for its development were. As the consequence of the WWII Japanese economy was devastated. For SMEs it was hard to find the capital and technology because they were excluded from exporting activities and international markets. Big manufacturing firms were helped by the government since they were believed to be potential carriers of the overall economic growth. In addition, Japan had a “comparative advantage in labour-intensive manufactured goods, and abundant supply of labour was available for SMEs” (Kimura, 2002). Eventually, subcontracting relationship between them was established and it seemed as a win-win situation. Small firms were getting financial as well as technical support and big firms had suitable suppliers. The long-term

nature of the subcontracting relations helped small firms to establish financial stability. During the high-growth period it seemed that this type of a relation was appropriate to ensure rise of the economy. However when conditions in the world markets started changing, approximately after oil crises, enterprises were forced to make some adjustments harmonized with trends in international markets.

As previously mentioned, the view of subcontracting relationship changed over time, which is expected since economic conditions were constantly changing starting from period after the WWII when Japan started rising up to present days. In the period of early growth, to some extent affected by the Marxian economics, scholars were stressing the asymmetrical relationship between big manufacturers and subcontractors. In order to protect subcontractors government implemented three types of policies: legislation against unfair subcontracting practices; the nurture of small-firm cooperatives and the establishment of small-business financial organization (Bala Subrahmanya, 2008). In the 1960s and 1970s the position of subcontractors improved significantly. As a result of mass production the manufacturing sector started growing, encouraging competition between large enterprises. This trend further extended to other sectors and the number of large companies using subcontractor increased. It was suitable for large firms to have suppliers that can produce parts of their products with improved quality, lower costs and in bigger quantities. These characteristics helped large firms to increase competitiveness of their products. As a result of this expansion large firms started offering technical and financial support to subcontractors. Subcontractors had incentives to engage in this type of relationship because it was providing them more chances for technological improvement, more stable contractual relations and more opportunities for growth (Bala Subrahmanya, 2008). Since subcontracting started proving as efficient system contributing to the growth public view on it changed. Researchers started emphasizing its merits such as encouraging efficiency in the industry. Especially when Japanese industries were outperforming US industries in 1970s and 1980s the system was gaining importance. As the number of subcontractors was increasing the quality of their products as a well as the price and engineering skills were supervised and ranked by large companies. The ones that performed better had more opportunities and more responsibilities, whereas those with lower rank had two choices-to be released or to work as low-tier subcontractors (Bala Subrahmanya, 2008).

With the aim of explaining why this system is seen as one of the main pillars of Japanese economic model some potential benefits of the system can be summarized in a few points. First, this type of the relationship provides efficient risk sharing mechanism. Risk is shared between big manufacturing companies and contractors. This was especially important in the beginning because small firms did not have the capacity to bear big risks in business. Second, close relationship between two parties allows increase in quality of the product since there is constant share of information between them. This characteristic provided certain flexibility in industries since they were able to use information from both sides to improve products. Third, there is cost effectiveness in two ways: cost reduction as a result of long term subcontracting collaboration and saving costs of establishing business relationship with new suppliers. Fourth, subcontractors have incentives to invest in relation-specific assets (Kimura, 2002).

To be able to have a complete picture of subcontracting relations and what made them efficient in the growth period one should look more closely into the internal organization of the conglomerates. Relying on the theory of existence of J-mode type of internal organization this paper argues that Japanese firms had different internal structure than the West. Not only subcontractors and big manufacturing firms established long-term relations they also had very close relation between employees. To compare, US had Tayloristic mass production where employees were vertically integrated in a way that engineers were separated from the workers defining the job for them and workers were doing the same job everyday without closer collaboration and information sharing with engineers. Japanese firms had multi-functional teams where engineers and workers were working together on organizing and improving production as well as integrating various job as assembling and quality management (Kwon, 2005). One more difference between these two different systems is that Japanese big manufacturing firms outsourced parts of the products from the subcontractors having collaborative relationship with them and Western firms produced most parts in-house (Kwon, 2005).

Besides working together on quality control big manufacturing firms and subcontractors were also sharing information between each other which allowed permanent upgrading of production process and products. Some institutionalists believe that these kind of internal relations between employees of both big firms and subcontractors were feasible due to high level of trust in the Japanese culture. A study conducted by Dyer, Cho and Chu in 1991 showed that “Japanese suppliers had a high degree of trust with automakers regardless of

relation type (i.e. whether they were standard part suppliers or relation specific suppliers) (Kwon, 2005). To depict internal relationships between employees Aoki gives examples from the steel industry: “At a representative Japanese plant, an “integrated engineering control room” exists side by side with the engineering office for each workshop. They are not hierarchically ordered in terms of status. In fact, there is often a rotation of personnel between the two to facilitate knowledge sharing among them and discourage the development of shop-centered interests. In the actual solution of cross-shop problems the control room acts like a coordinator at the same horizontal level with the workshops” (Aoki, 1990).

This paper argues that J-mode type of internal relations in subcontracting contracts characterized with closer collaboration and information sharing between subcontractors and big firms helped Japanese industry in the period after WWII. It contributed to the ability of firms to respond to changes in demand, changes in market conditions and other factors in industrial surroundings. Japanese firms gathered valuable information from both sides, subcontractors and large firms, and succeeded to develop the ability to use them “on-site” (Aoki, 1990).

## **4.2.Pillar 2- Government-Business Relations (Industrial Policy)**

During its rise Japan had unique relations between government and business. Government had substantial, some believe too large influence in the economy of the country since they were interfering in financial sector, industry, private sector etc. One of its main peculiarities and, at the same time major source of criticism, is surely industrial policy that illustrates connections between government and business. Definitions presented in theoretical part show that this concept is still vague, but for the purpose of this study it can be explained as efforts by the government (and especially MITI) to influence economic performance of a country by interfering in resource allocation in industry using various tools.

### **4.2.1. Evolution of Industrial Policy**

It was noticed by some authors<sup>4</sup> that actions within industrial policy were changing due to external and internal factors. Taking into concern some events that could have influenced the direction of industrial policy, the time span from the WWII onwards can be divided into a few sub-periods.

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<sup>4</sup> For further information see Okuno-Fujiwara (1991).

### *1945-1960<sup>5</sup>*

This was the hardest period for Japan. Its economy was devastated by the war and one-quarter of national wealth was lost (Okuno-Fujiwara, 1991). The government was struggling to find the way to recover. MITI established Priority Production System (PPS) with the aim of revitalization. PPS meant that domestic resources were directed into two industries that were seen as decisive-coal and steel. There was one more problem, lack of natural resources. This way of government regulation with focusing on improving production of two sectors continued until 1950s with a decrease in direct government control. International trade was still very limited and chances of finding capital in abroad were very small, so there was a need for government intervention through various policies. As the end of this period was approaching, Japan started recovering and growing. Therefore, it is believed that industrial policy had significant influence in the very beginning of restructuring and growth.

### *1960-1973*

These few years represent the period Japanese are the most proud of. It is the period of development and rapid growth. The structure of Japanese industry was switching from agriculture to manufacturing and “from light industries (such as textiles) to heavy industries (such as steel, petrochemicals and automobiles)” (Okuno-Fujiwara, 1991). These trends were supported and enhanced by growing rates of exports in heavy industries. In the beginning of this period government created policies that liberalized conditions for international collaboration by lowering restricting system of quotas and licences for imports. The effects were increase in ratio of imports from 49% in 1960 to 92% in 1963 and finally 97% in 1967 (Okuno-Fujiwara, 1991). Industrial policy in this period was directed to promoting several key industries. MITI was using several tools such as subsidies, tax reliefs and trade protection to support industries that were believed to be crucial in this growth process. In order to be among chosen industries they had to meet three main criteria: to be the industry capable of achieving high productivity growth; to be characterised by a large income elasticity of demand and to have many related industries whose growth would promote employment (Okuno-Fujiwara, 1991). As for the private sector MITI was also interfering with an attempt to control capital intensity and level of competition among firms. Overall, it can be inferred

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<sup>5</sup> Some authors believe that period from WWII to first oil crises in 1973 should not be divided into 2 sub periods, but there were some important changes that allow division into two sub periods.

that industrial policy of this period was characterised with use of strategic policies with aim of encouraging productivity and competitiveness.

### *1973-1990*

Japanese industries reached the peak of their growth and competitiveness in 1980s and then started showing signs of slowdown. Government actions and policies were influenced by external as well as internal structural changes. With lack of natural resources in the country, Japan was highly dependent on imported resources. Therefore, oil crises hit Japanese economy hard and were one of main contributors to changes of the policy. It turned out that strategy of adopting technologies and ideas from other countries was becoming exhausted showing the need of inventing their own technologies. There was also trend in switching from manufacturing towards service sector in international markets. Industrial policy was helping companies to overcome difficulties caused by trends mentioned above. Government also had to deal with foreign criticism directed towards the ways they were organising their trade, so industrial policy was showing signs of decreased protectionism. This period is also characterised with growing importance of R&D initiatives for the national economic growth. Therefore within the scope of industrial policy government started devoting more resources to R&D activities of firms. With the regards to the theoretical background it can be assumed that industrial policy in this period started showing indications of shifting to more corrective type rather than strategic.

### *Changes after 1990*

Some state that decline in growth rates can be found in mistakes of MITI's macroeconomic policy combined with difficulties of shifting from rigid state-influenced model to a more market-driven model (Noland, 2007). Government started realizing that imitator policy Japan was using is becoming exhausted and unsuitable for the current situation in the technological frontier. Therefore, they started creating programmes within industrial policy that are aimed to encourage innovative initiatives. After 1990 government began designing policies in order to improve Japan's national innovation system. In 1995 with the goal of improving the method of science and technology policy the Science and Technology Basic Law was established. It was supposed to tighten the links between public and private sector and national universities, especially in the domain of R&D. Previously, policies were created in a

way to restrict collaborations between these institutions. Hence, universities could not commercialize and protect their innovations. When the legal status of universities was changed, along with foundation of Technology Licensing Organizations, universities were given the possibility to bring their inventions to the market. Government expected that this progress could give incentives for university-business start-ups. Policies and laws for encouraging innovative activity in small and medium-sized enterprises also started to rise from 1999. In addition, METI set up an objective of shortening waiting time for patent examinations from 2 to 1 year by 2013 (Noland, 2007). One more change worth mentioning is transformation from MITI to METI in 2000. The main difference is that now METI's field of action is supposed to be limited to macroeconomic questions. However, it is also noticed that METI continued to target particular sectors with its "New Industry Promotion Strategy".

#### **4.2.2. The Importance of Industrial Policy**

Results of a various research work done in this topic have showed that industrial policy can result in inefficient use of resources and might not contribute to long-run growth. Therefore, some believe that role of the government should be limited to assuring macroeconomic stability, adequate property rights protection and establishment of business environment suitable for entrepreneurial and innovative initiatives.

On the other hand, what this study argues for is that government action with some limitations can have an important role. Relying on the theoretical framework that supports belief that public initiatives combined with the interests of private sector can contribute to the economic development industrial policy is added to subcontracting as an important part of the model. The case of Japan shows that industrial policy can have significant influence, but there are some things that need to be considered in order to understand why this was the case.

First, circumstances in Japanese economy after the WWII should be taken into account. Compared to another industrialized countries Japan started its development late with lack of natural resources, numerous population, shortages of capital and the need for trade relations. As Chalmers Johnson describes "nurturing the economy has been a major priority of the Japanese state because any other course of action implied dependency, poverty, and the possible breakdown of the social system" (Johnson, 1981, p. 307). With such conditions there was a need for urgent government action. Market failures were present and structural restructuring was a necessity. Besides circumstances and market failures factors that could influence results of the industrial policy are also tools that are chosen and the way they are



used. For economic conditions and preset market failures that were result of the war it might be asserted that providing resources directly to industries was the right way of enhancing productivity and improving economic performance (Buigues&Sekkat, 2009). As the Japanese economy was developing and economic surrounding became more turbulent there was a need for the change of instruments. Circumstances in present times require more flexible national economies. The emphasis is on the free markets and market-driven economies. But it does not have to mean that industrial policy would be an obstacle to economic development. On the contrary, combined with market trends and private sector in can contribute to overcoming of some difficulties actors in the economy are facing. (For instance, to encourage competition, help firms that are struggling to adapt to trends in international markets, etc.)

## **5. EMPIRICAL RESEARCH OF THE TRANSFORMATIONS OF THE MODEL**

After approximately 1980s when Japanese economic performance reached its peak Japan started to slow down. The situation in 1990 made things for Japan even worse. The “lost decade”, fierce competition in international markets, burst of financial bubble, turbulent changes in the economic environment, etc. were indicators for Japan that reforms in liberalizing direction are needed. This meant that the traditional Japanese model relying on government policies and somewhat rigid inter-firm organization as the sources of competitiveness had to be transformed. Since the model of Japanese economic growth proposed in this paper is based on two main pillars this section will go deeper into both pillars in order to grasp potential changes in both of them.

### **5.1.Trends in Subcontracting Relations**

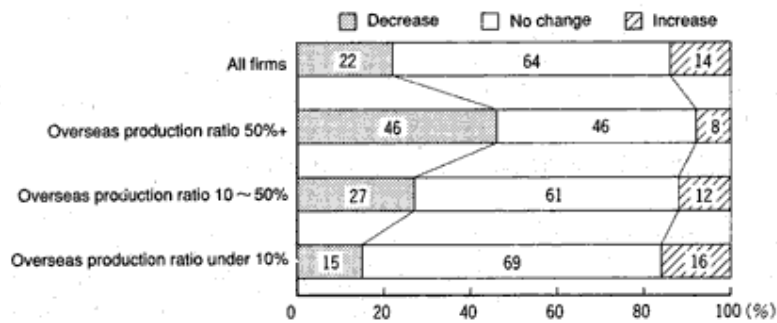
Globalization forces from 1990s started pressuring industries to reduce costs, especially for the product parts that were produced by subcontractors. After Plaza Accord<sup>6</sup> Japan lost its cost advantage compared to foreign competitors. Therefore, with the globalization forces there was a need for more cost effective relations and production. One of the ways of dealing with this was to produce abroad. Pressure was also due to penetration of foreign products to Japanese markets sold with lower prices. In Figure 3 it can be seen that between 1986 and 2008 there are upwards trends in all figures, but with fluctuations in ratio of investment in overseas activities. In a White Paper on SMEs by SME Agency from 1998 it was revealed

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<sup>6</sup> Plaza Accord was an agreement between Japan, West Germany, France, United Kingdom and United States, countries known as G-5. The aim was to devalue US dollar in relation to Japanese Yen. It was signed in Hotel Plaza, so that is how it got the name.

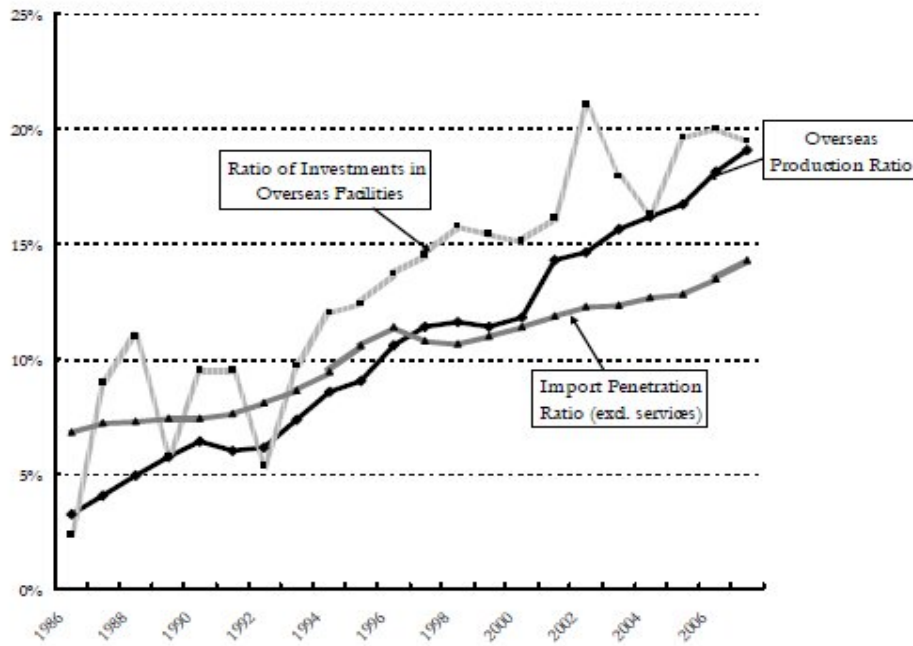
that big companies showed a tendency to decrease the number of domestic subcontractors when their overseas production was increasing (Figure 2). Large firms with overseas production ratio of more than 50% had a decrease of 46% in the number of domestic subcontractors. Hence, for subcontracting it is important to observe figure of overseas production (Figure 3). The level rose from about 7% in 1990 to almost 20 % of total production in 2007 showing that almost every fifth product was not produced in Japan. So, it can be expected that subcontracting relations started changing towards more open relations between suppliers and main customers. Large firms started using suppliers in overseas countries they were producing in.

**Figure 2: Number of domestic subcontractors compared with 3 years ago by overseas production ratio (large firms)**



Source: SME Agency, 1998

Figure 3: Outward-bound Investments, Overseas Production and Import Penetration, 1986-2008



Source: Schaefer, 2009

To get a better insight of the changes of subcontracting arrangements Table 1 provides data about changes within industries. It shows the percentage of SMEs that were working as subcontractors in various industries from 1966 until 1998. In 1966 the period when Japan was developing and when subcontracting relations were gaining more importance 13 out of 22 industries from the table had level of a subcontracting above 50%. The same trend remains until 1981 when the level increases for 2 more industries and in this year the number of industries with subcontracting level of more than 50% is the highest-15 industries. Starting from this year, the number is constantly declining. In 1998 number of industries with level of subcontracting higher than 50% is 10. As it can be assumed some industries had more intensive subcontracting compared to others. For example, textiles, apparel, general machinery, electrical machinery and precision machinery had more than 70% of SMEs working as contractors constantly before 1987. But in 1998 there was a decline in percentages. In contrast, in some industries such as food products, chemicals, petroleum and ceramics percentage of SMEs working as contractors did not exceed 40% in any year. When one takes a look at the overall level of total manufacturing one can notice that the level was constantly above 50% until 1998. In addition, overall level of subcontracting was increasing

until 1981 when the levels started declining. Almost all industries<sup>7</sup> reached the highest levels of subcontracting in 1981 and then levels started declining with lowest levels in a 1998.

**Table 1: Percentage of SME working as subcontractors per industry, 1966-1998**

| Industry                 | Year |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|
|                          | 1966 | 1971 | 1976 | 1981 | 1987 | 1998 |
| Food products            | 16.5 | 30.2 | 14.5 | 17.5 | 8.2  | 8.6  |
| Beverages and cigarette  | -    | -    | -    | -    | -    | 5.9  |
| Textiles                 | 79.8 | 75.9 | 84.5 | 84.9 | 79.7 | 76.4 |
| Apparel                  | 73.6 | 71.4 | 83.9 | 86.5 | 79.5 | 70.8 |
| Wood products            | 35.0 | 43.8 | 42.9 | 48.0 | 21.7 | 22.2 |
| Furniture                | 45.6 | 49.4 | 41.2 | 51.6 | 38.5 | 23.7 |
| Paper                    | 51.0 | 43.9 | 44.8 | 51.6 | 41.3 | 44.2 |
| Printing                 | 46.3 | 51.0 | 50.8 | 59.0 | 42.0 | 30.8 |
| Chemicals                | 40.2 | 38.7 | 37.1 | 38.5 | 22.5 | 23.4 |
| Petroleum                | 30.1 | 30.7 | 27.0 | 38.9 | 18.4 | 11.8 |
| Plastic                  | -    | -    | -    | -    | 68.7 | 58.5 |
| Rubber                   | 62.3 | 54.3 | 61.1 | 71.8 | 65.6 | 58.4 |
| Leather                  | 60.0 | 64.5 | 62.5 | 68.8 | 64.7 | 61.7 |
| Ceramics                 | 33.8 | 34.0 | 29.4 | 36.6 | 35.5 | 27.0 |
| Iron and steel           | 66.0 | 66.0 | 70.4 | 72.0 | 52.6 | 47.4 |
| Nonferrous metals        | 67.1 | 69.7 | 68.7 | 73.6 | 62.3 | 45.4 |
| Metal products           | 66.3 | 71.7 | 74.8 | 78.6 | 71.0 | 58.4 |
| General machinery        | 70.7 | 75.8 | 82.7 | 84.2 | 74.8 | 59.2 |
| Electrical machinery     | 81.4 | 78.9 | 82.3 | 85.3 | 80.1 | 65.2 |
| Transportation equipment | 67.1 | 77.9 | 86.2 | 87.7 | 79.9 | 69.3 |
| Precision machinery      | 72.3 | 70.7 | 72.4 | 80.9 | 70.4 | 58.8 |
| Other manufacturing      | 50.8 | 58.7 | 56.4 | 62.2 | 43.5 | 31.4 |
| Total manufacturing      | 53.3 | 58.7 | 60.7 | 62.8 | 55.9 | 47.9 |

Source: M.H. Bala Subrahmanya, 2008

<sup>7</sup> The only exception in the table is chemical industry with highest percentage of subcontracting in 1966.

In order to get a complete picture about subcontracting relations in industries it is important to see what percentage of output subcontractors were selling to big firms. Hence, Table 2 shows ranges of output sold by SMEs within contracting relations combined with figures of percentage of SMEs in industries. The composition of industries is the same as in the previous table. Due to the availability of this kind of data observations are possible for two years, 1981 and 1987. Range of output is divided as less than 40%, between 40% and 80% and from 80% to 100% for year 1981. In year 1987 it is divided slightly different less than 30%, from 30% to 70%, between 70% and 100%, and 100%. As one might notice industries that showed the highest percentages of SMEs working as subcontractors in the previous table (textiles, apparel, general machinery, electrical machinery and precision machinery) also showed high percentage of output sold to big firms. In all mentioned industries more than 85% of subcontractors sold between 80% and 100% of their output within subcontracting system in 1981. Similar trend remained in 1987. Other industries also show a high percentage of SMEs selling their significant amount of their products to big firms. With the exceptions of food products and chemicals whose levels are not exceeding 55% of subcontractors that sell between 80% and 100%, other industries have more than 70% subcontractors selling this amount under subcontracting contracts in 1981. In 1987 in almost all industries (the exceptions are food products, chemicals and petroleum) there was a significant percentage (more than 60%) of subcontractors that sold 100% of their products to big firms. In total manufacturing 82.4% of subcontractors sold more than 80% of their output in 1981 and 81.3% of subcontractors sold 100% of output under subcontracting arrangements. After analyzing both tables it can be noticed that when levels of subcontractors in industry are higher, their share of products sold within subcontracting contracts is also higher.

Table 2: Subcontracting Intensity of SMEs, 1981 and 1987

| Industry                 | Range of output sold under subcontracting arrangement<br>(per cent) |       |        |      |       |        |      |
|--------------------------|---|-------|--------|------|-------|--------|------|
|                          | 1981  |       |        | 1987 |       |        |      |
|                          | <40   | 40-80 | 80-100 | <30  | 30-70 | 70-100 | 100  |
| Food products            | 48.5  | 13.2  | 38.1   | 18.1 | 16.0  | 10.5   | 55.4 |
| Textiles                 | 3.7   | 1.8   | 94.2   | 2.0  | 2.2   | 1.8    | 94.0 |
| Apparel                  | 4.8   | 3.9   | 91.0   | 2.1  | 2.8   | 1.8    | 93.3 |
| Wood products            | 20.7  | 13.5  | 65.4   | 6.5  | 13.6  | 8.9    | 71.0 |
| Furniture                | 13.9  | 16.4  | 69.6   | 3.7  | 12.2  | 11.0   | 73.1 |
| Paper                    | 16.5  | 1.6   | 72.6   | 11.9 | 11.1  | 7.4    | 69.6 |
| Printing                 | 22.9  | 14.3  | 62.5   | 15.2 | 13.8  | 9.2    | 61.8 |
| Chemicals                | 28.4  | 17.6  | 53.6   | 23.9 | 11.2  | 15.8   | 49.1 |
| Petroleum                | 26.7  | 10.3  | 62.8   | 25.3 | 11.0  | 20.4   | 43.3 |
| Plastic                  | -   | -     | -      | 3.9  | 8.6   | 10.5   | 77.0 |
| Rubber                   | 7.0   | 5.8   | 86.9   | 3.2  | 6.0   | 6.6    | 84.2 |
| Leather                  | 4.2   | 3.8   | 91.8   | 1.4  | 2.1   | 2.7    | 93.8 |
| Ceramics                 | 16.4  | 11.8  | 71.5   | 7.6  | 9.7   | 4.0    | 78.7 |
| Iron and steel           | 14.5  | 12.2  | 73.1   | 8.6  | 15.2  | 12.3   | 63.9 |
| Nonferrous metals        | 9.0   | 11.2  | 79.5   | 6.6  | 7.8   | 11.4   | 74.2 |
| Metal products           | 8.9   | 11.2  | 79.7   | 3.8  | 9.6   | 10.2   | 76.4 |
| General machinery        | 7.9   | 7.9   | 84.0   | 3.9  | 7.1   | 10.2   | 78.8 |
| Electrical machinery     | 5.0   | 6.2   | 88.6   | 3.1  | 4.8   | 9.3    | 82.8 |
| Transportation equipment | 5.2   | 4.9   | 89.7   | 2.8  | 4.8   | 9.6    | 82.8 |
| Precision machinery      | 5.2   | 6.3   | 88.2   | 3.0  | 5.4   | 7.9    | 83.7 |
| Other manufacturing      | 11.5  | 9.8   | 78.4   | 6.2  | 8.9   | 5.0    | 79.9 |
| Total manufacturing      | 9.4   | 7.9   | 82.4   | 4.5  | 7.0   | 7.2    | 81.3 |

Source: M.H. Bala Subrahmanya, 2008

To see the statistical relationship between the data from two tables Bala Subrahmanya correlated percentage of subcontracting with percentage of SMEs that sold between 80 % and 100% in 1981 and 100% 1987. He discovered that there is a statistically significant positive correlation between the percentage of SMEs that sell almost 100% of their output within

subcontracting relations and the percentage of subcontracting (Bala Subrahmanya, 2008). From this finding it can be supposed that the bigger percentage of subcontracting industry has the relations between subcontractors and large firms will be more intense.

To show that Japan started departing from a traditional model based on exclusionary subcontracting relations to the more open relations between suppliers and customers Table 3 demonstrates trends in automotive industry of Japan. Trends in one industry can give us closer look into what is happening within that particular industry. Automotive industry is taken as an example not only because it has subcontracting relations, but also because of the need for rapid changes in order to keep up with trends in markets. So, it can be assumed that changes on subcontracting relations are noticeable in this industry.

**Table 3: Transformation of Subcontracting Relations in Automotive Industry, 1984-1993**

| Variable   | Year |      |      |      |
|--|------|------|------|------|
|  | 1984 | 1987 | 1990 | 1993 |
| Assemblers per supplier                                    | 4.81 | 5.01 | 5.17 | 5.44 |
| Suppliers per assembler                                    | 2.16 | 2.28 | 2.44 | 2.59 |
| Percent of suppliers that supply to both Toyota and Nissan | 0.26 | 0.26 | 0.29 | 0.32 |

Source: Kwon, 2007

As it can be seen from the table subcontractors and big manufacturing firms increased the number of partners out of the subcontracting relation. Starting from 1984 to 1993 all numbers were steadily rising. The percentage of suppliers that collaborate with Toyota and Nissan was also increasing. This trend can be interpreted as signs of switching from long-term subcontracting relations to more open relations.

The need for changes of the subcontracting relations can be observed from the two sides, from the SMEs that work as subcontractors and big manufacturing firms that buy their products. Due to exclusive relations with manufacturing firms and restricted competition with other subcontracting firms, SMEs' product prices were not competitive on the international markets, so they had incentive to start opening towards more diversified business relations. As from the perspective of big manufacturing firms they believed that subcontracting

relations were not allowing them to be flexible enough to adopt new technologies and innovations fast like their competitors. A series of researches showed that in recent years Japanese big firms show tendency to select their suppliers in a more open market (Kwon, 2005).

To sum up, analysed data are showing that there is a change in this part of the model. What is surprising is the notion that changes started occurring in already in 1980s. Up until 1990s many assumed that Japanese model is still maintaining its traditional shape, but it seems that modifications of subcontracting arrangements started taking place earlier. It was expected that globalizing forces of 1990s and Plaza Accords would trigger transformations of this part of the model, but data on industrial level have pointed out that first signs of changes can be found already in 1980s.

## **5.2. Trends in Industrial Policy**

In 1998 OECD published a book in which they revealed result of a research on industrial policies and public support within them. The time span is from 1989-1993, period when it can be expected to find some signs of adjustments of industrial policy to conditions in environment. Japan was one of the 15 member countries that recorded an increase in expenditures for manufacturing industry. Beginning and the end of the period were quite similar, but in the middle of the observed period expenditures reached the peak, to be more specific in 1991 the amount of help was 616 billion yen which is more than double compared to the beginning of the period (OECD, 1998, p.124). However, when compared to OECD's average Japan's rate of manufacturing support<sup>8</sup> was under the third of it (OECD 1998, p.124).

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<sup>8</sup>This rate measures public support to manufacturing industry as a share of manufacturing GDP. (OECD 1998, p.124)



**Table 4: Reported expenditure and programmes by policy objective, 1989-1993**

|             | Programmes | Nominal NCG: billion ¥ |        |        |        |        |
|-------------|------------|------------------------|--------|--------|--------|--------|
|             |            | 1989                   | 1990   | 1991   | 1992   | 1993   |
| Sectoral    | 8          | 2.36                   | 3.32   | 3.92   | 3.88   | 3.24   |
| % share     | 3.2        | 0.87                   | 0.65   | 0.64   | 1.4    | 1.12   |
| Crisis aid  | 9          | 0.54                   | 0.68   | 0.43   | 0.21   | 0.41   |
| % share     | 3.6        | 0.20                   | 0.13   | 0.07   | 0.08   | 0.14   |
| R&D         | 22         | 47.41                  | 51.96  | 52.82  | 50.77  | 48.54  |
| % share     | 8.7        | 17.53                  | 10.19  | 8.57   | 18.38  | 16.85  |
| Regional    | 17         | 9.90                   | 20.51  | 21.15  | 13.04  | 9.47   |
| % share     | 6.7        | 3.66                   | 4.02   | 3.43   | 4.72   | 3.28   |
| Investment  | 28         | 5.10                   | 27.48  | 23.85  | 10.55  | 9.44   |
| % share     | 11.1       | 1.89                   | 5.39   | 3.87   | 3.82   | 3.28   |
| SMEs        | 154        | 152.66                 | 260.02 | 187.95 | 160.90 | 143.68 |
| % share     | 60.9       | 56.46                  | 50.99  | 30.51  | 58.25  | 49.88  |
| Exports     | 5          | 40.66                  | 129.13 | 309.02 | 23.64  | 57.70  |
| % share     | 12.7       | 15.04                  | 25.32  | 50.16  | 8.56   | 20.03  |
| Energy      | 5          | 9.97                   | 14.19  | 14.13  | 10.51  | 13.39  |
| % share     | 2.0        | 3.69                   | 2.78   | 2.29   | 3.80   | 4.65   |
| Environment | 5          | 1.81                   | 2.53   | 2.83   | 2.73   | 2.18   |
| % share     | 2.0        | 0.67                   | 0.50   | 0.46   | 0.99   | 0.76   |
| Total       | 253        | 270.40                 | 509.92 | 616.11 | 276.23 | 288.06 |

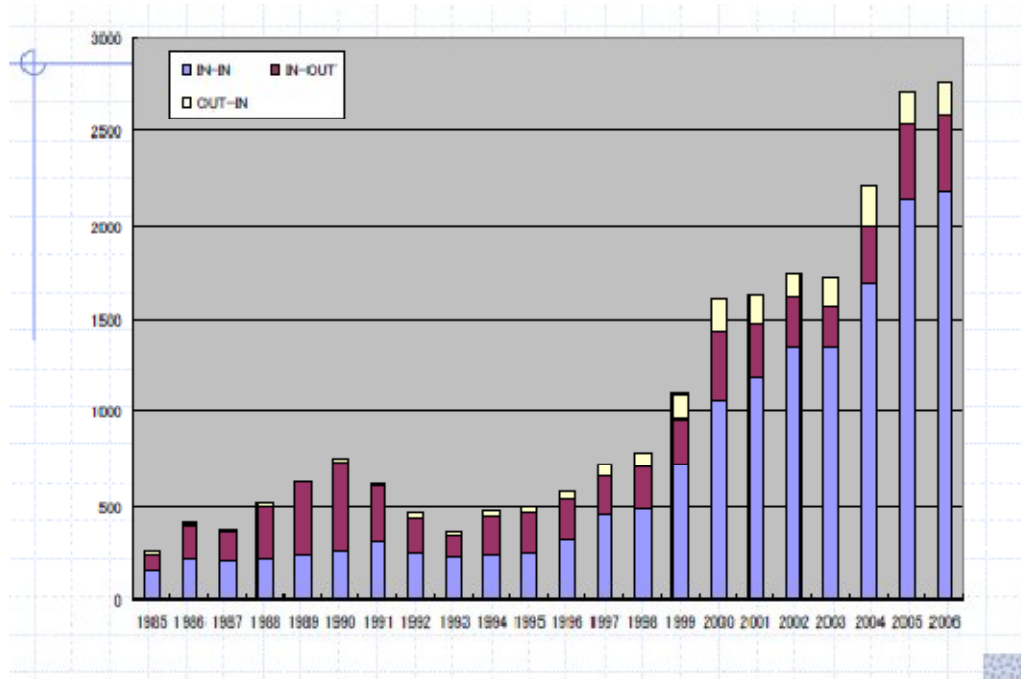
Source: OECD, 1998, p.125

Table 4 shows more detailed overview of expenditures and programmes by policy objective in the manufacturing sector. As can be seen from the table expenditures for export promotion, SME and R&D programmes represented programmes that was invested the most in. In 1989 these programmes together were 88% of all expenditures in manufacturing industry and in the end of the period they represented 87% of all expenditures. As can be noticed the policy did not change its focus or volume of public support for the observed years. Change can be seen in 1991 when public support for SME decreased from approximately 50% to 30% and

export promotion doubled. It was the period when Japanese “export credit guarantee system was particularly hit by loan write-offs and total guarantee and insurance claims paid” (OECD, 1998 p.125). In the rest of the period the previous trend continued. The smallest share of the expenditure was devoted to sector specific and crisis aid for enterprises. Together they were not exceeding 1 to 1.5% of the total expenditures. In the report OECD claim that this represents a shift from sector-specific and enterprise-specific support to a more horizontal character that already started before the observed period (OECD, 1998, p.125). The main recipients of the sector-targeted programmes were shipbuilding, computer industry and petrochemical industry (OECD, 1998, p.125). As already mentioned, sectoral support was not playing significant role in manufacturing support in this period with levels from 0.7% in 1989 to 1.12% 1993. Expenditures for R&D and technological innovations were stable in these 5 years. When it comes to programmes reported, 70% of R&D expenditures were devoted to horizontal programmes with the aim of technological development and remaining 30% was invested in technology-specific programmes. These data provided an insight of how government support was divided in the manufacturing sector and what was the main focus of the industrial policy in the given period.

In 1995 the government created a Deregulation Subcommittee to show that their way of thinking about role of state through public policy had started changing. Later on this organization was replaced by the Council for Regulatory reform. Some deregulatory measures from the beginning of 1990s were aiming to enhance competition among firms in different sectors of industry. This was important because the government was consciously restricting competition among firms in certain sectors in previous period. Not only was the government restricting competition in some sectors in Japan, they were also designing policies that were not allowing foreign firms to buy shares in Japanese companies. Mergers and acquisitions (M&A) were very limited. Actually, up to 1980s they were very rare. But in recent years M&A was seen as way of restructuring signaling deregulation and decreased government control in business relations. Since some authors found that M&A can contribute to more effective resource allocation (Arikawa & Miyajima, 2007) increased number of M&A can indicate that government is ready to decrease its interference with resource allocation. Of course, it cannot be expected that industrial policy will be abandoned completely, rather becoming more market-oriented than before.

Figure 4: Trends in Number of Mergers & Acquisitions, 1985-2006



Source: Arikawa & Miyajima, 2007

Figure 4 shows trends in numbers of M&A from year 1985 to 2006. “In-in” stands for M&A among firms in Japan, “in-out” shows trend in numbers of Japanese firms doing M&A in abroad and “out-in” figure depicts number of foreign firms having M&A in Japan. What is striking from this graph is that starting from 1990s the number of M&A was rising in all three categories. Until 1993 percentage of foreign companies having M&A in Japan was really small showing restrictions posed by government on business relations. International companies were not very welcome to penetrate Japanese markets by having mergers with Japanese firms. The number of Japanese firms having M&A within the country was not very big. The biggest share of M&A was number of transactions made by Japanese firms that were investing in abroad. The overall number of M&A up to 1993 was modest.

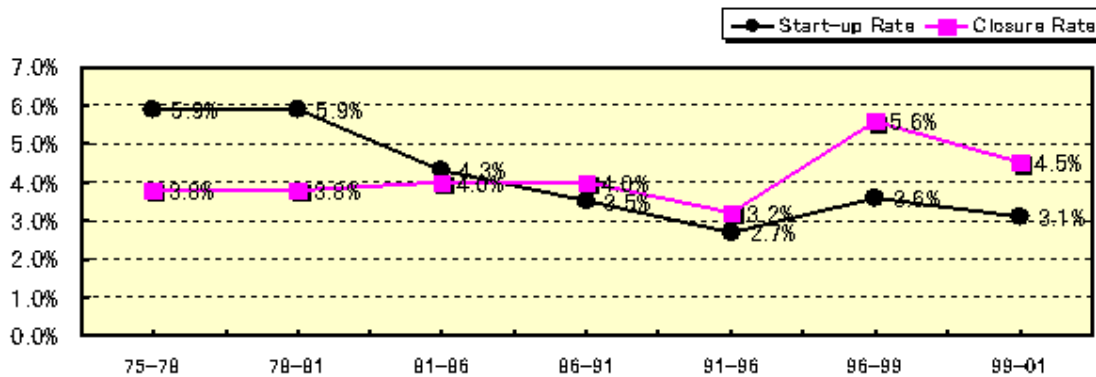
However, what is important to notice is that despite low levels of M&A period between 1987 and 1993 depicts a fluctuation in numbers of M&A. This can be an indicator of early deregulating changes in the government policies. It can be assumed that changes in liberalizing ways occurred in the late 1980s. What is important to emphasize is that the

biggest share of transactions belongs to M&A among Japanese firms in the country, which can be interpreted as a potential indicator of restructuring and new growth strategy.

After 1993 the number of transactions is steadily increasing. Starting from 500 transactions in 1990 the number rose to 2725 transactions in 2005. The number of foreign firms having M&A has risen too, but still it does not make significant share of overall number of transactions. These rising trends in 1990s are in accordance with overall trends in the world markets. Therefore, they should be interpreted with the caution. It was noticed in previous studies that some industrialized countries such as Germany, US, France and United Kingdom were showing similar trends as a result of globalization process (Arikawa & Miyajima, 2007). Therefore, it can be assumed that Japan was following trends in international markets and also decreasing rigidities by allowing foreign countries to penetrate their markets.

As it was previously mentioned after the WWII Japanese industrial policy was focused on providing direct support to targeted industries with the aim of encouraging economic development and growth. The focus of industrial policy was on large manufacturing companies that were believed to be crucial for economic recovery after WWII. SMEs were not the government's priority and compared to the large companies they did not have variety of ways to find capital. Nowadays SMEs are of bigger importance since they are more flexible to adjust to fluctuations in the markets. The attention is switching to encouraging entrepreneurial initiatives and innovations. Figure 5 depicts trends in rates of start-ups and closures as a percentage of total enterprises. As it can be noticed start-up rates were in constant decline until 1991. In the period after 1981 rates of start-ups became lower than rates of closures and the same trend remains until the end of the observed period. Closure rates were constant until 1991 when they started growing. These trends can be a result of lack of skills and opportunities, but also a result of insufficient policy support.

**Figure 5: Change in Start-up and Closure rates, enterprise-based (non-primary industries/annual average)**



**Source: SME Agency website**

Confronted with trends introduced in Figure 5 Japanese government announced a change in industrial policy related to philosophy behind SME policies (Buguiés & Sekkat, 2009). The essence of these new policies designed for SMEs was to encourage establishment of new independent SMEs and also to create conditions for growth of existing SMEs. One of the strategies of government’s industrial policy now is to revitalize Japanese economy by helping SMEs and encouraging innovative activities. Furthermore, public policies created in recent years were aiming to “promote partnerships between SMEs, universities and government, to implement new government organizations for SME financing and to support business creation and management reforms in existing SMEs” (Buguiés & Sekkat, 2009).

Presented data on industrial policy are showing that are indications that the government started changing its attitude towards role of industrial policy. Despite overall opinion that industrial policy beginning to change as a result of crises in 1990s, the data shows that alterations can be traced to late 1980s and beginning of 1990s.

## 6. CONCLUSIONS

When Japan lost its cost effectiveness in production Japanese firms were forced to find new and cheaper suppliers. Rigidities posed by the government policies resulted in high prices of products supplied by subcontractors. In addition, other East Asian countries started offering quality goods at a lower price. One of the solutions for more cost effective production was outsourcing in abroad. Japan recorded continuous increase in overseas production rates. With regard to findings of SME Agency it can be assumed that with constant increase in overseas production there will be decline in number of domestic subcontractors.

Moreover, in industrial level modifications were also noticed. After 1981 and up to 1998 there was a constant decrease in percentage of SMEs working as subcontractors in various industries. Some industries had bigger percentage of subcontractors, some had less, but both recorded a downward trend after 1981. In contrast to expectations that subcontracting relations started changing as a result of Plaza Accord and globalizing forces in 1990s, the data showed that changes started occurring earlier, after 1981. Analysis also showed that industries that had bigger percentage had also more intensive relationships among firms. A constant decrease in numbers of subcontractors at the industrial level combined with an upward trend in overseas production can signalize a new transformation process of subcontracting relations.

Industrial policy is also showing some signs of modifications. In the beginning of 1990s manufacturing sector was still the main beneficiary of government policies. But programs that were invested the most in were R&D, SMEs and export promotion. As it was already noted this can be interpreted as moving from sector and enterprise specific to more horizontal objectives that started in late 1980s. Such high share of investments in SMEs and R&D might also be an indication that government is trying to enhance productivity and encourage growth in manufacturing sector by advancing technological potential and supporting innovative initiatives.

Furthermore, the government announced process of deregulation and started establishing institutions that would help with this process. Between 1987 and 1993 there was a fluctuation in number of M&A that can point to some early changes in government policies. It can be assumed that government started reducing rigidities already in late 1980s. After 1993 the number of M&A in Japan has been constantly increasing and this trend is harmonized with overall trends in global markets. The biggest share of all M&A is among Japanese firms in

the country. Previously the state was helping firms struggling with lack of capital through special loans, but after 1990s the number of Japanese firms joining together in business is rising. This could mean that industrial policy became less restrictive when it comes to inter-firm collaboration. Besides following global trends a steady upward trend in number of M&A transactions might also be an indicator that government is undertaking restructuring reforms.

Government's devotion to targeting large companies with various tools of industrial policy led to constant decrease in start-up rates. Since 1980s rates of closures were constantly higher than rates of start-ups. Confronted with these trends government decided to change industrial policy towards SMEs. Japanese large firms that were carriers of the growth were not flexible enough to adjust fast to changes in technological frontier. Therefore, the government is now designing policies that will support SMEs that are much more flexible and therefore seen as potential growth triggers.

To sum up, it was noticed that Japanese model proposed in this paper is showing signs of transformations. Some rigidities of the model put constraints on the growth process in 1980s. Therefore, in order to regain its position in international markets Japan had to adjust some of its features to current circumstances. This study found that changes in the proposed model started occurring already in 1980s, which is earlier than expected. In literature the Japanese model up to 1990s is described as traditional and unchanged. But, data are pointing out that both pillars of the model are demonstrating early changes. Subcontracting relations recorded decreased trend in early 1980s, whereas industrial policy started changing in later 1980s.

It cannot be expected that Japanese model will be completely abandoned or that Japan will transfer to open-market neo-liberal model. It is more likely that Japan will continue opening its boundaries to other countries. One can expect that subcontracting relations will still exist, but in a less exclusionary relationships than before. As far as industrial policy is concerned, it can be assumed that government will not give up on interference in resource allocation, rather decrease its influence and leave more space for market forces.

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