INDUSTRIAL UPGRADING AND EXPORT DIVERSIFICATION: A COMPARATIVE ANALYSIS OF ECONOMIC POLICIES IN TURKEY AND MALAYSIA

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This paper considers the prospects of manufactured exports of Turkey and Malaysia given the rising standards of global competition. While Malaysia has the advantage of having an export-oriented MNC-led industry in high-technology manufactures, Turkey has a weaker, stagnant export structure when it comes to increasing its technology content. Its low-technology textile and food manufacturing industries face difficulties in competing against Asian producers which have access to much lower real wage levels. In more sophisticated parts of manufacturing, Turkish firms find it difficult to compete against high-technology European firms. The divergent trends in net barter and income terms of trade is a reflection of these structural differences. A periodical comparison of actual economic policies' impact on industrial and trade outcomes is followed by an econometric analysis of trade liberalization on trade performance and balance of payments. Conclusions are drawn from the implications of these qualitative and quantitative assessments.

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1. Introduction

The significance of diversifying export structures for middle-income countries has risen with the widespread implementation of free trade agreements under the new WTO rules and through bilateral agreements. Higher standards of global competition have brought new challenges for export diversification and industrial upgrading. This paper takes a closer look at these challenges by focusing on two middle-income developing countries, Turkey and Malaysia. While Malaysia has the advantage of having an export-oriented MNC-led industry in high-technology manufactures, Turkey's export structure is relatively weaker and stagnant when it comes to increasing its technology content. Its low-technology textile and food manufacturing industries face difficulties in competing with low-wage Asian producers which have access to much lower real wage levels. In more sophisticated parts of manufacturing, Turkish firms find it difficult to compete against high-technology European firms.

The paper takes a historical perspective to compare different phases of manufacturing experiences and the role of economic policies in restructuring these experiences. One of the central questions that this paper aims to answer arises from Figure 1. Malaysia experienced a more or less stable trend in net barter terms of trade during the ISI period, then showed an improvement after trade liberalization. In contrast, Turkey experienced declining net barter terms of trade throughout ISI, then a slightly increasing trend following liberalization, and a further deterioration after the currency devaluation following the financial crisis of 1994. More importantly, the purchasing power of exports, measured by income terms of trade, increased dramatically in Malaysia, while it displayed only a modest increase in the case of Turkey. The critical

questions, therefore, are the following: Why do we have these divergent paths in the terms of trade trends and how are they associated with the different development trajectories of Turkey and Malaysia?[2]

The rest of the paper demonstrates that the rapid transformation of Malaysian exports into manufactured goods with higher technological content is partly responsible for the upward movement in relative export prices and for the massive expansion in the volume of these high-tech exports. Likewise, Turkish specialization in low-tech manufactured exports resulted in deteriorating relative export prices and a much lower rate of increase in the volume of exports. Moreover, the existence of higher rates of unemployment in Turkey is partly responsible for keeping real wages lower, and thus, resulting in lower prices of exported goods. In contrast, Malaysia's lower rate of unemployment and tighter labor markets created higher rates of increase in real wages, which was reflected in a rising terms of trade. Section 5.3.2 provides empirical evidence in support of this view.

The outline of this paper is as follows. Section 2 provides the analytical framework on the role of technology in the distribution of Schumpeterian rents which influence terms of trade trends and the impact of technological structure of exports on export performance and economic growth. Section 3 presents an overview of stylized facts about industrialization processes in Turkey and Malaysia. Section 4 analyzes in great detail how differences in economic policies (industrial and trade policies in particular) generated different outcomes in industrialization, balance of payments problems, and technological diversification of exports. Section 5 analyzes the evolution

[2] Despite the centrality of this question, the paper pays attention to another set of questions that arise from section 2.

of technological structure of manufactured exports, considers the prospects for Turkey and Malaysia to sustain competitiveness in world markets, and provides empirical evidence on the relationships between structural changes in manufacturing and export performance, economic growth, and the terms of trade movements. Section 6 discusses the instruments of technological upgrading by situating Turkey and Malaysia within the group of exporters of manufactured goods. Section 7 evaluates empirically the relative impact of a trade policy, namely trade liberalization, on the growth of their exports, imports, and the resulting changes in their trade balance. Section 8 draws the conclusions.

2. Analytical Framework: Technology, Terms of Trade, and Export Structure

In his 1998 article, "Beyond Terms of Trade: Convergence/Divergence and Creative/Uncreative Destruction," Singer explained the implications of his proposed extension of the Prebisch-Singer hypothesis from different types of commodities to different types of countries as follows:

> The manufactures exported by developing countries tended to be technologically simpler than the manufactures imported from developed countries – hence the extension of the PST from commodities to countries also involved a shift from emphasis on industrialization and diversification to an emphasis on building up technological capacity, entrepreneurial skills, and of 'human capital' in general. Without such a technological capacity, a shift into manufactures required foreign investment or aid (Singer 1998: 14-15).

The emphasis on building up technological capacity in the revisited PST, as a driving force for growth and development, was greatly influenced by Schumpeter's conception of technical innovation. In this respect, PST can be considered as part of the neo-Schumpeterian approaches to development. Singer interpreted Schumpeter's concept of creative destruction in the following sense: "The creation of new technologies replacing primary commodities or economizing in their use or using them more

efficiently for the production of higher quality goods creates destruction for the producers of primary commodities" (1998: 20). According to Singer, the innovation process begins within industrial sectors of industrialized countries (in industrialized countries or within industrialized sectors) that create new commodities, new methods of production, new forms of organization, new trade routes and markets, and new sources of supply while the destructive elements of this process is felt by primary producing countries and their (or in) primary producing sectors.

It must be clear, however, that the process of creative destruction is not limited to the technological discrepancy between industrial and primary producing sectors or countries. A more generalized interpretation needs to include the technological divisions among different technological intensities of manufactured goods: high-technology, medium-technology, low-technology, and resource-based manufactures. While the high end of technical innovation generates rents (or super-profits in the Marxian sense) for entrepreneurs operating in high-technology industries, the producers using standardized technologies receive no rents and often suffer from excessively competitive markets.

Schumpeter's original conception of the creative destruction process involves innovations that cluster in time: where there is first a phase of revolution, then a later phase where the results of the revolution are absorbed.

> While these things are being initiated we have brisk expenditure and predominating "prosperity" … and while [they] are being completed and their results pour forth we have the elimination of antiquated elements of the industrial structure and predominating "depression" (Schumpeter 1954: 68).

These innovative impulses that gather *in time*, generating long phases of prosperity and depression, can also be seen as clustering *in space* (Arrighi, Silver, and

Brewer 2005: 26). In the quote above, one can replace "while" with "where" and "read it as a description of a spatial polarization of zones of predominating 'prosperity' and zones of predominating 'depression'" (*ibid:* 26).

This kind of reading is indeed present in two prominent theories of economic development inspired by Schumpeterian view of innovations: Akamatsu's "flying geese" model (1961) and Vernon's "product-cycle" model. Both models picture the diffusion of industrial innovations as a "spatially structured process" that originates in the more developed countries and is gradually imitated by the less developed countries. The innovation process tends to begin in developed countries because "high incomes create a favorable environment for product innovations; high costs create a favorable environment for innovations in techniques; and cheap and abundant credit creates a favorable environment for financing these and all other kinds of innovations". The receipt of high rewards, relative to effort in the form of rents, further improves the environment for innovations, creating "a self-reinforcing 'virtuous cycle' of high incomes and innovations" (*ibid:* 27).

Low-income countries tend to receive little benefit from innovations developed in high-income countries; they cease to be innovations when they arrive in poor countries, but become standardized technologies yielding average rates of return due to intense competition. Moreover, destructive aspects of major innovations affect developing countries disproportionately because low levels of income and accumulated wealth leave their residents with a much lower capacity to adjust socially and economically to the disruptive effects of these innovations. Through asymmetric impacts on regions where innovations originate vs, regions where innovations dissipate, the process of creative

destruction reproduces uneven development as seen as a spatially structured process of divergence.

Effects of the creative destruction process on terms of trade tend to favor the "innovation-intensive" products, especially thanks to the significant barriers for entry into these product markets which allow the Schumpeterian rents to be appropriated by the innovating group of entrepreneurs. This point is also made by Kaplinsky: "…the real terms of trade will be not so much between commodities and manufactures, but between innovation-intensive products (benefiting from Schumpeterian rents) and non-innovation-intensive products" (2006: 992).

Since innovation-intensive products also tend to be technology-intensive (products that require use of higher or more sophisticated technologies have a greater tendency to be improved through new innovations), the export structures dominated by technology-intensive commodities have better growth prospects than others do. This can be further explained by the interactive mechanisms emphasized by the North-South model (Botta 2009) introduced in the previous paper:

(i) Manufacturing activities that are subject to rapid product or process innovation enjoy faster growth of demand compared to technologically stagnant activities. This effect is illustrated by the positive (negative) impact of the technological content variable (ϕ) on the income elasticity of exports (imports). There is also considerable empirical evidence that most of the dynamic products in world trade use complex and sophisticated technologies (Ocampo, Rada and Taylor 2009: 72-73, Lall 1998).

(ii) Technology-intensive manufacturing activities are less susceptible to entry by rival producers compared to activities with low technological content, which require low

levels of scale, skill, and technology in general. Although a low-technology export structure might be a good starting point for a labor-surplus economy, it cannot sustain export growth over time unless it takes market shares from other exporters of low technology manufactures. Under the slow growth of final goods markets, gaining market shares is possible, but rather difficult. It requires substantial technical effort and investments in skill formation, as well as R&D.

(iii) Structural change involving higher shares of manufacturing activities in higher ends of the technological spectrum allows higher rates of growth due to (a) spillover effects from technology-intensive activities to other productive activities and to the national system of technology; (b) ability to respond faster to changing competitive conditions in global markets; and (c) the higher learning potential and greater opportunity for application of science to technology. The coefficient for share of manufacturing GDP (α) captures this positive effect on productivity and greater growth potential in our model.

(iv) Adjusting to global market forces and specializing along static comparative advantages impedes the process of industrialization in developing countries by confining them to their original productive pattern (Greenwald and Stiglitz 2006). The industrial policies geared towards expanding key manufacturing sectors, with selective protective measures and discretional incentives, can counteract negative impacts of market forces and allow developing countries to specialize along dynamic comparative advantages. This effect of industrial policies is captured by the policy variable (σ) in our model. Very low values of this variable correspond to a 'market-friendly' institutional environment, which avoids the adoption of infant-industry

policies (Botta 2009: 64). The effect of trade liberalization can also be interpreted from this perspective.

In light of these propositions, the rest of this paper will focus on the following questions. First, comparing the Malaysian economic performance with Turkey, which economy portrays a more dynamic growth path coupled with a faster structural change in its sectoral composition? Second, what is the role of industrial policy in creating their differences in growth performance and structural change? Third, what are the trends in terms of trade and what are the major factors generating these trends? Can they be partly explained by the changes in technological-intensity of manufacturing activities (benefiting from Schumpeterian rents)? Forth, how is the growth performance affected by technological composition of manufactured exports? Fifth, what is the role of technological efforts in attracting FDI, formation of skills, R&D expenditures on promoting technology-intensive activities and economic growth? Sixth, how has the liberalization of trade flows affected the relative growth of exports vis-à-vis imports and the net effect on balance of payments?

3. Late-Industrialization in Turkey and Malaysia: Some Stylized Facts

In 1968, Malaysia's per capita income ($1,084 at 2000 prices) was only half of Turkey's per capita income ($2,038 at 2000 prices). Due to its rapid industrial transformation, Malaysia caught up with Turkey in the late 1990s (Figure 2). In PPP terms, its per capita income has exceeded Turkey over the past decade (see Table 1). Malaysia's GDP grew at an average annual rate of 7.4 percent during 1981 to 1997, led by a manufacturing sector that expanded at 12.3 percent (Lall 1995: 759). In contrast, Turkey's GDP grew on average at a rate of 5 percent during the same time period, and

their expansion of the manufacturing sector was also much slower. While the Turkish and Malaysian economies have grown at similar rates since the 1998 Asian Crisis, the rate of structural transformation has been much faster in the case of Malaysia, whose share of manufacturing in GDP rose from 14 percent in 1971 to 30 percent in 1993, while shares of traditional sectors (mining and agriculture) declined from 43 to 24 percent. These figures stand out when compared to the case of Turkey, whose manufacturing share increased from 16 percent in 1971 to 21 percent in 1993, and the traditional sectors' share fell from 37 to 17 percent (State Planning Organization, Turkey).

Massive structural transformation within the Malaysian economy is reflected in rapid technological upgrading of its export composition. Figures 3a and 3b show the technological composition of exports in Turkey and Malaysia respectively, over the period of 1962 to 2006. The share of high-technology manufactures in Malaysian exports has risen from almost nothing in 1962 to about 60 percent in 2006, and that of primary commodities has declined from 75 percent to less than 10 percent. In comparison, the Turkish exports are dominated by a large share of low-technology exports (mainly textiles and garments), and the share of manufactures with high-technology content is less than 10 percent. Section 5 will examine in greater detail the recent trends in the technological intensities of exports.

When examining the macroeconomic performances of Turkey and Malaysia in a comparative perspective, Table 1 shows that Malaysia has outperformed Turkey in a number of indicators:

First, Malaysia has been much more successful in attracting foreign direct investment (FDI), partly due to its earlier experience with British colonial capital exports

to its resource-based industries, namely rubber, tin and palm oil. The average share of FDI in Malaysia's GDP was 2.2 percent during the 1960s, then increasing to 3.1 percent in the 1970s and 4.6 percent in the 1980s until the East Asian currency crisis hit in 1998. Even after the crisis, it has remained around 3.3 percent over the past decade. For the Turkish GDP, on the other hand, the share of FDI has always been rather low—historically it's been less than 1 percent and only exceeded that mark during the last decade.

Second, the share of exports in GDP is much higher for Malaysia in all successive periods due to its experience with export-oriented industrialization prior to their independence in 1957. Over the past decade, Malaysia's share of exports to its GDP has grown remarkably, reaching 114 percent, while the same figure for Turkey was only 23 percent. The average annual percentage growth of exports has also been higher for Malaysia than that for Turkey.

Third, while the value of imports, as a percent of GDP, has been much higher in Malaysia, the imports themselves grew at a faster rate in Turkey. The rapid growth of imported commodities often caused current account deficits, especially during the late 1970s as the workers' remittances deteriorated. According to recent IMF Economic Outlook reports, Turkey has one of the highest shares of current account deficits relative to its GDP. This is a major concern for maintaining economic stability since these deficits are financed by short-term capital inflows that are very volatile and tend to fly out as the fragilities increase, like during the financial crisis of 1994 for example. In contrast, Malaysia has run a current account surplus at an average rate of 12.4 percent to its GDP, and it also instituted capital controls during the financial crisis of 1998 to maintain

stability of its financial sector. This contrasts with the experiences of other Asian countries such as Korea and Thailand, which practiced IMF-led austerity programs to recover from the crisis.

Fourth, another concern for Turkey's macroeconomic performance is the rising total debt service ratio. As a share of exports for goods, services, and income, this ratio has reached an average of 36 percent over the past decade, whereas it is only 6 percent in the case of Malaysia. As a share of the Turkish GNI, the total debt service rose from an average of 6 percent during 1981-97 to 8.7 percent since 1998. Malaysia has reduce this ratio from 9.7 percent to 7.3 percent over the same time periods.

Fifth, Turkey has faced a relatively much higher rate of inflation since the 1970s compared to Malaysia, which had inherited low-inflation and fairly stable macroeconomic dynamics from their previous British colonial period. Turkey's fluctuations in relative prices, due to high inflation, have been one of the reasons for the reluctance of the manufacturing sector to invest in long-term projects (Rodrik and Aricanli 1990). With single-digit inflation on average, Malaysia has been more successful in sustaining price-stability.

4. Industrial Policy in Turkey and Malaysia

Late industrialization in case of Turkey and Malaysia has unfolded through successive phases of industrial policies having common characteristics but yet being very distinct in their capacity to achieve competitiveness in world markets. Although both countries began industrializing earlier than the 1960s, we will focus on the period beginning with 1960s due to the difficulties with data availability for the previous

periods. One can trace four phases of industrial development considering the historical experiences of Turkey and Malaysia:

I. Import-Substituting Industrialization (ISI): 1957-1970 in Malaysia, 1954-1976 in Turkey
II. ISI Second Round and Exhaustion: 1971-1985 in Malaysia, 1977-1980 in Turkey
III. Liberalization and Export-Oriented Ind'n:1986-1997 in Malaysia, 1981-2000 in Turkey
IV. Crisis Management: 1998-2008 in Malaysia, 2001-2008 in Turkey

4.1. Import-Substituting Industrialization (ISI)

The first phase for Malaysia begins with gaining independence in 1957 and ends with a drastic shift in industrial policies in 1970. This period involves a moderate degree of protection for import-substituting activities and measures to attract foreign direct investment (FDI) into export activities. In case of Turkey, a similar period of import-substituting industrialization (ISI) has taken place over the period 1954-1976[3]. In both countries, the state played an active role in promoting infrastructural development and nurturing the import-competing industries with protective trade policies and tax incentives. The main difference between the two countries' experiences over this period was that the Malaysian industrial policies were focused on export promotion in resource-based manufactured goods while Turkish industrial policies were predominantly targeting domestic market until the 1980s. The Malaysian Industrial Development Authority (MIDA), which was set up in the late 1960s to enhance export growth, became a major

[3] Note, however, that the first industrialization efforts in Turkey took place during 1930-39. We shall come back to this point.

actor in encouraging electronics multinational corporations (MNCs) in the USA to shift their production units to Malaysia. This was happening during the semiconductor assembly boom in the developing countries and Singapore—Malaysia's greatest role model—was reaching out to the MNCs to upgrade its labor-intensive assembly to more complex activities. Having the same motivation, MIDA's efforts to attract electronics MNCs became eventually successful partly due to generous fiscal incentives (due to the rich tax base from resource-based sectors) and a favorable investment climate, as well as an English speaking labor force that was well-trained and disciplined. It was thanks to the combination of these factors that Malaysia could launch on its high-technology export growth path (Lall 1994, Jomo 2008).

4.1.1 Path Dependence: Colonial and Semi-Colonial Experiences

In contrast to the Malaysian development, Turkey has neither set up an institution to attract foreign investment nor promoted export activities to a degree that Malaysia has done. One of the significant factors that induced these different trajectories has been the path-dependence. When Malaysia became independent in 1957, it had already a developed resource-based sector in exporting processed tin, rubber, and food, and this sector was previously developed by the British to satisfy its industrial raw material needs. This provided Malaysia with a strong taxable base for raising government revenues to be directed into other sectors. The Malaysian government preserved the tradition of export-orientation and welcoming attitude to foreign investors, but only strived to upgrade it from low-skill, resource-based activities to more sophisticated lines of production.

Turkish industrial efforts were also partially path-dependent to follow previous historical achievements. Despite being never officially colonized, when Turkey was

founded in 1923 (after a brutal independence war against European powers after the World War I), it inherited a semi-colonial economic structure from the defeated Ottoman Empire: First, small industrial producers were driven out by European competitors during the course of the 19th century. Almost all of industrial goods were imported and the only export commodities consisted of raw materials. Although Ottoman Empire was self-sufficient in textile products at the beginning of the 19th century, a century later 80 to 90 % of its domestic consumption was obtained from imported garments and textile products. Secondly, and more importantly as an indicator of semi-colonial status, Ottoman Empire had accumulated a large amount of external debt that it had increasing difficulties to service. The lender countries from Europe, as a result, had begun to dictate terms not only in economic decisions, but also in political and military realms with growing sanctions for the Ottoman Empire. In short, the newly-established Turkish state took over an economically backward and dependent productive sector coupled with a weak financial structure and a huge debt stock that it had to pay over a short period of time (Boratav 1988).

4.1.2 Differences in Manufacturing Experiences before WWII

Amsden classifies prewar manufacturing experience into three categories: pre-modern, émigré, and colonial. Since it is based on small-scale artisan handicrafts, the Ottoman Empire's experience falls into the first category. Pre-modern manufacturing was also seen in China, India, and Mexico, and was of longest standing among all. Malaysia's experience, in contrast, arose from the know-how transferred by permanent or quasi-permanent emigrants from China and India, and thus falls into the émigré type of prewar manufacturing together with Indonesia, Taiwan, and Thailand. Manufacturing industries

in Turkey and Latin America received also emigrants from North Atlantic countries, but this type of émigré experience differed from Malaysia's and others' experience since the influence of foreign individuals was felt before the arrival of foreign firms (Amsden 2001: 15). In case of Turkey, these individuals were mostly wealthy merchants who were sometimes engaged in money-lending, but they were hardly any entrepreneurs engaged in industrial production. By contrast, in Malaysia, Chinese emigrants played an important role in earlier forms of industrial organizations in export and import processing. Amsden's third category, colonial prewar manufacturing experience, represents the know-how emerging from formal colonial organizations established by the North Atlantic countries (as in India) or by Japan (as in Korea, Taiwan).

The distinction between émigré and colonial experience allows Amsden to differentiate the long-run technology strategies among late-comers—whether to "make" or to "buy". Those that invested heavily in national firms and national skills—China, India, Korea, and Taiwan—all had colonial manufacturing experience, whereas those that had attracted foreign direct investment and show to invest in advanced skills—Argentina, Brazil, Chile, Mexico, and Turkey—all had North Atlantic émigré experience. The reason behind this differentiation lies in the transition to national-state formation. While the previously-colonized countries could in the postwar period nationalize, expropriate, and acquire foreign-owned business enterprises and seize "first-mover" advantage in expanding industries with large economies of scale, the countries with North Atlantic émigré experience had no comparable discontinuity and the nascent national enterprises were often crowded out by multinational firms (Amsden 2001: 16).

Note, however, that the Turkish case differed from the Latin American experience since there was some discontinuity with the end of the Independence War and the establishment of the Turkish Republic in 1923. What differentiates the North Atlantic émigré experience from the colonial one, in our opinion, is not that the existence of foreign direct investment *per se*, but rather the *nature* of that foreign direct investment. Malaysia had also attracted large sums of FDI under Chinese émigré experience, and did not carry-out a whole-scale nationalization of the existing foreign enterprises. Yet, the impact was mostly positive, especially in terms of upgrading from resource-based manufacturing to more complex activities such as electronics in the later periods. For countries with North Atlantic émigré experience, the problem was not simply the existence of "a large stock of foreign direct investment" and the crowding-out problem, but rather the fact that the existing foreign capital was employed either as merchant capital, that is, for buying cheap and selling dear without engaging in production, or as interest-bearing capital, that is, to lend money for earning interest on it. Thus, the problem was the almost complete non-existence of factory-scale manufacturing activity (see Boratav 1988 for the Turkish case). Amsden tends to underplay this factor (the absence of productive capital), focusing more on the differences between national and foreign capital.

4.1.3 First Industrial Interventions in Turkey

The first industrial move of the Turkish state took place during the Great Depression, when the imports of industrial commodities from developed countries came to a halt. Under a significant degree of protection and etatist policies, state economic enterprises (SEEs) began to emerge as the main industrial enterprises. The major

industrial activities consisted of the production of consumer goods such as flour, sugar, and garments, and industrial raw materials such as iron and other metals. State took also an active role in maritime transportation, municipal services, and the energy sector.

In 1934, the First Five-Year Industrial Plan was designed to guide public investments in strategic sectors. While some of the investment projects were completed by 1938, others were interrupted by the Second World War[4]. After the war, for the first time in the history of the Turkish Republic a multi-party system was set up. The new ruling party, the Democrat Party, implemented drastic changes in economic policies including a new external-orientation, the reduction of protective measures for the domestic industry, and prioritizing investments in agriculture, mining, and infrastructure. As a result, imports grew by more than a 100% while exports remained stagnant in 1947—which resulted in a large trade deficit for the first time since the foundation of the Turkish Republic. The trade deficits took a chronic form after 1947 as the share of the industry shrank from 15.2% to 13.4% from 1946 to 1952, which made it increasingly dependent on imported inputs. This situation continued until the limits of external borrowing were reached and the consumer demand stagnated in 1954. Under these pressures, the Democrat Party shifted back to a more protective set of policies[5] and direct

[4] Turkey has not participated in this war. However, it has seen the negative impacts of the war through the significant reduction in export earnings and the postponement of the industrial planning activities until the end of the war due to the rising share of military expenditure in total income.

[5] The import-controlling programs were established in 1958 and they placed importable goods in one of the three lists: the Liberalized List 1 (LL1), the Liberalized List 2 (LL2), and the Quota List (QL). Unless a good was included in one these lists, it was prohibited to be imported. Tariff rates tended to be the lowest for raw materials and intermediate goods that were not domestically produced, and highest for final goods that were domestically produced (Katircioglu *et al* 1995: 34). These restrictions remained intact until the trade liberalization of 1980 and the new Import Program of 1983.

public investments in SEEs, encouraging import-substitution. However, ISI did not take the form of a stable industrial plan until the 1960s.

Beginning in 1963, Turkey had three five-year industrial plans with a focus on promoting the production of chemicals, commercial fertilizers, iron, steel and metallurgy, paper, petroleum, cement, and vehicle tires. While the first of these plans prioritized state initiatives and enterprises in taking the lead, the second and third industrial plans gave the priority to private capital accumulation supported by subsidies and incentives, limiting the role of the state to only support private enterprises. Over the period 1962-1976, the SEEs became more active in intermediate goods sector while the private enterprises took the lead in producing consumer goods. Machinery production was largely undertaken by SEEs, but it was not sufficient by any means, which led to significant spending on imported machinery. Although final goods industries' share in GDP rose over this ISI period, the dependence on imported inputs and investment goods was not reduced—which tended to keep trade deficits significantly high as a share of GDP. These deficits were financed either by external borrowing or workers' remittances (which increased over time and became the main source that balanced the current account deficits).

4.1.4 Early Attempts of Performance Requirements

Despite the targets in industrial plans for a large increase in exports and the promotion of textile industry, there was only limited achievement. One of the attempts of the Turkish government in the 1960s was to promote exports by making them a condition for capacity expansion by foreign firms. A German multinational, Mannesmann, formed a joint venture with a Turkish development bank, Sumerbank, to produce steel pipes. Both the Turkish and German managers recognized that the Turkish government was

constantly willing to assist the joint venture in its operations. However, foreign investors were worried about the condition that each capital increase could only take place with the consent of the Turkish government. It became a government policy to allow for a capital increase by forcing companies to take on export commitments. Moreover, the government placed the condition that any profit transfers had to be covered by export earnings. However, the steel pipes produced by the joint venture could not yet compete at world market prices and the export sales led to losses (Friedman and Beguin 1971: 209-10). Hence, although the promotion standards set by the Turkish government resembled significantly to the treatment of the Korean government in terms of its monitoring and disciplining big capital, the Turkish case was of little success—perhaps because it was not maintained long enough to bear its fruits as it takes significant periods to time to complete 'technology transfer'; or because the government failed to subsidize the losses from export sales.

In the Malaysian case, in addition to the activities of MIDA to attract eletrononics MNCs from USA in the late 1960s, "the 1958 Pioneer Industries Ordinance (PIO) provided incentives and tariff protection for the development of import substituting manufacturing. Firms enjoyed tariff protection and tax relief depending on the level of investment" (Li and Imm 2008: 83). However, the implementation of performance requirements and guided promotion of exports had not started until the small domestic market began to show signs of saturation and the rate of employment creation proved to be insufficient. Furthermore, the linkages between the export sector and domestic import-competing sectors were very few and weakly-developed, and only a few of these

domestic enterprises had the capacity to upgrade themselves to internationally competitive levels (Lall 1995: 764).

4.2. ISI Second Round and Exhaustion

The second phase, 1971-85 for Malaysia and 1977-80 for Turkey, represent a second-round of ISI for Malaysia, and an exhaustion of ISI for Turkey. It is possible to say that Malaysia had a longer period of import-substitution, especially with the government's effort to build heavy industry in the 1980s. By the time Turkey reached 1980s, it had pretty much exhausted its potential for pursuing import-substitution under a highly-protected domestic market and the export promotion strategies had not been effective as in the case of Malaysia.

The second-round of ISI in Malaysia began by the launch of the New Economic Policy (NEP) in 1971 as a response to the ethnic disturbances in 1969. The NEP sought to improve the living standards of *bumiputeras* (indigenous Malays) by increasing their employment in the domestic industries as workers as well as owners of capital. The government's most significant intervention in this period was to take over domestic shares of foreign-owned plantations and import-competing enterprises, and to establish state enterprises, which were later transferred to Malay capitalists. The number of SEEs increased substantially as these nationalizations gained speed. Malay-owned enterprises, whether big or small in scale, were strongly preferred in government financing and support. Moreover, employment and education quotas were used as policy tools to improve the labor participation rate of the Malay population.

4.2.1 Heavy Industrialization in Malaysia and Turkey

Aside from the inter-ethnic redistribution taking place during this period, there were also significant industrial interventions to improve the linkages between the MNC-led export sector and the Malay enterprises that were expanding under generous government finance. The central initiative involved in these interventions was the establishment of the Heavy Industries Corporation of Malaysia (HICOM) in 1980. The Malaysian government was imitating for the most part the Korean drive for the Heavy and Chemical Industry in the 1970s. Its primary focus was the expansion of manufacturing activities outside of the Free Trade Zones (FTZs) and the improvement of inter-industry linkages. Nevertheless, HICOM faced large losses since the mid-1980s and several other state enterprises also displayed a poor performance.

These weak performances are regarded by the proponents of neoliberal policies as a costly failure and the modification of the governments' policies after 1985 are seen as a refutation of Malaysian industrial policy at large (see World Bank 1993). Lall and others have argued that this view is largely "unwarranted" because "the design of the interventions in Malaysia was not ideal, and so does not constitute a proper test for the effectiveness of industrial policy; and the period over which effectiveness should be assessed may need to be longer when complex learning processes are involved" (Lall 1995). The design of these policies was not ideal because "the NEP was addressed primarily to redressing social imbalances and not to gaining world market competitiveness in a new set of industrial activities. HICOM and other state industrial enterprises were set up to serve domestic markets and establish local linkages, and there was no systematic attempt to guide or monitor their technological development process…

[unlike Korea]" (Lall 1995: 765). This point also applies to the comparison between Turkey and Malaysia because the design of interventions was also not ideal in Turkey, and therefore, does not represent an appropriate test for the effectiveness of industrial policy in Turkey. Similar to Malaysia, the great majority of state enterprises in Turkey targeted the domestic market and their technological development process was not guided or monitored as in the case of Korea.

In Turkey, the same period of 1971-85 witnessed the Third Five-Year Industrial Plan (1972-76), the exhaustion of inward-oriented, protective, import-substituting manufacturing (1977-79), and the launch of the first economic liberalization program in 1980. The difference of the 70s import substitution from the earlier periods was the efforts of the government to create import-competing industries that produced investment goods and intermediate inputs. While the main instrument was the foreign trade regime, the investments in "heavy industry" were mostly achieved through direct state involvement in production. An additional incentive for increasing investment began in 1968 with the issuance of "certificates of encouragement" to private enterprises by the State Planning Organization. The investment projects eligible for these certificates enjoyed subsidized credits, tax breaks, and were partially exempt from customs duties. However, the realization rates of these projects were rather low, and there was no process of guiding or monitoring after the certificates were issued. Furthermore, the government provided substantial export subsidies to exporting firms since the early 1960s in order to compensate for the overvalued exchange rate. Yet, these subsidies were also not effective in many cases to upgrade domestic industries to internationally competitive levels (Erzan 1995).

4.2.2 Turkish Debt Crisis, 1977-79

During the last few years of 1970s, the recessionary pressures in the world-economy were severely felt in Turkey. As exports fell by $ 200 million from 1976 to 1977, imports still continued to rise by $ 660 million and export/import ratio declined to 30 %. Consequently, trade deficit was over $ 4 billion. The workers' remittances, which were financing a large part of this deficit in early 1970s, were adversely affected by the overvaluation of the currency and the austerity programs that were implemented in Europe after the first oil shock. To finance the increasing current account deficits, the Turkish government came up with a plan to provide exchange-rate guarantee to the Turkish firms accumulating short-term debts from European banks. This form of subsidized foreign financing became increasingly costly as the currency became progressively overvalued. By mid-1977, foreign banks refused to lend any further, which created a severe liquidity crises in Turkey (Rodrik 1990: 1344). This period also corresponds to escalating civil unrest and political tensions in the parliament. It came to an end by a military coup in September 12th, 1980 and the military government implemented a far-reaching stabilization program under the guidance of the IMF.

4.2.3 Comparison of ISI Experiences

Before getting into the details of this program, it will be useful to compare the Malaysian ISI experience with the Turkish one.

First, Malaysia did not encounter the balance of payments problem to the degree that it was faced in Turkey, for two reasons: (a) Malaysia had relatively strong market positions in tin, rubber, and palm oil, and promoted its export-oriented industries effectively so that its export growth never lagged too much behind its import growth; and

(b) the import-competing industries were more successful in building backward linkages and deepening ISI into the second-round of intermediate and investment goods sectors. The second reason is at least as important as the first one because the protected infant industries in final goods sector can become mature only in the presence of local suppliers of the inputs required. In case of Turkey, although state enterprises were actively engaged in intermediate goods production, they have often made losses due to inadequate know-how and imperfections in knowledge transfers. But, perhaps more importantly, they were not given enough time to absorb complex organizational and production technologies. By contrast, Malaysia had an additional five years of ISI (1980-85), substantially investing in its heavy industry drive through state-owned enterprises. Turkey could not afford waiting longer due to its rising trade deficit that was becoming increasingly unsustainable.

Second, as a more general point, the divergence in growth paths is to a great extent influenced by the comparative strength of the Malaysian trade and fiscal positions, both of which reflect structural differences in international specialization patterns and their impact on tax base as compared to Turkish. This is an exogenous difference that is path-dependent and structural and thus, cannot be reduced to relative effectiveness or strength of economic policies implemented.

Third, both the Turkish and Malaysian interventions were carried out by public sector enterprises with 'soft budgets', lacking an initial learning basis for effectively using new production technologies. This aspect contrasts significantly with other Asian latecomers such as Korea, whose drive for machinery and chemical industries were undertaken by giant private conglomerates (the *chaebol*) with an already strong and

diverse production base and an already internationally competitive export performance[6]. Nonetheless, while the Malaysian enterprises were successfully restructured and gained such capabilities through being subject to performance requirements in the late-1980s, the Turkish counterparts have only been privatized and financially encouraged through subsidies, tax incentives, etc.—but they were hardly monitored for their performance, which has not improved to desired levels. Thus, as I will explain in the next section in detail, the Turkish manufacturing experience differed considerably from successful East Asian latecomers in one respect: Turkish state failed to develop institutions that could provide guidance and monitoring to the manufacturing enterprises for enabling them to compete at world market prices.

Fourth, neither the Turkish nor the Malaysian industrial policies were supported by supply-side measures to ensure sufficient development of skills or technology support. Despite having good basic educational institutions, both countries had a relatively small share of technical education provided at the level of university or vocational institutions. This was certainly a large constraint to industrial upgrading as the high-level technical and engineering skills were not well-developed at all. Yet, both countries have placed significant measures to improve skill development—but Malaysia has been more successful in creating a large pool of well-trained technicians and engineers compared to Turkey. Moreover, during import-substitution phase, both countries were short of an effective system for the development of industrial technology. Without such a system, it was rather difficult to establish linkages required to perform better. This factor also

[6] Note that Taiwanese industrialization was driven largely by small-scale firms. Thus, the large scale enterprises were not uniformly true for all East Asian latecomers.

differs significantly from first-tier NICs such as Korea, where its industrial deepening was backed up by supply-side measures and this has accompanied interventions in industrial development.

Fifth, neither the Turkish nor the Malaysian governments had a clear-cut, *selection* strategy for identifying and rigorously supporting key industrial sectors during the import-substituting industrialization process. The Turkish interventions especially suffered from lacking a coherent strategy as all sectors—the agriculture, the import-competing sector, the export-oriented sector, the service sector—were tried to be supported all at once. Rodrik argues that the governments had indeed "good intentions", yet a policy supporting agriculture often hurt the industry, or policies supporting import-competing sectors were detrimental to the performance of exporting enterprises. Thus, to target all sectors at the same time amounts to targeting none of them (Rodrik 1995). Malaysian ISI experience was similar to the Turkish case in this sense since selective industrial strategies began to be implemented only after 1985.

4.3 Liberalization and Export-Oriented Industrialization

The third phase, 1985-1997 for Malaysia and 1980-2001 for Turkey, follows the recessions of the previous period and represents a radical turn towards opening up to the world markets and promoting export-orientation at an increasing scale. The Malaysian government instituted measures to privatize and restructure state enterprises and started to implement a new set of incentives to attract MNCs. With the Investments Act of 1986, the requirements for local share-holdings of the NEP were relaxed and more generous investment incentives for the manufacturing sector were offered. Moreover, the value of the Malaysian ringgit declined (by 7% against the US dollar and by 20% against SDRs)

and this nominal devaluation was reflected by a real effective exchange rate decline of about 20% in 1986. In the meantime, most of the East Asian currencies' value rose relative to the US dollar, raising comparative production costs. As a result of these developments, Malaysia began to receive an increased inflow of FDI with rising importance from the East Asian countries including Taiwan, Hong Kong, and Japan. The growth of FDI flows in this period is also attributed to the lower real wage costs (due to high unemployment rates over the mid-1980s) and the new labor laws that weakened workers' bargaining position and increased labor flexibility (Jomo 2008: 15).

Although similar downward trends in real wages and exchange rates are also observed in Turkey (due to massive nominal devaluation and anti-labor laws passed after the 1980's stabilization program), the response of FDI flows has been quite stagnant. There has been an increase in the number of investors from 100 in 1980 to 610 in 1986. However, FDI has predominantly been concentrated in foreign trade financing and investment banking—areas where foreign investors had a clear advantage over domestic ones. The banking sector was receiving 4% of foreign investment in 1979, but this figure rose to 20% in 1986 (Rodrik 1990: 1348). The contribution of FDI flows to manufacturing activity has been very disappointing, especially considering the liberalization efforts (simplification of the approval process, reductions in bureaucratic impediments, etc.) that took place. It has been often argued that foreign investors doubt the long-term existence of reforms and the stability of the financial system. Overall macroeconomic instability appears to be an important concern given the high rates of inflation, interest, and exchange rate depreciation. Political instability, of course, is another factor that keeps FDI in real sectors relatively low.

Apart from the differences in the flows of foreign investment, the Turkish case differs from the Malaysian industrialization in this period by the absence of a more selective strategy in its industrial policy design. In 1985, the Malaysian government replaced the NEP with the New Development Policy (NDP), which was much more similar to the industrial policies adopted by other East Asian NICs. The capabilities and requirements of the manufacturing activities were systematically analyzed, which formed the basis of the Industrial Master Plan (IMP) from 1986 to 1995. The emphasis of this plan was to develop a more selective strategy targeting automated manufacturing, microelectronics, advanced materials, biotechnology, and information technology (Lall 1995: 767). These targeted sectors were promoted by investments in education, training, technical support, finance, and quality improvement.

4.3.1 Selective Import Protection and the 'Flying Geese' effect in Malaysia

Import protection in Malaysia became more *selective*. While tariff protection was reduced to an average of 20 percent, *infant industry protection was preserved*, for example, in case of light aircraft production in the public sector. It is important to stress this point because it constitutes a major difference compared to the more comprehensive elimination of import protection in Turkey. Moreover, a technology plan formed the core of IMP, improving the infrastructure of science and technology institutions and inducing R&D expenditures in private enterprises. The re-organized public enterprises kept their significant role in industries requiring large investments that have long gestation periods, such as automotive, petrochemical, iron and steel, and cement. Selective strategies showed themselves also in the regulation of export-oriented MNCs. MIDA provided incentives to direct FDI into higher-value added activities and higher-technology

processes, replicating the experience of Singapore. However, unlike Singapore, Malaysia began to use incentives for increasing local content. Foreign suppliers in FTZs were denied their full privileges and started to be treated as local firms. Malaysian government also attempted to direct the investments into labor-intensive activities from Penang into Johor, by building a 'growth triangle' with Singapore and Indonesia (Lall 1995: 767).

These changes in Malaysian industrial policy were accompanied by high growth rates in exports and national income. However, much of this strong performance is attributed to the attraction of the MNCs to the new incentive structure and the rising costs of production in the other East Asian countries (Jomo 2008: 16). Thus, being part of the "East Asian" area constitutes another structural factor favoring Malaysia. These regional dynamics reflect the 'flying geese' effect: as production costs rise over time in mature developing countries, companies migrate to lower-cost producers in search for higher profit rates for the same working capital. Migration of Korean and Taiwanese firms to Malaysia is a case in point for the flying geese effect. In the meantime, Malaysia succeeded in 'maturing' some of its import-substituting industries as these firms developed technological and managerial capabilities over time and began to compete in external markets.

4.3.2 Non-selective Export Promotion in Turkey

In comparison, the reform package in Turkey was mainly designed to put the economy on an outward-oriented course and promote export industries as the main engine of growth. This promotion strategy, however, did not take a *selective* character as in the Malaysian case. Its basic instruments consisted of a large nominal devaluation (that led to a sizable real depreciation of 50% from 1979 to 1987) and a generous program of

export subsidies composed of tax rebates, export credits, and foreign currency retention. While currency depreciation made exporting firms more competitive, the export subsidies were dispersed across the sectors without much targeting based on the dynamic comparative advantages. There was only one clearly promoted sector, textiles and clothing, which has received an increasing number of investment incentives over this period (Erzan 1995: 94). Thus, while the impact of the export incentives on the apparent export boom of the early 1980s is obvious, their net contribution to capacity building has been disappointing. After capital account liberalization in 1989, there were massive capital inflows in 1989 and 1990 and the Turkish lira appreciated substantially. This appreciation led to a fall in profit margins of export-oriented firms. Although export volume did not decline, its high levels are attributed to the export subsidies received. In other words, without export subsidies in place, it would be very difficult for these firms to compete at world market prices. What is more disappointing, however, is the fact that private investment in tradables has been stagnant. Exporting firms relied for the most part on existing capacity (Rodrik 1990: 1347).

4.3.3 Non-selective Import Protection in Turkey

The Turkish strategy in trade liberalization has also not been selective in its targeting. The main policy tool in controlling foreign trade—quantitative restrictions (or non-tariff barriers (NTBs))—was abolished with the new Import Program in 1984. This program specified which commodities could not be imported, and which commodities were subject to license. Under the previous system, all commodities that were not listed in the 'liberalized lists' were prohibited. The new Import Program, therefore, constitutes a shift from the 'positive list' to the 'negative list' and reduces the role of non-tariff

barriers significantly. However, this amounted to an overall reduction of NTBs without reserving some degree of protection for the existing infant industries. There was some adjustment of import tariffs upwards and some special import levies were imposed to finance extra-budgetary funds. In 1985-6, the highest tariff rates were on capital goods (20.8%), relatively lower rates were on non-durable consumer goods (8.2%), and the lowest rates on intermediate goods (7.0%) (Katircioglu 1995: 35). These measures, however, were far from replacing the protective role of the quantitative restrictions and the competition in domestic markets became much more intense. Moreover, starting in 1988, these tariff rates declined across all commodity groups as part of Turkey's tariff harmonization efforts with the European Union.

4.3.4 Capital Account Liberalization in Turkey

Turkey liberalized its capital account in 1989. This became a policy maneuver paving the way for liquidity injection into the domestic economy in the form of short-term foreign capital, i.e. flows of 'hot money'. These capital inflows served a double-purpose: to finance the growing public sector expenditures and to cheapen the cost of imports by providing cheaper short-term credit. This policy was thus an attempt to "fix" the twin structural weaknesses, of trade and fiscal deficits. As a result, the lower cost of imported intermediates provided another stimulus for growth over the period 1990-1994 (Yeldan 2006: 1999).

Despite the advantages of lower costs, however, private investment in manufacturing—domestic and foreign—has on the whole been stagnant after the 1980s.

By increasing the instability of the financial sector and raising the interest rates on credit beyond reasonable levels, capital account liberalization has been partly responsible for this stagnancy[7]. High inflation rates also contributed to dampen investment levels by creating uncertainty due to the fluctuations in relative price levels. The high rate of real depreciation coupled with high relative tariffs has increased the cost of capital goods. Although overall investment incentives increased substantially, the share of manufacturing sector has declined (from 75% to 6% from 1980 to 1988) at the expense of the service sector[8] (Senses and Taymaz 2003: 4). All these factors induced by the policy reforms after the 1980s generated major weaknesses in the Turkish manufacturing sector in terms of a low saving and investment rate, increased short-sightedness, and unable to stimulate the future growth of the economy. Analysts agree that the success of the export sector in expanding exports in the early 1980s also owes significantly to the "accumulation of industrial capacity in the earlier period" (Rodrik and Aricanli 1990, Boratav 1985, Senses and Taymaz 2003).

5.4.4. Crisis Management

The fourth phase, 1998-onwards for Malaysia and 2001-onwards for Turkey, begins with the spread of the East Asian currency crises to Malaysia and with a few years delay to Turkey. Its distinct characteristic has been the abandonment of the industrialization strategy due to the exigencies of crisis management. The crisis has been

[7] The idea behind capital account liberalization was the opposite: to lower the cost of credit by having access to cheap sources of foreign borrowing. However, the cost of borrowing increased tremendously with the rise of interest rates due mostly to increased speculative activity related to arbitrage earnings that attracted inflows of short-term capital.

[8] Housing and tourism were the two highly-promoted service sectors experiencing a remarkable private investment activity.

managed through the implementation of capital controls in Malaysia, while Turkey resorted to another IMF-led stabilization plan. Despite differences in the forms of crisis management, both countries seem to prioritize the management of the financial system at the expense of the manufacturing sector (Jomo 2001, Senses and Taymaz 2003).

Management of the Asian financial crisis of 1997-98 differed significantly among the worst affected economies in the region. While Thailand, South Korea and Indonesia responded by calling in the IMF and embarking on IMF-designed programs to secure emergency credit flows from the IMF, Malaysia was never in serious need of IMF credit facilities due to its lower levels of foreign debt and stricter central bank prudential regulation. Unlike Thailand, South Korea and Indonesia—which committed to float their exchange rates, raise interest rates, constrain fiscal spending, liberalize their financial markets opening to foreigners, close troubled banks, and implement other conditions to secure financial assistance from the IMF, Malaysia took a very different path. The Malaysian authorities decided to impose comprehensive controls on capital-account transactions, fix the exchange rate at RM3.80 per US$ (a 10 per cent appreciation), reduce interest rates, and follow a policy of reflation. These policy changes were undertaken during the summer of 1998 as the financial crisis was deepening in Malaysia compared to other affected countries.

There is some controversy on whether the implementation of capital controls produced a faster recovery from the economic crisis and a better economic performance than would have been possible in its absence. Some have shown using econometrics that the capital controls have "produced faster recovery, smaller declines in employment and real wages, and more rapid turnaround in the stock market" (Rodrik and Kaplan 2001).

Opponents of capital controls disputed these claims (Dornbush 2000), arguing that South Korea, Thailand, and Indonesia had positive growth rates beginning in the first quarter of 1999, whereas the Malaysian recovery took off later in the second quarter. There is also an argument in between these two poles, which suggests that "the nature of the experiences do not allow strong analytical or policy conclusions to be drawn" (Jomo 2001: 13)—due to strong differences in the pre-crisis regulation schemes and exposure to foreign borrowing. Malaysia could preserve a strong prudential regulation that was designed as a response to its late 1980s-crisis, while other countries deregulated their financial systems much more. This was important for Malaysia's successful implementation of transparent capital controls, which would have been harder to undertake in more financially-liberalized economies of South Korea, Thailand, and Indonesia. Moreover, the recovery in Malaysia was also accompanied by Keynesian reflationary efforts and favorable external conditions, most notably the electronics boom. Hence, it is unreasonable to attribute the successful elements of crisis management merely to the imposition of capital controls.

Compared to Malaysia, Turkey's crisis management resembles to the experiences of more financially-liberalized economies of South Korea, Thailand, and Indonesia. Turkey was forced to call in the IMF and undertake IMF-designed programs to cope with its financial crisis in 2000-2001. Unlike Malaysia, its banking regulation system was very weak and the indebtedness to foreign banks was rather high—which made the implementation of such capital controls rather difficult, even though several critics have argued that capital controls are necessary for the management of Turkish financial system (Boratav and Akyuz 2003)

A greater concern in the long-term is the change in the nature of bank loan portfolios. The Malaysian banks increased their lending for residential property loans and raised their limits in purchases of shares. These developments took place at the expense of loans for productive purposes, especially in manufacturing, but agriculture and mining as well. Given the declining trend in FDI inflows since 1996, the redirection of bank loans away from productive sectors would restrain investments in the real sector substantially (Jomo 2001). Moreover, the emphasis on the official development policy on attracting high value-added investments and moving up the technological ladder is suspended after the crisis. Economic policy became all about managing the crisis and stabilizing the economy, and much less about strategic and long-sighted industrial policies. Human resource development, in particular, continued to lag behind first-tier NICs after the Asian financial crisis.

The post-crisis developments in Turkey resembled those in Malaysia with its neglect of long-term priorities in high productivity, high technology investments. Monetary policy was tightened and the IMF-designed inflation-targeting programs were implemented. While inflation rate was kept at lower figures, the contractionary effects of tight monetary policy were reflected in very high rates of unemployment, economic expansion did not create new jobs, and the bargaining power of workers deteriorated further resulting in declining real wages (Yeldan 2006, Senses and Taymaz 2003). These trends and their relationship to terms of trade movements will be analyzed in the next section.

5. Export Performance: Turkey, Malaysia, and other NIEs

5.1. Growth of Manufactured Exports

This section will consider Turkey's export performance and structures in comparison to Malaysia and other newly industrializing economies (NIEs). Table 2 indicates the values and growth rates of manufactured exports for 13 leading developing countries. The largest exporter is China, with 2,140 billion of manufactured exports in 2008, followed by Korea and Mexico with about 330 billion and 208 billion respectively. The smallest ones are Argentina and Indonesia; Turkey is next with 101 billion. The fastest growing exporters over the 1980-2008 period are China, Thailand, Mexico each with over 14 percent annual growth, followed by Turkey and Indonesia (see Table 3). The slowest growing are Hong Kong, Brazil and Argentina. It is important to notice that the 13 countries listed in Table 2 account for nearly 80% of the developing countries' total manufactured exports in 2005. The analysis of export patterns from developing countries thus eventually amounts to explaining what drives exports from these few NIEs.

The growth rates of Turkey's manufactured exports were particularly high in the early 1980s, but they slowed down after mid-1980s. In 1997-98, when world trade growth fell dramatically as a result of economic crises in NIEs and in Russian Federation, Turkey's export performance suffered significantly, its growth declining from 10.5% in 1990-95 to 6.8% in 1995-2000. On the other hand, since the year 2000, Turkey's manufactured exports have been accelerating at an annual rate of more than 21 per cent (Table 3). In contrast, Malaysia's manufactured exports seem to have slowed down especially in the last few years.

5.2. Technological Composition of Manufactured Exports

Table 4 shows the technological structure of exports. Turkey has the weakest structure of the group—having only 3.8 per cent of its manufactured exports in high-technology products. 45 per cent of Turkey's manufactured exports are accounted for by low-technology (LT) products and 3.2 per cent by resource-based (RB) products. The sum of medium technology (MT) and high-technology (HT) products contribute 51.4% of its exports. This is a very low figure compared to Malaysia, whose 74 per cent of exports consist of MT and HT products. Even China, despite its specialization in labor-intensive LT exports, has been shifting to produce a much higher share of medium- and high-technology products, and its proportion of HT products has slightly outweighed that of LT share in 2008.

The export structure of Turkey is not only technologically weak, but also relatively stagnant. Over the period 1985-2008, the total share of HT and MT products has risen by 26.9 percentage points, a tiny rise in the share of HT largely complemented by the rise in that of MT products (Table 4). Although the rise in the share of MT products in Turkey has been remarkable since 1995, it pales in comparison to the extent and speed of structural change in Malaysia and other NIEs. Given the rapid transformations in the structure of world trade and rising importance of products with higher technology content, Turkey's structural stagnation is a major problem that needs to be addressed. Table 5 provides the values and growth rates of each category of exports for these countries.

Considering the whole period from 1985 to 2008, Table 5 shows that Turkey has its highest growth rates in exports of HT products. However, this high rate is only an

indicator of its small beginning level. In absolute terms, its high-tech exports in 2008 are a small proportion (3-4%) of those from Singapore, Hong Kong, and Korea, and only about 1% of China's. Apart from that, the highest overall growth comes from MT products, whose growth rate began to exceed LT products especially since the late-1990s. This provides evidence for a significant structural change towards products with higher technological content—from LT towards MT products. However, the tiny share of HT products in total exports and the slowdown in their growth rates since 1995 continues to pose significant challenges for the dynamic transformation of Turkey's export structure. In short, the figures in Table 5 suggest a recurring structural problem in Turkey's exports, with a dominance of LT and MT products and small evidence of an ability to shift to more dynamic HT products.

One of the problems with having a high share of low-technology products in Turkish exports is that most of these products are textiles and garments—whose international markets are becoming increasingly competitive due to East Asian new-comers. Turkey is considerably a high-wage country compared to countries such as China, India, Indonesia, and Philippines. Given this cost-disadvantage, the Turkish textile industry has been investing in equipment, quality improvements, and design capabilities. However, Asian textile firms have also upgraded their productive capacity and invested in such capabilities. It remains to be seen if the Turkish exporters will be able to establish a reputation of quality and retain their market shares, especially in Europe.

Malaysian HT exports tended to grow at a slower rate during the late 1990s and early 2000s, particularly due to the Asian currency crisis in 1998. However, despite being lower compared to the previous period, the growth rate of HT products' exports was

higher than goods with lower technological content over the period 1995-2008. These exports also form the major stimulating force in the Malaysian economy that relies significantly on the performance of export-oriented MNCs. These companies began to invest in local content, which involves large sunk costs and makes it harder for the productive activities of MNCs to be "footloose". To put another way, the local content investment ties the export-oriented MNCs to the hosting country and encourages them to upgrade their exports to remain competitive in world markets.

If Turkey desires to mobilize itself to compete in advanced export activities in the Malaysian fashion, it has to upgrade its domestic activities in more sophisticated technologies to global levels of efficiency. Such an upgrading requires a significant degree of technological learning. Although the previous instruments of industrial policy to promote such learning are no longer applicable under the new global agreements, there are yet other tools of policy that could be carefully designed to encourage and stimulate the process of technological learning to compete at world market prices. The next section examines these instruments and their relative effectiveness focusing on Turkey and Malaysia.

5.3. Structural Change in Manufacturing Sector, Export Performance, and the Terms of Trade

5.3.1 Impact of the Share of High-Technology Exports on Export Performance and Economic Growth

The brief theoretical review in Section 2 provided us with three testable propositions: (i) Manufacturing activities with rapid product or process innovation enjoy faster growth of demand compared to technologically stagnant activities; (ii) Technology-

intensive manufacturing activities are less susceptible to entry by rival producers compared to activities with low technological content; (iii) Structural change involving higher shares of high-technology manufacturing production allows higher rates of growth. In order to asses whether the empirical evidence gives support to these propositions, we use indicators of technological intensity of export structures and plot them against indicators of international competitiveness and export dynamism. This provides suggestive evidence in favor of these relationships.

The share of high-technology exports in total exports (Xtechi/Xi) is an indicator of technological intensity of the specialization pattern. In Figure 4 this indicator is plotted against a measure of international competitiveness—the country's share in total world exports—for Turkey and Malaysia between 1962 and 2008. The dark line represents the path followed by Malaysia and the light one represents that of Turkey. We expect that a country can capture a larger share of world markets if it increases its specialization in high-technology manufactures whose markets pose higher barriers to entry and grow at a faster rate (the first two propositions). Figure 4 shows that there is a strong positive association between the technological intensity of the export structure and international competitiveness measured by market shares. The Pearson correlation coefficient between the two indicators is 0.91 for the two countries, which is highly significant. It also illustrates that Turkey remained in the lower corner of the technology intensity-market share space, exhibiting a small share of high-technology exports coupled with a small rate of participation in world markets. In contrast, while Malaysia started from a similar position to Turkey in the early 1960s, the technological upgrading of her export structure

allowed her to reach the upper corner of the technology intensity-market share space in the first decade of twenty-first century.

Figure 5 and Figure 6 plot the growth rate of the share of high-technology exports in total exports against the growth rates of manufactured exports and of export share in world markets for the leading exporters of manufactured goods (Hong Kong, Singapore, Thailand, Korea, Indonesia, China, India, Brazil, Mexico, Argentina, Turkey, and Malaysia) over the period 1962-2008.

Two results emerge from Figure 5. First, countries that had higher rates of technological upgrading experienced higher rate of growth in their total manufactured exports. The correlation coefficient between high-technology share exports and the value total manufactured exports is 0.30, and the correlation coefficient between the former and the log of the latter is 0.60 (Table 6). Second, while Turkey has experienced a relatively high rate of export growth along with a relatively lower rate of technological upgrading, the opposite is true for Malaysia. Given that higher rates of technological efforts at any point in time yield higher rates of expansion in more dynamic sectors, the prospects for future growth of manufactured exports is brighter in Malaysia compared to Turkey[9].

Figure 6 shows that countries that raised their high-technology export shares in 1962-2008 also tended to capture a larger share of world export markets than the average in the same period. Korea, China, Malaysia, and Thailand cover the upper corner with successful structural transformation and export performance, while Turkey, India, and Latin American countries occupy the lower corner of Figure

[9] The relatively high rate of growth of manufactured exports in Turkey is attributable to the growth of its low- and middle-technology industries, which have so far been the driving export sectors.

Furthermore, it is seen from Figure 7 that the countries that remained competitive in world markets over the period 1962-2008 were also the ones that attained higher rates of income growth in per capita terms. Turkey performed only slightly better than Argentina, Brazil, and Mexico in terms of increasing the average income level of its citizens. All Asian countries achieved to raise their average income levels at a faster rate due to rapid transformation in their export structure towards manufactured commodities with greater technological content. Malaysia could have performed even better than it did given the high rate of growth in its high-technology share of manufactured exports.

5.3.2 Structural Changes in Manufacturing and the Terms of Trade Trends

Let us now consider how the patterns of structural change in productive sectors influence the trends in terms of trade for Malaysia and Turkey. As we have mentioned in the beginning, we expect that the rapid transformation of Malaysian exports into manufactured goods with higher technological content has generated an upward movement in relative export prices and a massive expansion in the volume of these high-tech exports. Figure 8 displays the evolution of net barter terms of trade vis-à-vis the rise in share of high-tech exports in total exports for Malaysia from 1962 to 2007. It is possible to see a parallel upward movement towards the end of ISI period and the beginnings of the export-led growth in late 1970s and early 1980s.

The parallel movement is even more apparent in the trends of income terms of trade and the share of high-tech exports seen from Figure 9. This means that rising relative prices of Malaysian exports accompanied rising volume of exports that resulted in a steep rise in her income terms of trade, at least in part because of rising shares of high-technology manufactured goods in its total exports. The Pearson correlation

coefficients for terms of trade indices and high-technology export shares are 0.79 for net barter and 0.91 for income terms of trade, which are highly significant.

As we described in great detail in the previous sections, Malaysia has been very successful in attracting multinational corporations in electronics manufacturing from the US and mature Asian economies during the boom in electronics demand worldwide. This has played a very significant role in its technological upgrading and future prospects of economic growth. It has also benefited from the regional structural factors as we explained under the 'flying geese' effect in the previous section. Thus, it was a combination of internal factors such as a guided technological effort to attract FDI in high-technology sectors along with favorable external factors such as a good trade and fiscal position initially and following movement of other Asian firms into Malaysia that provided a positive cumulative causation mechanism between industrialization and economic growth.

Turkey, on the other hand, experienced a downward trend in its net barter terms of trade for most of the period over 1962-2007 and the share of its high-technology manufactured exports was significantly low throughout this period (see Figure 10). We expect the specialization in low technology-intensive manufactures to generate a tendency for the relative export prices to deteriorate over time and a much lower rate of growth in the volume of exports (that is, a modest rise in income terms of trade). The very low levels of high-tech export share indicate that the overwhelming majority of Turkish manufactured exports are low or medium technology-intensive (also shown from Table 4). Due to high levels of competition in these types of manufactures, the relative prices tend of deteriorate over time (UNCTAD 2005). Since 1994 Customs Union with

European Union, the net barter terms of trade declined 14 percent over 1994-2007. The collapse in Turkey's net barter terms of trade in 1970s is primarily due to the rising prices of oil—which is a net import commodity for Turkey—during the oil price shocks of 1973 and 1979.

Figure 11 provides evidence for a positive relationship between Turkey's income terms of trade and high-technology export share. However, most of the gains in export volume since 1980s has been a product of the expansion in low-technology and (later) middle-technology exports. The relatively low shares of high-technology exports account for the much lower rate of growth in income terms of trade in Turkey in comparison to the massive expansion in Malaysian income terms of trade. Table 8 displays the Pearson correlation coefficients for NBTT, ITT, and HST for Turkey. While ITT is strongly positively correlated to HTS, NBTT is negatively correlated to HTS.

We also expect that higher rates of unemployment in Turkey to create a tendency for keeping real wages lower, and thus, resulting in lower relative prices of exports of Turkey. Inversely, we expect that the lower rates of unemployment in Malaysia will tend to push real wages upwards, which would be reflected in rising net barter terms of trade for Malaysia. In order to asses whether empirical evidence supports this view, we provide the evolution of real wages in manufacturing sector, the rate of unemployment, and the net barter terms of trade for Turkey and Malaysia in Figures 12 and 13, respectively.

Figure 12 shows that the rise in the rate of unemployment[10] after 1996 significantly lowered the collective bargaining power of workers and lowered real wages, which was also reflected in an overall decline in terms of trade since the late-1990s.

[10] The highest rise in unemployment rate took place during the 2001 Currency Crisis and unemployment rate remained high since the crisis.

Table 9 provides the correlation coefficients for these variables. Net barter terms of trade for Turkey is positively correlated with real wages (0.51) and negatively correlated with the unemployment rate (-0.40), as we had previously expected.

Figure 13 illustrates the trends in manufacturing real wages, unemployment rates, and the net barter terms of trade (NBTT) for Malaysia. It is seen that during the steep rise in NBTT in mid-1980s unemployment rate was rapidly declining and real wages were soaring. Table 10 shows that the correlation coefficient of NBTT with unemployment rate was significantly negative (-0.96) and with real wages significantly positive (0.72), supporting our observation from Figure 13. These correlations are stronger in case of Malaysia compared to Turkey.

Instruments of Export Upgrading and Competitiveness

Theorists of technological learning and capabilities have emphasized three sets of factors that might enhance or undermine the pace of learning in a late-industrializing country: the incentive framework, the factor markets, and institutions (see, for example, Lall 1992). Considering the first one, one can argue that Turkey has developed economic incentives conducive to raising overall productivity. Fostering the manufacturing industry under a regime of import-substitution relying on state protection, ownership, and interventions, Turkey has implemented a liberal policy regime since the 1980s. This has mainly been accomplished through lowering trade barriers, abolishing all NTBs, systematizing and reducing tariff rates, and entering a free trade agreement with the European Union since 1994. The Turkish government also restructured its tax incentives and preferential credit system, reformed the SEEs, and liberalized the FDI regime. Accompanying these developments was a shift in state investments from sectors of

potential competition with private sectors into complementary sectors of infrastructure provisions such as transportation and communications (Lall, 2000). Similar changes have also taken place in the case of Malaysia, but as we have emphasized, in a more carefully-planned, and strategically-selective fashion.

The liberalization of Turkish policy regime has significantly restrained the capacity of the developmental state to use industrial policy in support of new activities. Under the WTO rules and as part of its free trade agreement with the EU, the traditional instruments of industrial policy—infant industry protection, the use of subsidies to promote local productive enterprises, local content regulations, and selective acceptance of FDI—are no longer permitted. Before liberalization, Turkey could implement some of these policy tools, but as we have seen, with limited success, partly due to insufficient degree of selective targeting to encourage domestic enterprises for entering sectors with complex technologies. Given the new rules of international agreements, however, Turkey can still make use of other instruments of competitiveness that are commonly applied by industrial countries and NIEs: upgrading of skills, planning to promote science and technology, technology support for private enterprises, R&D incentives, and attracting FDI. This still consists of a large pool of instruments that middle-income countries such as Turkey and Malaysia can successfully implement.

Let us now consider some of the indicators of the effectiveness of these instruments as far as they were used in Turkey and Malaysia, and compare their performance with other NIEs and some industrialized countries. We will follow two sets of indicators: (i) skill upgrading and R&D expenditures, and (ii) the attraction of FDI inflows into productive sectors.

6.1. Skill Upgrading and R&D Expenditures

The nature of technological change in the twenty-first century brings greater demands for skills and the skill formation needs to be flexible enough to be responsive to emerging industrial requirements. To move from one pattern of competitiveness, thus, requires transforming the formation of new skills and the interaction of this skill-generation process with the productive system as it uses and contributes to skill upgrading. In short, to enhance competitiveness in manufacturing sector, skill upgrading should be continually taking place and encouraged by the governments' supportive policies towards education and R&D expenditures.

Table 11 shows the share of the labor force having tertiary education and the school enrollment percentages on the one hand, and R&D expenditures as a percentage of GDP, researchers and technicians in R&D per million people on the other. This is the data for 2007 or most recent year available for the NIEs and some earlier industrializers. Malaysia's share of tertiary educated labor force it its total labor force is 20 per cent, which is about 50 percent larger than Turkey's share, 13 per cent. These figures are way below compared to industrialized countries such as Japan and UK, but they are also much lower than most of the NIEs, such as Korea, Hong Kong, and Singapore. Turkey and Malaysia's percentage of tertiary educated labor force is only higher than some of the Latin American countries, including Brazil and Mexico.

In school enrollment ratios, Turkey has a higher percentage of tertiary enrollments than Malaysia, but notice that the Malaysian figure is a year older. In gross secondary enrollment rate, Turkey has also a higher share compared to Malaysia. However, in net terms, they are equal as seen from the fourth column in Table 11. These figures lag

behind Korea, Thailand and Argentina, but better or on a par with Hong Kong, Indonesia, India, China, Brazil and Mexico. However, they lag much behind all of the selected industrialized countries. Note here that Korea has the highest tertiary enrollment rate, 95 percent, much above the industrialized world. These enrollment rates in formal education are a major indicator of skill generation, but they are certainly not the only one. In particular, they exclude other forms of training, such as within-firm training. The comparisons of enrollments also neglect the differences in quality and completion rates between countries. In Turkey, for example, a student appears as enrolled to the secondary school even when he/she discontinues school after one or two years. The rate of completion, therefore, is much lower than the rate of enrollment. The percentage of the labor force with tertiary education is a better indicator of human capital formation since it does not suffer from such overestimation problems. Despite its exclusion of other forms of training, it captures a critical process in skill formation, and it is the only data available comparable across countries.

Compared to export structures across countries, Turkey appears to have a skill base that is further advanced relative to the technological complexity of its manufactured exports. With a lower or equal level skill endowment, countries in Southeast Asia, in particular Malaysia and Thailand, have been able to develop export bases with higher technological content by specializing in simple assembly electronics led by MNCs. Seen from this perspective, Turkey has excess skills for the assembly part of high-tech manufactures. On the other hand, if Turkey aims to develop capabilities embedded in domestic enterprises such as Korea and Taiwan, its skill base needs much improvement. This is also the case in comparison to European countries such as France and Germany,

which have much stronger skill endowments than Turkey. For meaningful integration with the EU in terms of using its advanced technologies as a full member and not merely as a supplier of cheap labor, Turkey needs to face the deficiencies in its skill base and implement carefully-designed measures to overcome them.

The R&D expenditures as a percentage of GDP are about 1 per cent in Turkey and Malaysia, as well as other NIEs, with the exception of Singapore and Korea: the ratios of R&D spending in GDP for these two countries are at the same levels as the previously industrialized countries. In the number of researchers in R&D expenditures, Turkey has a slightly greater figure than Malaysia, but the latter's figure are two years older. Thus, it might be the case that in two years time, Malaysia could have improved in this indicator. In comparison of the number of technicians in R&D expenditures, the figures are for the same year of 2004 and Malaysia appears to have a greater number than Turkey. However, these numbers still lag much behind most of the NIEs, especially Singapore, Korea, and Hong Kong. Needless to say, they are also much smaller than the number of researchers and technicians in the industrialized world. Singapore and Korea appear to be two outstanding countries closest to the performance of the industrialized countries, followed by Hong Kong. Malaysia and Turkey follow them from a ten-fold distance.

One of the reasons behind the poor performance in R&D efforts in Turkey is the absence of a tradition for conducting R&D due to a high reliance on imported technologies and new products. This passive reliance is reflected in low levels of R&D spending by the private sector (Boratav 2008). The majority of R&D is financed by the government and takes place in public universities and institutes. This R&D activity has

little linkages to the industrial sector as there has been very little collaboration between the private industry and public universities. This is partly due to a mismatch between the technical needs to the industry and the research conducted at the universities. The infrastructure for technological activities is unable to satisfy industrial needs, especially in competitive export sectors. There are a large number of Small and Medium Enterprises (SMEs) that comprise the bulk of Turkish industry, but these have few sources of financing their technological investments and thus tend to lag in technology. In face of these deficiencies, the Turkish government has been implementing improvements in tax incentives for industrial R&D, direct procurements to stimulate technological effort, and more importantly, to improve linkages between industry and science community. On a more personal note, during my last visit to Turkey in December 2009, one of my friends who is a research assistant at mechanical engineering in the Middle East Technical University shared his experience with an industrial research project conducted for the private sector. One of the automobile assemblers needed a mechanism to keep the hood of the car open as they were painting it. My friend was quite surprised that all those engineers employed by the firm were incapable of designing such a simple mechanism. All they do, he said, is to talk on the phone and make business arrangements, rather than solving technological problems. In short, the linkages between the scientists and private industry are crucial in advancing technological learning and building industrial capabilities.

6.2. FDI Inflows into Fixed Capital Formation

Unlike Malaysia and other Southeastern late-comers, Turkey has not been able to attract very large FDI inflows in relation to gross domestic fixed capital formation—this

is despite the fact that it has liberalized its FDI regime and provided incentives to international investors.

During the last few years there has been a rise in FDI inflows as a share of domestic fixed capital formation. It has reached two-digit levels in 2005 and 2006, 13.8 per cent and 25.3 per cent respectively. However, these inflows have been primarily through acquisitions in financial services, particularly the domination of foreign investors in the banking sector. This contrasts starkly with the Malaysian experience where most of the FDI was invested into export-oriented manufacturing activities. Such inflows of FDI have not generally materialized in the Turkish manufacturing industry. In order to attract export-oriented FDI, especially in high-tech manufactures, a developing country needs to offer a disciplined, trained, and self-monitoring labor force specialized in modern technical skills. This should be accompanied by a well-maintained infrastructure, standardized procedures, reduced business costs, provision of intermediates at world market prices, priority treatment for MNCs and a stable macroeconomic environment. An effective FDI promotion strategy is further required to target high-technology investors and meet their needs. Although Turkey has some of these aspects, it lacks in others. For instance, uncertainties in its macroeconomic dynamics might hinder MNCs to commit themselves to outsourcing components from Turkey. Its industrial infrastructure may not be able to compete with Eastern European countries. Furthermore, the promotion and targeting of FDI may not suffice to change previous perceptions that Turkey is hostile to foreign investors, and these perceptions can act as a disincentive to prospective investors. In short, Turkey could take some lessons in MNC-targeting from Malaysia, whose FDI as a percentage of its capital formation has been significantly high and its promotion of the

electric MNCs from USA to outsource their assembly activities has succeeded to bear fruit.

7. The Effect of Trade Liberalization on Exports, Imports, and Balance of Payments

Trade liberalization is often implemented with the purpose of stimulating economic growth through a more efficient allocation of resources under a more competitive market system, a growing flow of knowledge and investment across borders, and eventually a rising rate of capital accumulation and technical improvement. This traditional view of trade liberalization has several times been refuted by a growing body of literature by Chang, Amsden, and others. However, the point is that even under this supply side view, while the trade liberalization affects exports and imports positively by increasing their growth, the effect on trade balance and balance of payments remains uncertain. The latter depends on the relative impact of liberalization on export and import growth, and on the changes in relative prices of traded goods. If the balance of payments worsens in the post-liberalization period due to a larger increase in import growth relative to export growth, economic growth might be constrained from the demand-side. This is particularly the case when payments deficits are not sustainable by increasing amounts of capital flows or are not eliminated by changes in relative prices.

Turkey and Malaysia exemplify two countries that have undergone excessive trade liberalization in 1984 and 1988 respectively. To assess the relative impact of these liberalizations on export and import growth, we specify standard equations for export growth and import growth and add to the normal determinants of trade performance (e.g. domestic income, foreign income, and price competitiveness) a measure of trade

liberalization that interacts with income and price variables[11]. We test for the effect and significance of liberalization using different estimation techniques including OLS with Newey-West standard errors that are heteroscedasticity and autocorrelation corrected (HAC), and cointegration techniques of dynamic OLS (DOLS) and fully-modified OLS (FMOLS) (after testing for unit roots and cointegration). The results from the cointegration techniques should be treated with caution due to the limited degrees of freedom.

The export performance of a country depends primarily on competitiveness (measured as the price of a country's exports relative to the foreign price of related goods expressed in a common currency) and the level of world demand (measured by the world GDP minus the GDP of the own country). This yields the following export function:

$$\ln X_t = \beta_0 + \beta_1 \ln W_t + \beta_2 \ln PX_t + u_t \qquad (1)$$

where ln*PX* is the logarithm of relative prices; ln*W* is the logarithm of world income; and *u* is a stochastic error term.

The export equation can be modified by introducing the measure of trade liberalization: a dummy variable (*lib*) for the year of significant trade liberalization. This provides an augmented equation of the form:

$$\ln X_t = \beta_0 + \beta_1 \ln W_t + \beta_2 \ln PX_t + \beta_3 lib_t + v_t \qquad (2)$$

The second modification allows us to see the impact of trade liberalization on the price and income elasticities of demand for exports, and involves including the interaction dummies liblnW and liblnPX. These slope dummies capture the joint effects of the elimination of trade barriers on income and price elasticities respectively:

[11] The methodology used in this section follows Santos-Paulino and Thirlwall (2004).

$$\ln X_t = \beta_0 + \beta_1 \ln W_t + \beta_2 \ln PX_t + \beta_3 lib_t + \beta_4 lib \ln W + \beta_5 lib \ln PX + v_t \qquad (3)$$

Following the same methodology, the import equation can be specified as a function of domestic income and relative prices:

$$\ln M_t = \alpha_0 + \alpha_1 \ln Y_t + \alpha_2 \ln PM_t + e_t \qquad (4)$$

where ln*PM* is the logarithm of relative prices; ln*Y* is the logarithm of world income; and *e* is a stochastic error term.

Including the shift dummy for taking account of the trade liberalization, we can rewrite (4):

$$\ln M_t = \alpha_0 + \alpha_1 \ln Y_t + \alpha_2 \ln PM_t + \alpha_3 lib_t + \varepsilon_t \qquad (5)$$

Another version of equation (5) can be obtained by adding the interaction dummies:

$$\ln M_t = \alpha_0 + \alpha_1 \ln Y_t + \alpha_2 \ln PM_t + \alpha_3 lib_t + \alpha_4 lib \ln Y + \alpha_5 lib \ln PM + \varepsilon_t \qquad (6)$$

Let us now consider the regression results for export equations in (2) and (3), and for import equations in (5) and (6). First, we see that the income elasticity for exports is estimated to be lower than that for imports in case Turkey (Tables 13 and 14). Pre-liberalization income elasticity for exports is 0.82 with OLS estimates, or 0.80 with fully-modified OLS. Trade liberalization had a significant positive impact on export growth, increasing exports by 0.82 per cent for one per cent increase in foreign income in the post-liberalization period.

The cointegration results also show similar increases, with 1.79 per cent using FMOLS estimates. However, the impact of liberalization on import elasticities was much more pronounced. The income elasticity of imports rose from 1.04 over 1971-1983 to 2.46 over 1984-2006, with an addition 1.42 per cent additional increase after the trade restrictions were liberalized. Cointegration results are also broadly similar; however, the

pre-liberalization income elasticities are insignificant with dynamic OLS estimation. It would be more valid to draw results from the fully-modified OLS estimates, whose elasticity estimates are significant for both income variables and their interaction dummy variables.

Second, for the Turkish case, we find that the shift dummies showing the impact of liberalization on real export/import performance were found to be significant and negative. This implies that removing trade restrictions had an overall negative impact on both exports and imports. However, the negative impact was greater for exports relative to imports in real terms.

Third, the first and second points together imply that the impact of trade liberalization was negative on the trade deficit and thus on balance of payments, exacerbating the effect of the relatively larger import income elasticity in the pre-liberalization period. If the worsening in trade balance is not sustainable through capital inflows, downward income adjustment is necessary to keep the balance of payments at a sustainable level. What is worse, the economy becomes dependent on foreign capital inflows that very highly volatile. Their attraction depends on keeping interest rates high. However, such high rates of interest lower the return on productive capital and reduced productive investments. This is exactly what has been taking place in the Turkish economy since the implementation of the new Import Program in 1984.

Fourth, in case of Malaysia, we see that the export income-elasticity was already higher than the import one in the pre-1988 period. With the remarkable reductions in trade barriers in 1988, there was an increase in income elasticities of export and import demands. Note, however, that the increase in export income-elasticities was significantly

larger than that in import income-elasticities (Tables 15 and 16). While the increase in import elasticity ranged from 0.59 to 0.66 per cent, the rise in export elasticity ranged between 0.94 and 1.19, depending on which estimation technique is used. In short, the relative impact of trade liberalization on income-elasticity of exports was greater than that of imports, relaxing the balance-of-payments constraint even further in case of Malaysia.

In conclusion, the impact of trade liberalization might vary across countries with different manufacturing experiences. Countries having a more carefully-strategically planned manufacturing experience, such as Malaysia, might benefit from liberalization that is conducted in a timely-fashion—allowing infant industries to reach some maturity. By contrast, countries failing to use strategic industrial policy in a selective manner to nurture targeted manufacturing sectors, such as Turkey, is likely to be constrained by balance of payments restraints and high interest rates detrimental to the growth of new industrial activities.

8 Conclusion

Flows of international trade influence the patterns of growth divergence among countries through differences in the types of goods and services countries produce and in the potential for export growth in international markets for these goods and services. Those specializing in innovation-intensive commodities with higher technological content tend to experience dynamic gains from trade—benefiting from Schumpeterian rents retained in a rising trend of terms of trade as well as higher rates of growth in their export volumes and per capita income levels. The East Asian countries that have

achieved to sustain this high-road to industrialization have adopted strategic industrial policies to develop their infant industries and make them competitive at world market prices. In other words, diversification into technology-intensive sectors has never been an automatic outcome of integration into the world economy and specialization along static comparative advantages. Quite the opposite, all successful latecomers including the today's developed countries such as the United States and Germany have made extensive use of interventionist policies to counter the adverse effects while taking advantage of the positive effects of external economic relations.

The historical comparison of manufacturing experiences of Malaysia and Turkey provides further evidence in support of the careful design and strategic use of industrial policies. Some of the critical points can be summarized as follows:

- The export-led growth strategy of Malaysia involved a preceding import-substitution phase along with an active export diversification strategy. Malaysia used a series of interventions including infant industry protection (even after lowering average rate of tariffs substantially), export subsidies and targets, performance requirements, allocation of credit, local content rules, investment in human capital, skill-formation, and local R&D capabilities, as well as loose protection of intellectual property rights to allow for reserve engineering. Turkey made use of some of these interventions as well; however, it eliminated a great part of its protective measures much faster and did not subject the promoted firms to performance criteria once they received the export subsidies. Thus, the measures of neither the import protection nor export promotion were *temporary* and *conditional* to the achievement of precise performance criteria in Turkey to the extent that it was in Malaysia.

- Previous experiences of developing countries in manufacturing create important cumulative effects of path-dependency. British colonial experience provided Malaysia with well-established manufacturing sectors in resource-based exports such as tin, rubber, and palm oil, and thus a strong tax base for raising government revenues. The semi-colonial Ottoman experience, in contrast, resulted in a very weak manufacturing base with a poor trade performance and a fragile basis for fiscal purposes (not to forget the massive debt payments made to the European countries that won the First World War). In sum, although Turkey was never formally colonized, it inherited a semi-colonial economy with a "twin weakness" in trade and fiscal conditions much worse than the colonial Malaysia.

- Location of Malaysia in the rapidly-growing East Asian region also provided another exogenous effect that benefited from external economies of the "flying geese" pattern. These benefits were not available to Turkey which, to a great extent, remained as a peripheral economy to the central economies of Europe. It never attracted export-oriented FDI from Europe to the extent that Malaysia did from the rest of Asia, although it benefited from preferential access to the European market for the growth of its textile industry.

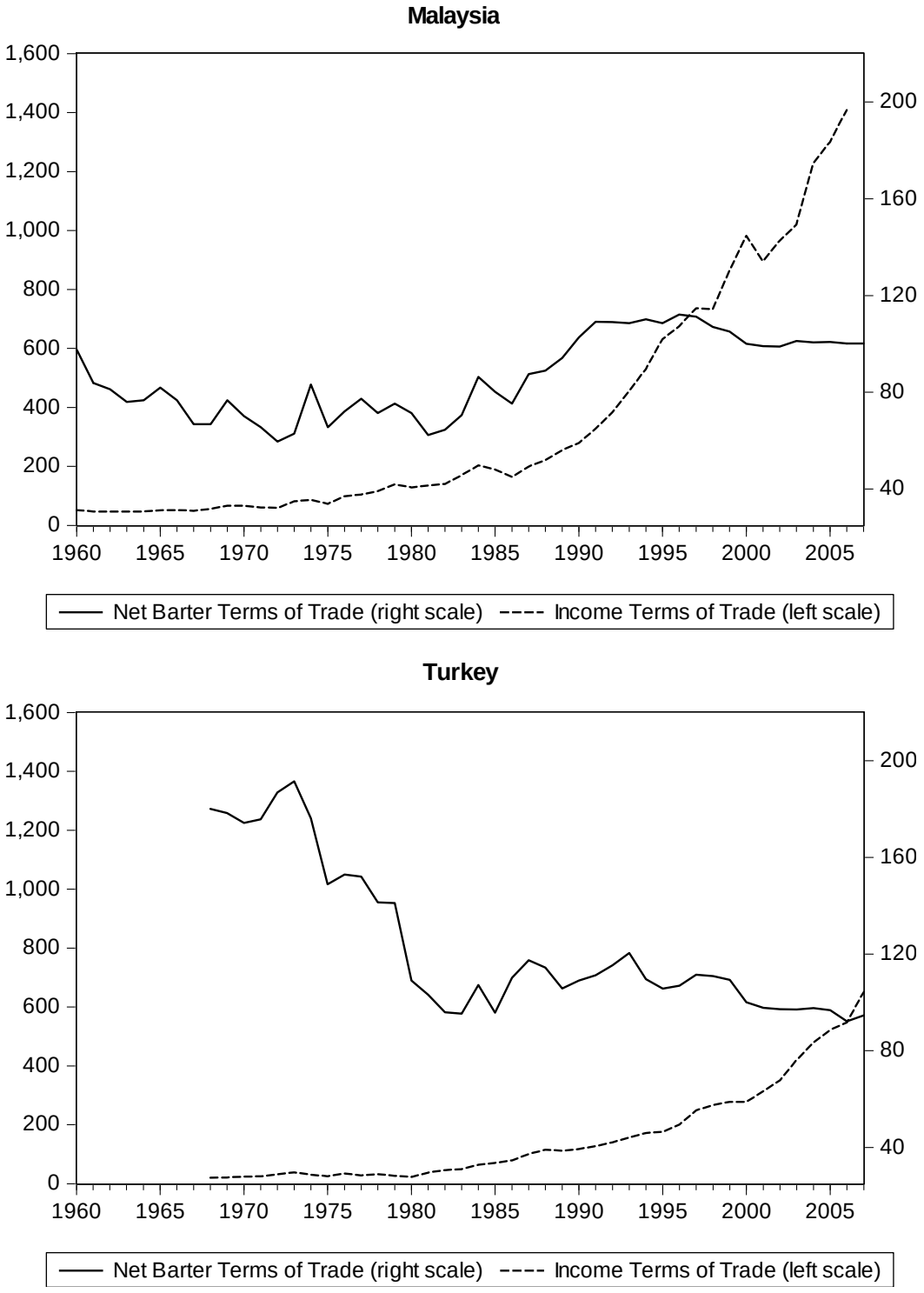
- The terms of trade dynamics, especially the trends in income terms of trade, suggest a strong positive correlation between the share of technology-intensive manufactured exports and the income terms of trade for both Turkey and Malaysia. However, the rise in income terms of trade has been much more pronounced in case of Malaysia due to its ability to diversify into high-technology manufactures with growing global demand. Moreover, the changes in real wages and unemployment rates play an

additional role in determining the net barter terms of trade movements. Significant rises in real wage indices (or falls in rates of unemployment) tend to create higher export prices, which lead to rises in net barter terms of trade, ceteris paribus.

- Trade liberalization in Turkey increased the income-elasticity ratio by creating a stronger positive impact on income elasticity of demand for imports. In contrast, Malaysian trade liberalization reduced the income-elasticity ratio with a relatively larger positive impact on export income-elasticity. The differences in the outcomes of trade liberalization may be attributed to the timing of the liberalization (earlier in Turkey), the way of liberalization (more gradual and selective in Malaysia), and the other complementary policy changes such as the methods of export promotion (conditional to export performance in Malaysia).

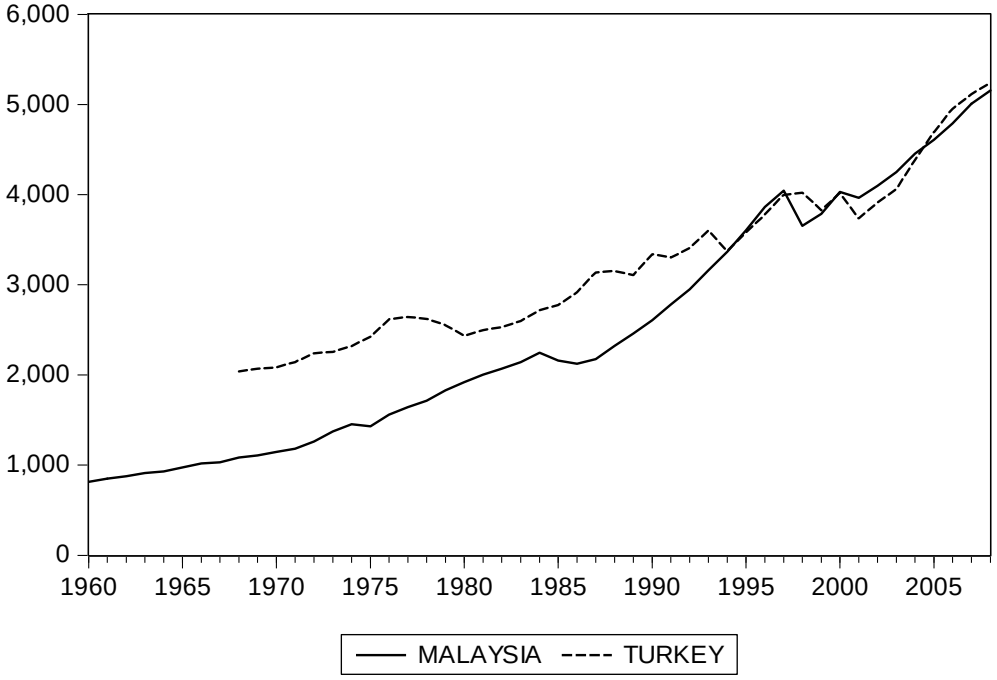
Additional points could be drawn, but these points outline the arguments of critical importance in making a case for the use of industrial policies to overcome the balance of payments constrained growth mechanisms and take advantage of upcoming opportunities for realizing dynamic gains from international trade.

Figure 1 Malaysia and Turkey, Terms of Trade Trends, 1960-2007.



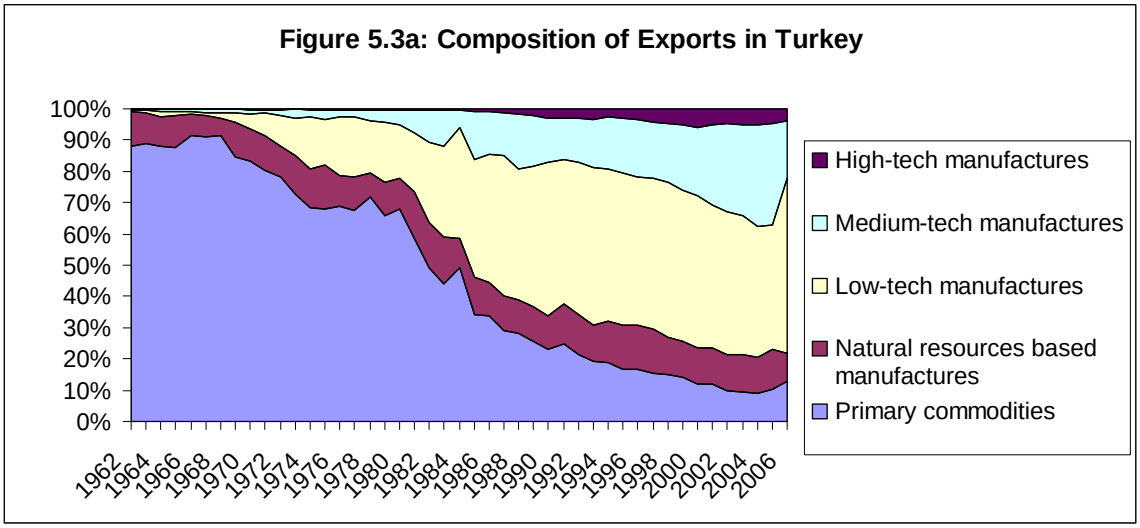
Source: World Bank WDI 2009 online database, IFS Supplement of Trade Statistics, and Author's calculations.

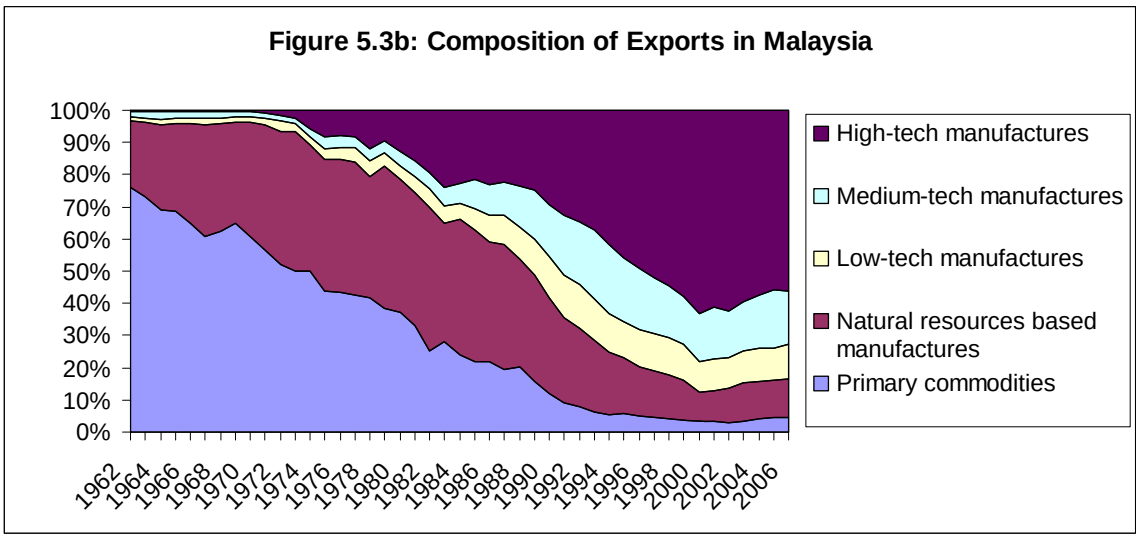
Figure 2 Turkey and Malaysia, GDP per capita, 1960-2008, in constant 2000 US$.



Source: World Bank WDI 2009.

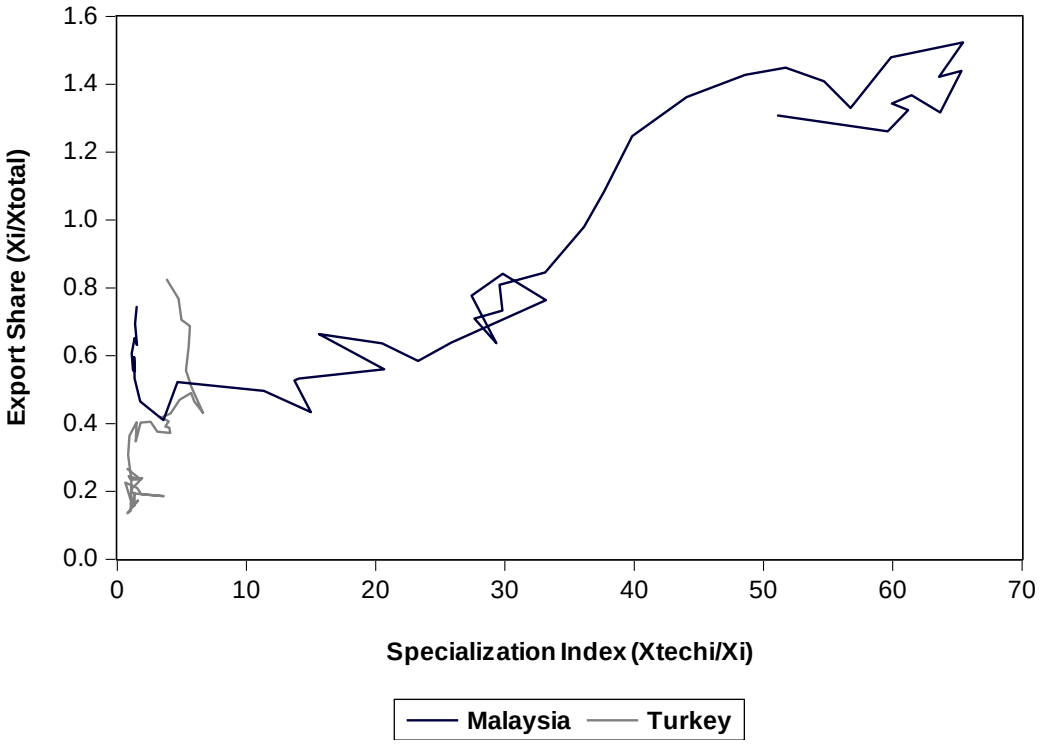
Figure 3 Composition of Exports in Turkey and Malaysia, 1962-2006





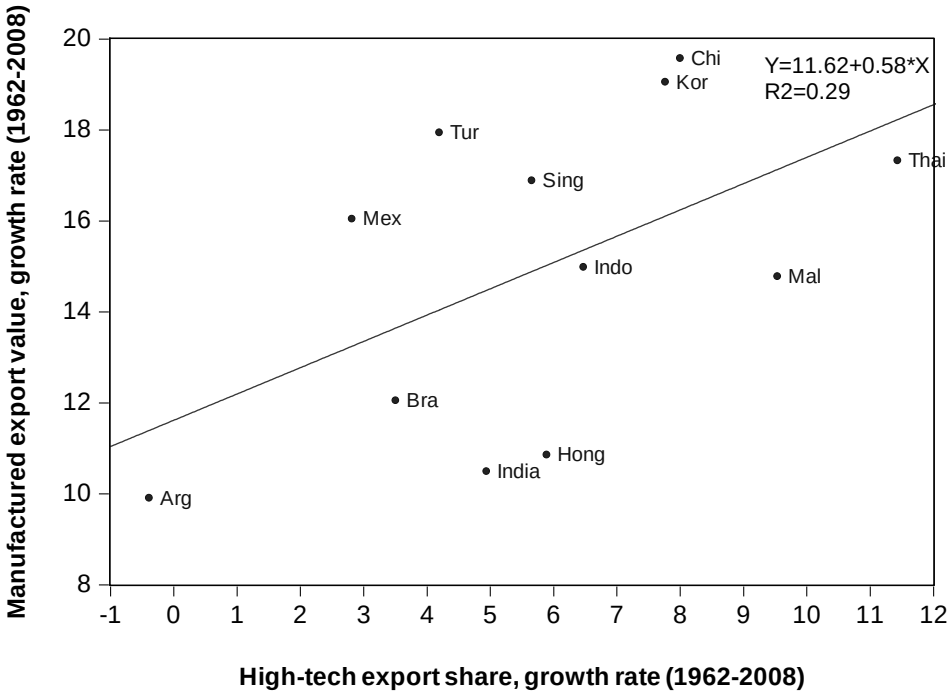
Source: Feenstra et al (2005) and author's calculations from COMTRADE database.

Figure 4 Structural Change and Export Share Patterns: Malaysia and Turkey, 1962-2008



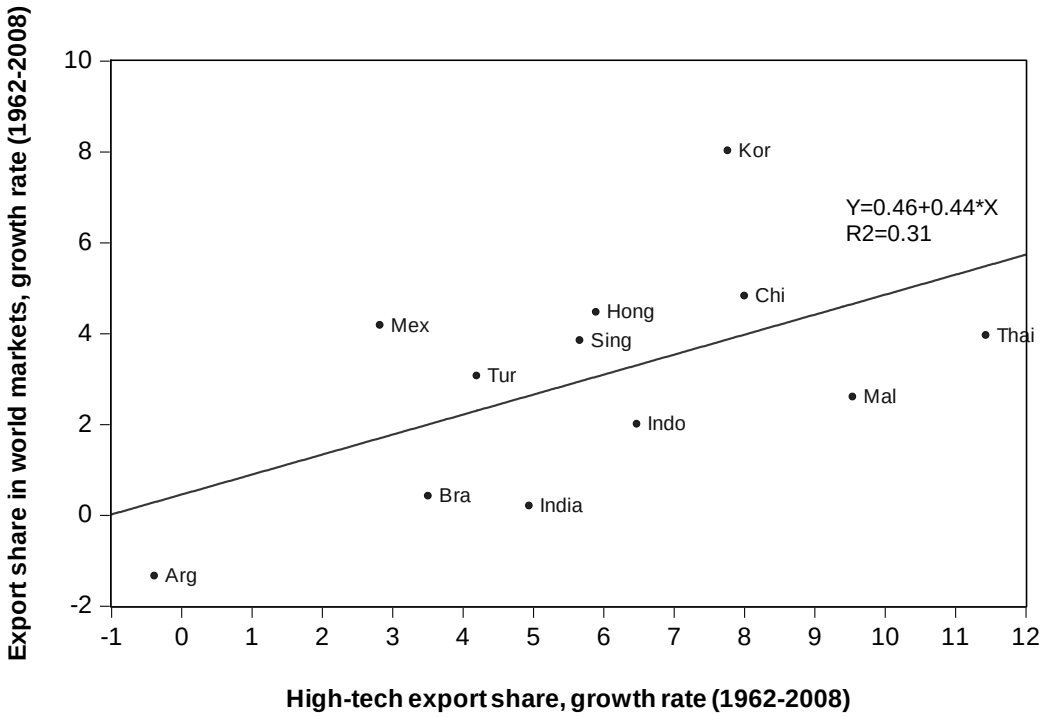
Source: UNCTAD Handbook of Statistics provides data for export shares of individual countries in world trade. Specialization index is calculated from the technological composition of exports provided by Feenstra et al (2005) and author's extensions based on COMTRADE database.

Figure 5 Structural Change in the Manufacturing Sector and Its Growth Performance



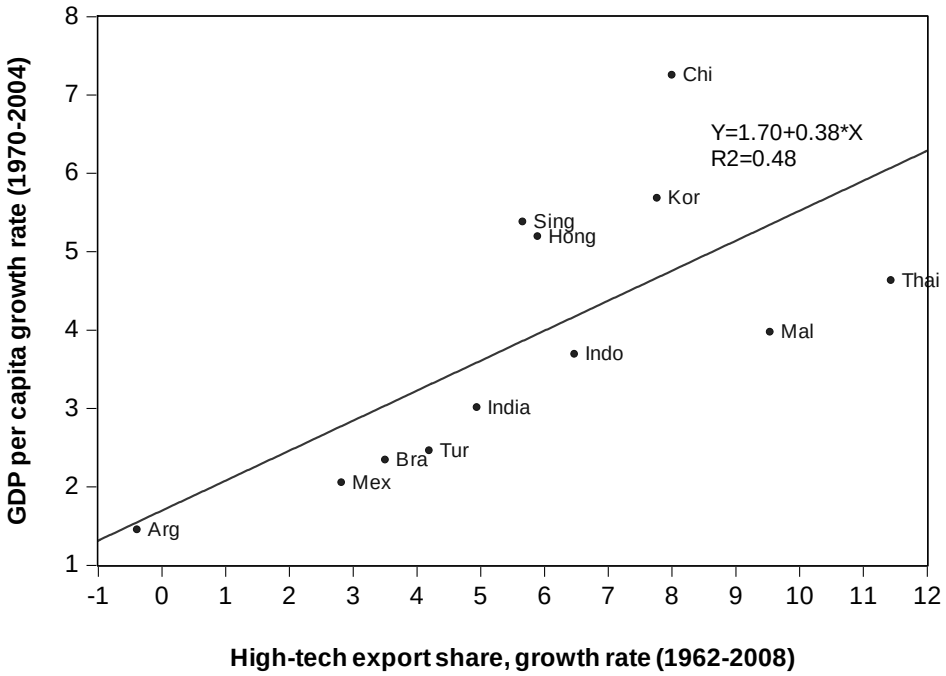
Source: Author's calculations based on Feenstra et al. (2005) and COMTRADE data. The growth rates are annual growth rates in percent.

Figure 6 Structural Change in the Manufacturing Sector and Its Competitiveness



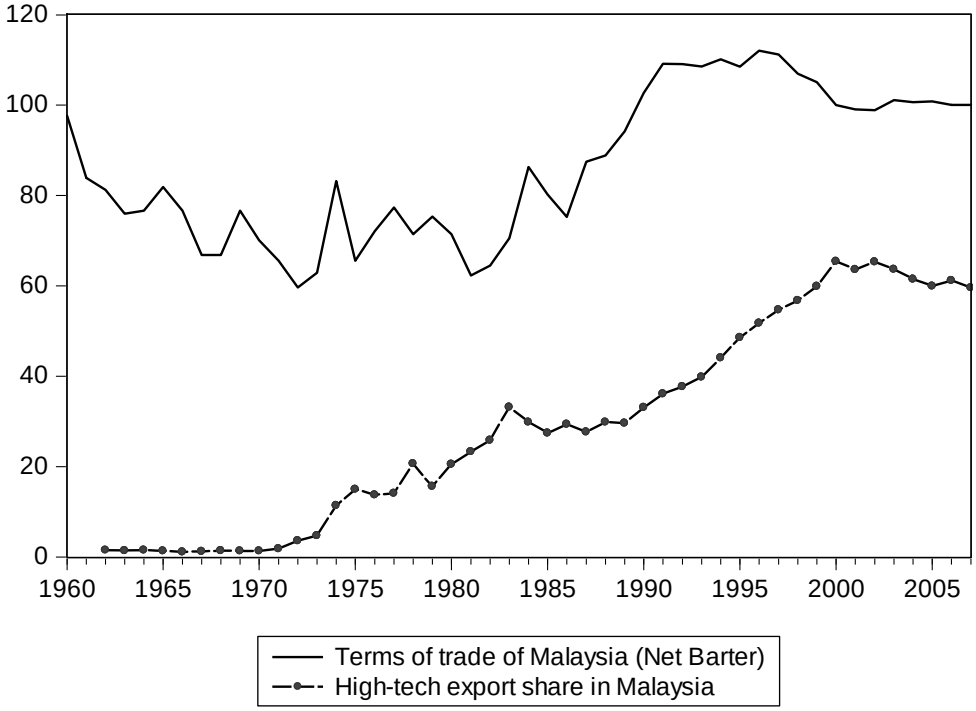
Source: Author's calculations based on Feenstra et al. (2005) and COMTRADE data, and UNCTAD Handbook of Statistics for export shares in world markets.

Figure 7 Structural Change in Manufacturing and Per Capita Income Growth



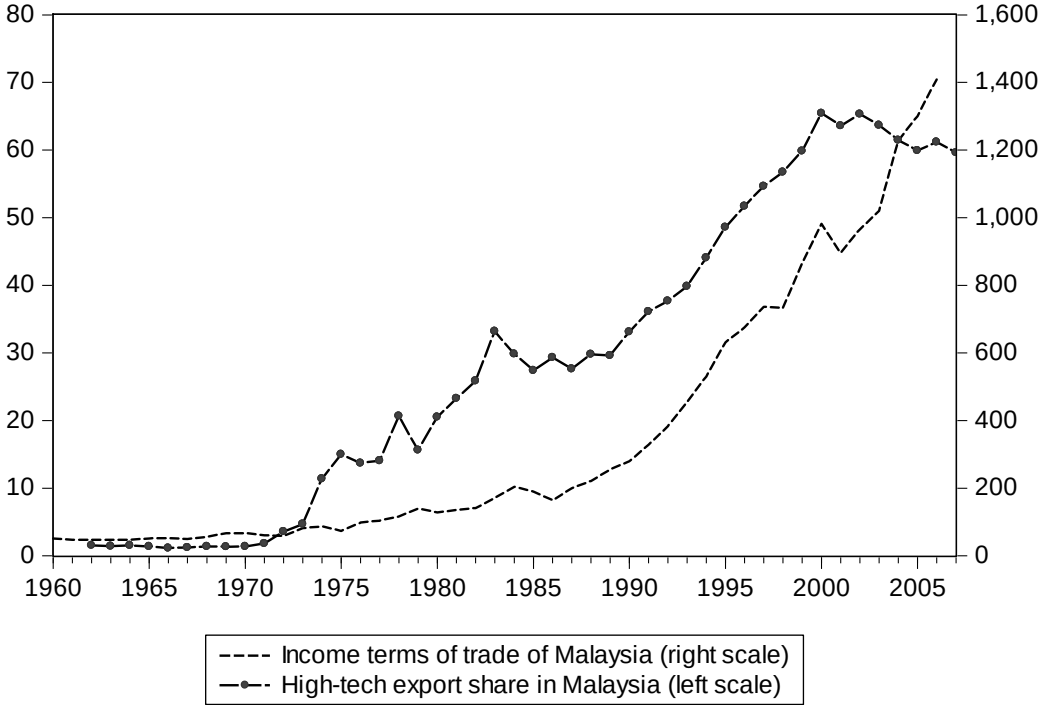
Source: Author's calculations based on Feenstra et al. (2005) and COMTRADE data, and World Development Indicators for GDP per capita growth rate (annual percent growth rate averaged over time).

Figure 8 Net Barter Terms of Trade and High-Technology Export Share in Malaysia



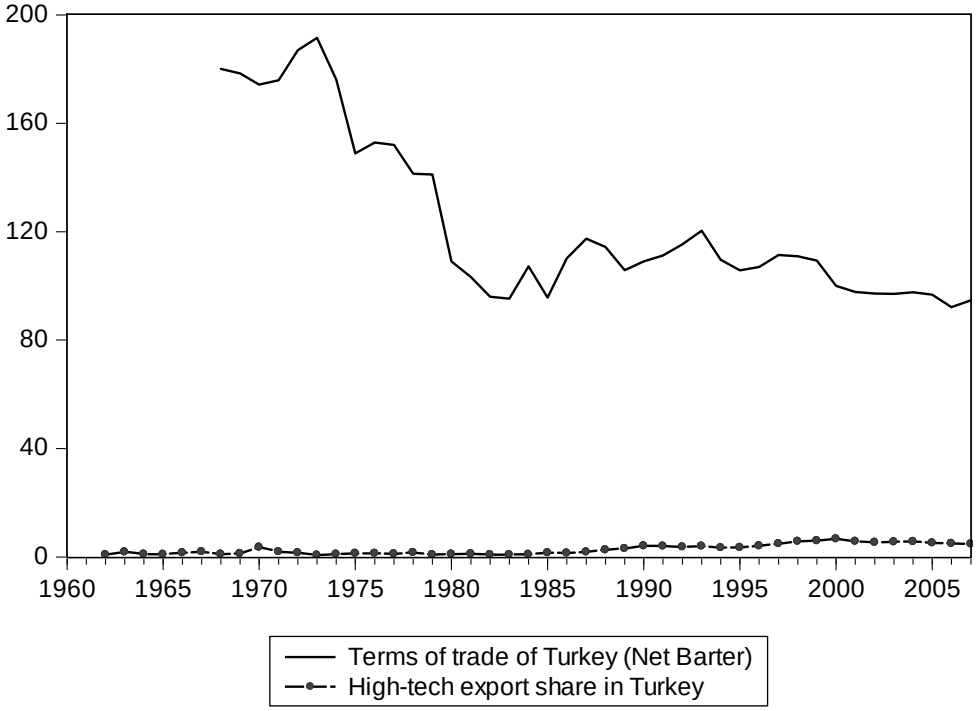
Source: World Bank WDI 2009, IFS Supplement of Trade Statistics, COMTRADE.

Figure 9 Income Terms of Trade and High-Technology Export Share in Malaysia



Source: World Bank WDI 2009, IFS Supplement of Trade Statistics, COMTRADE.

Figure 10 Net Barter Terms of Trade and High-Technology Export Share in Turkey

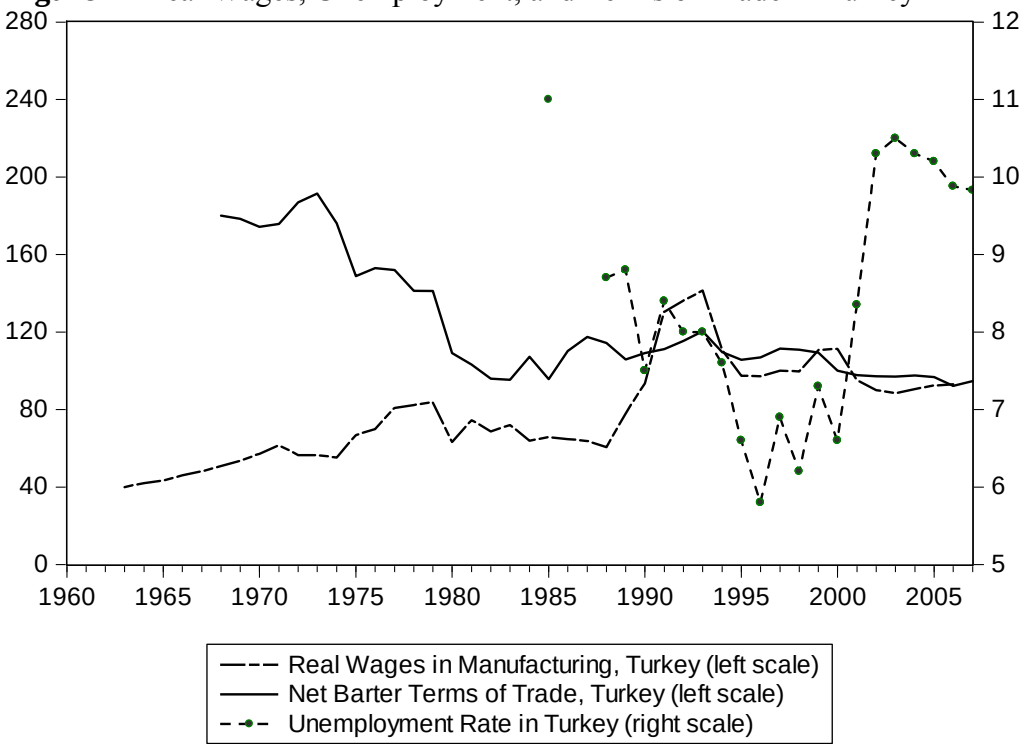


Source: World Bank WDI 2009, IFS Supplement of Trade Statistics, COMTRADE.

Figure 11 Income Terms of Trade and High-Technology Export Share in Turkey

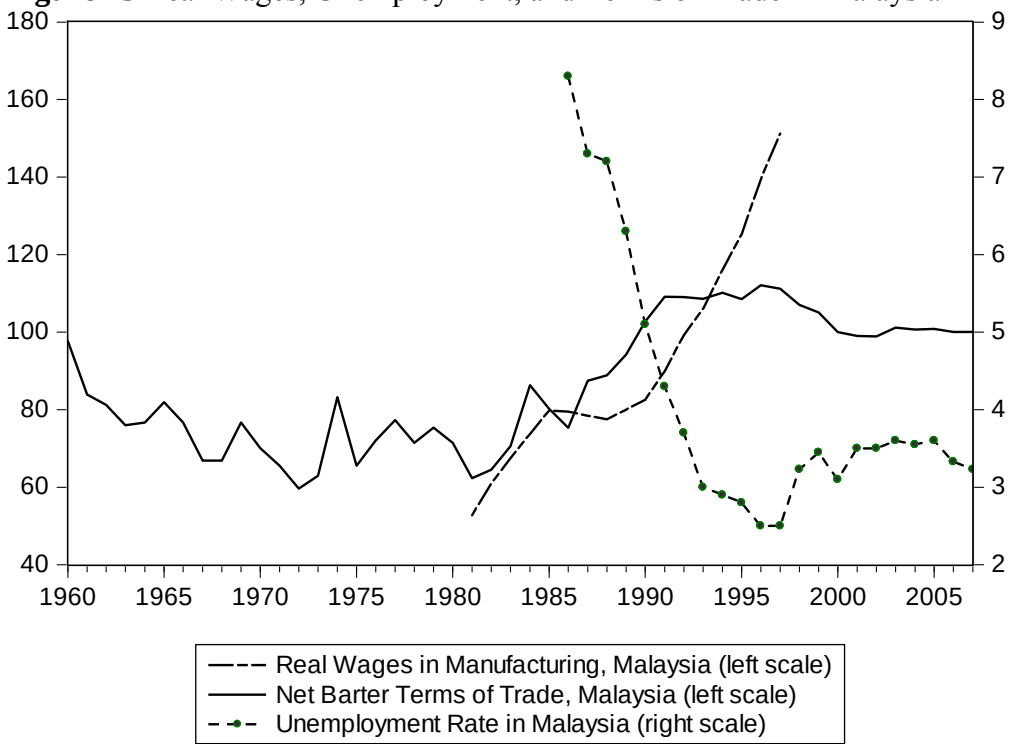
Source: World Bank WDI 2009, IFS Supplement of Trade Statistics, COMTRADE.

Figure 12 Real Wages, Unemployment, and Terms of Trade in Turkey



Source: Real wage index is calculated from Boratav (1985), Yeldan (2006) and State Planning Organization online database. Unemployment rate is provided from IFS. NBTT is calculated from IFS Supplement on Trade Statistics and WDI.

Figure 13 Real Wages, Unemployment, and Terms of Trade in Malaysia



Source: Real wage index is taken from ILO labor statistics database and adjusted to fit the left scale. Unemployment rate is provided from IFS.

Table 1 Macroeconomic Performances of Turkey and Malaysia in a Comparative Perspective

	1960-1970		1971-1980		1981-1997		1998-2008	
1. Income Growth and Per Capita Income	Turkey	Malaysia	Turkey	Malaysia	Turkey	Malaysia	Turkey	Malaysia
GDP growth (%)	3.6[a]	6.5	4.1	7.9	5.0	7.4	4.0	4.4
Real GDP per capita (US$)	2063	977	2424	2276	3165	2711	4359	4345
Real GDP per capita (PPP constant 2005 international $)	n.a.	n.a.	n.a.	n.a.	7407	6908	10202	11075
2. FDI, Export Growth, and Composition of Exports								
Foreign direct investment, net inflows (% of GDP)	0.3[b]	2.2[b]	0.1	3.1	0.3	4.6	1.4	3.3
Exports of goods and services (% of GDP)	3.9[c]	42.5	5.0	45.7	15.9	70.1	22.7	114.2
Exports of goods and services (annual % growth)	n.a.	5.9	n.a.	8.1	10.7[d]	11.9	6.6	6.9
3. Import Growth and Composition of Imports								
Imports of goods and services (% of GDP)	5.4	37.9	9.5	41.7	19.2	69.0	24.4	93.6
Imports of goods and services (annual % growth)	n.a.	4.2	n.a.	11.2	12.8[d]	12.1	8.7	6.1
Manufactures imports (% of merchandise imports)	75.9	52.3	66.6	63.7	61.0	77.9	68.1	81.0
4. Current Account and Total Debt Service								
Current account balance (% of GDP)	n.a.	n.a.	-3.3	0.3	-1.1	-4.2	-2.7	12.4
Total debt service (% of exports of goods, services and income)	n.a.	n.a.	22.4	7.8	30.6	13.4	35.8	5.9
Total debt service (% of GNI)	1.0[b]	2.0[b]	1.3	3.4	6.0	9.7	8.7	7.3
5. Real Wages Growth Rate								
Private manufacturing	5.6		2.3		3.3		1.6	
Public manufacturing	5.9		3.6		5.4	6.9	6.0	
6. Unemployment Rate	n.a.	n.a.	n.a.	n.a.	7.6	4.7	8.9	3.4
7. Inflation Rate and Terms of Trade								
Inflation, consumer prices (annual %)	4.0	0.9	33.6	6.0	60.3	3.4	34.5	2.7
Net barter terms of trade (2000 = 100)	n.a.	n.a.	109.1[f]	71.4[f]	107.9	93.0	99.3	101.3

Source: World Development Indicators 2009 online database.
Notes: Figures are simple averages over the periods. a 1960-68 data missing; b 1970's figure; c 1960-1967 data missing; d pre-1987 data missing; e [re-1989 data missing; f 1980's figure.

Table 2 Values of Manufactured Exports by Leading Developing Countries, mil. in US$

Country	1962	1970	1980	1985	1990	1995	2000	2005	2007[a]	2008[a]
Turkey	46	104	987	4,340	10,044	17,455	24,644	65,970	86,003	101,812
Malaysia	312	760	7,593	9,531	24,632	73,150	104,223	136,566	160,639	134,294
Hong Kong	632	2,109	14,744	17,493	44,154	49,542	54,732	80,275	89,183	93,267
Singapore	152	304	7,113	10,622	32,714	75,153	87,506	131,385	155,697	164,358
Korea	20	646	15,193	24,713	59,825	112,821	165,485	274,739	329,650	n.a.
Taiwan	n.a.	n.a.	18,214	28,295	62,211	103,987	115,896	133,075	140,013	140,393
Indonesia	137	361	3,858	3,069	11,725	31,519	47,650	55,018	64,605	72,147
Thailand	127	146	2,563	3,649	17,249	45,380	63,788	101,144	121,253	131,313
China	272	878	8,920	25,844	73,722	213,684	379,672	983,318	1,834,942	2,140,775
India	822	1,450	4,842	6,601	16,653	27,270	33,854	70,319	92,134[b]	113,589[b]
Argentina	215	533	2,996	2,985	6,175	10,919	11,131	15,791	22,677	27,679
Brazil	362	1,084	13,271	17,321	25,758	36,578	44,382	87, 692	105,945	111,343
Mexico	226	712	5,021	9,848	25,920	62,101	135,565	164,301	200,405	208,818
Total	3,323	9,087	105,315	164,311	410,782	859,559	1,152,632	2,407,490	3,056,729	2,608,422
All LDCs	9,022	22,190	156,788	206,593	470,546	988,546	1,514,270	3,081,775	n.a.	n.a
Total % LDCs	36.8%	41.0%	67.2%	79.5%	87.3%	87.0%	76.1%	78.1%	n.a.	n.a.

Source: Feenstra and others (2005)
Notes: [a] Calculated from UN Comtrade data, then adjusted to Feenstra and others (2005)
[b] 2007 and 2008 data for India includes Sikkim region, whereas the rest of the years excludes this region.

Table 3 Growth Rates of Manufactured Exports by Leading Developing Countries, percent per annum

Country	1962-70	1970-80	1980-85	1985-90	1990-95	1995-2000	2000-2005	2005-2008	1962-80	1980-2008
Turkey	8.6	21.8	23.2	18.0	10.5	6.8	21.3	25.7	20.4	13.9
Malaysia	10.7	24.0	6.0	20.7	21.6	5.5	7.1	-0.9	18.0	12.6
Hong Kong	14.7	19.5	3.9	19.7	0.2	1.4	8.6	4.7	17.5	6.2
Singapore	10.0	29.7	10.0	24.2	16.7	1.3	10.2	6.8	24.2	11.6
Korea	40.8	32.6	9.1	18.8	11.9	6.7	12.3	9.1	36.4	11.4
Indonesia	11.5	22.7	-0.2	29.1	19.6	7.3	3.2	8.9	20.9	13.5
Thailand	0.7	28.1	6.9	31.8	18.7	5.6	10.5	8.1	18.4	15.1
China	13.4	20.5	17.0	21.5	20.8	10.6	20.9	16.8	16.8	18.8
India	6.0	14.0	7.4	20.7	10.5	4.1	15.8	15.5	10.9	11.2
Argentina	9.4	18.4	-2.4	17.0	10.9	0.7	5.9	18.6	15.8	8.4
Brazil	12.9	23.7	5.2	10.5	7.3	3.1	14.4	8.0	21.0	7.2
Mexico	13.2	19.7	14.4	20.1	17.2	14.9	3.7	7.6	18.2	14.4
Total	11.8	22.6	8.6	20.1	15.0	7.5	16.0	11.9	18.8	13.5
All LDCs	10.4	19.6	5.7	17.6	14.6	7.6	15.5	15.6	15.8	12.5

Source: Author's calculations based on Feenstra and others (2005)
Notes: Data for 2007 and 2008 are calculated from UN Comtrade data. 2007 and 2008 data for India includes Sikkim region, whereas the rest of the years excludes this region.

Table 4 Structure of Manufactured Exports by Leading Developing Countries, %

	1985				1995				2008			
	RB	**LT**	**MT**	**HT**	**RB**	**LT**	**MT**	**HT**	**RB**	**LT**	**MT**	**HT**
Turkey	18.4	57.1	23.0	1.5	16.9	58.1	21.5	3.5	3.2	45.4	47.6	3.8
Malaysia	52.5	8.4	11.7	27.4	18.4	11.9	21.1	48.6	9.8	16.1	23.0	51.1
Hong Kong	4.1	62.3	19.1	14.5	5.8	44.6	19.4	30.2	0.4	28.0	17.5	54.1
Singapore	14.7	13.3	31.1	40.9	7.7	7.0	21.1	64.2	2.5	6.6	26.6	64.3
Korea	6.8	49.0	30.0	14.3	6.7	22.0	36.0	35.2	1.1	11.4	45.8	41.7
Indonesia	68.9	18.1	7.7	5.2	38.6	37.3	16.4	7.7	31.7	28.2	28.3	11.8
Thailand	37.8	36.3	13.2	12.6	17.2	28.1	17.7	37.0	5.7	19.7	39.1	35.5
China	14.3	44.3	33.0	8.5	7.6	57.1	19.7	15.7	0.6	37.0	25.2	37.2
India	33.7	50.0	11.8	4.5	31.8	49.2	14.1	4.9	35.8	31.4	23.4	9.4
Argentina	56.9	18.6	18.6	5.9	46.0	22.0	28.3	3.7	35.2	11.4	48.3	5.1
Brazil	43.6	21.2	30.4	4.8	43.6	18.2	33.9	4.3	32.4	12.7	44.1	10.8
Mexico	14.2	14.2	46.8	24.8	7.9	17.4	50.7	24.0	0.6	18.1	48.8	32.5

Source: Author's calculations based on Feenstra and others (2005)
Notes: Korea's export structure for 2008 is based on 2007 figures.

Table 5 Exports of Leading Developing Countries by Technological Categories

	Values ($ million)			Growth Rates (% p.a.)			Values ($ million)			Growth Rates (% p.a.)		
	1985	**1995**	**2008**	**1985-1995**	**1995-2008**	**1985-2008**	**1985**	**1995**	**2008**	**1985-1995**	**1995-2008**	**1985-2008**
	Resource Based						**Medium Technology**					
Turkey	797	2,955	3,237	12.7	4.3	8.7	1,000	3,747	48,426	12.0	20.7	16.3
Malaysia	5,005	13,443	13,152	10.0	1.1	3.4	1,113	15,440	30,880	28.0	6.4	12.9
Hong Kong	723	2,888	372	13.8	-8.4	1.6	3,339	9,597	16,329	9.1	5.0	3.3
Singapore	1,560	5,757	4,095	12.8	-0.3	5.3	3,302	15,873	43,741	15.9	8.6	9.2
Korea	1,672	7,532	3,642	12.8	3.1	8.5	7,410	40,669	151,106	15.1	10.9	12.1
Indonesia	2,115	12,164	22,887	16.7	4.2	8.4	236	5,185	20,424	32.2	9.6	17.1
Thailand	1,381	7,811	7,429	16.0	2.2	7.9	483	8,024	51,359	28.7	14.6	18.4
China	3,685	16,196	13,458	13.8	5.3	10.6	8,520	42,100	539,267	18.5	20.7	18.8
India	2,224	8,675	40,705	12.3	16.7	12.7	777	3,840	26,607	16.7	15.8	14.4
Argentina	1,699	5,026	9,736	10.5	3.8	6.6	555	3,085	13,359	16.2	8.3	12.0
Brazil	7,550	15,932	36,072	7.1	8.1	7.2	5,270	12,392	49,113	8.1	10.9	7.9
Mexico	1,403	4,878	1,243	9.7	-0.9	6.1	4,606	31,476	101,955	18.0	8.4	13.1
	Low Technology						**High Technology**					
Turkey	2,478	10,149	46,235	13.0	11.5	11.2	66	603	3,913	22.9	14.3	17.3
Malaysia	801	8,736	21,623	24.0	6.6	11.9	2,612	35,530	68,639	26.6	6.8	16.0
Hong Kong	10,893	22,099	26,113	6.0	1.4	1.9	2,538	14,959	50,454	16.1	10.4	10.8
Singapore	1,415	5,282	10,767	12.7	5.8	6.3	4,345	48,240	105,755	23.0	6.4	12.4
Korea	12,104	24,869	37,452	5.3	3.1	2.7	3,527	39,751	137,450	20.5	11.5	15.3
Indonesia	556	11,758	20,312	32.0	3.1	12.8	161	2,413	8,524	33.3	7.8	22.3
Thailand	1,323	12,748	25,911	21.7	6.0	9.7	461	16,797	46,614	34.7	7.7	17.9
China	11,449	121,931	791,269	23.6	14.8	16.1	2,190	33,457	796,781	30.9	26.2	27.8
India	3,302	13,417	35,625	13.6	8.1	9.3	297	1,338	10,653	11.5	15.1	14.0
Argentina	554	2,403	3,162	10.8	2.3	5.8	177	405	1,421	9.7	6.0	7.8
Brazil	3,675	6,672	14,098	7.0	6.9	4.9	826	1,581	12,060	5.0	14.4	12.0
Mexico	1,396	10,819	37,799	18.0	8.3	14.9	2443	14,929	67,819	17.0	10.1	14.9

Source: Author's calculations based on Feenstra and others (2005)
Notes: Korea's export structure for 2008 is based on 2007 figures.

Table 6 Correlations Between High-Tech Export Share (HTS), Manufactured Exports (MX), Log of Manufactured Exports (LMX) and Export Share in World Trade (WT), Based on Panel Data for Leading Exporters of Manufactures from 1962 to 2008

	HTS	MX	LMX	WT
HTS	1.00			
MX	0.30	1.00		
LMX	0.60	0.45	1.00	
WT	0.52	0.81	0.65	1.00

Source: Author's calculations based on Feenstra et al. (2005) and COMTRADE data, and UNCTAD Handbook of Statistics for WT.

Table 7 Correlations Between Net Barter Terms of Trade (NBTT), Income Terms of Trade (ITT), and Shares of High-Technology Exports (HTS) in Malaysia

	HTS	ITT	NBTT
HTS	1.00	0.91	0.79
ITT	0.91	1.00	0.72
NBTT	0.79	0.72	1.00

Source: World Bank WDI 2009, IFS Supplement of Trade Statistics, COMTRADE.

Table 8 Correlations Between Net Barter Terms of Trade (NBTT), Income Terms of Trade (ITT), and Shares of High-Technology Exports (HTS) in Turkey

	HTS	ITT	NBTT
HTS	1.00	0.80	-0.53
ITT	0.80	1.00	-0.58
NBTT	-0.53	-0.58	1.00

Source: World Bank WDI 2009, IFS Supplement of Trade Statistics, COMTRADE.

Table 9 Correlations Between Real Wages in Manufacturing (RW), Net Barter Terms of Trade (NBTT), and Unemployment Rate (UN) in Turkey

	RW	NBTT	UN
RW	1.00	0.51	-0.40
NBTT	0.51	1.00	-0.60
UN	-0.40	-0.60	1.00

Source: Real wage index is calculated from Boratav (1985), Yeldan (2006) and State Planning Organization online database. Unemployment rate is provided from IFS. NBTT is calculated from IFS Supplement on Trade Statistics and WDI.

Table 10 Correlations Between Real Wages in Manufacturing (RW), Net Barter Terms of Trade (NBTT), and Unemployment Rate (UN) in Malaysia

	RW	NBTT	UN
RW	1.00	0.72	-0.85
NBTT	0.72	1.00	-0.96
UN	-0.85	-0.96	1.00

Source: Real wage index is taken from ILO labor statistics database and adjusted to fit the left scale. Unemployment rate is provided from IFS.

Table 11 Tertiary and Secondary Education, R&D Expenditure, 2007 or most recent year

Country	Tertiary Educated (% of labor force)	School Enrollment, Tertiary (% gross)	School Enrollment, Secondary (% gross)	School Enrollment, Secondary (% net)	R&D Expenditure (% of GDP)	Researchers in R&D (per million people)	Technicians in R&D (per million people)
Turkey	13	36	80	69	1[a]	577[a]	46[c]
Malaysia	20	30[a]	69[b]	69[b]	1[c]	503[c]	63[c]
Hong Kong	26	34	86	79	1[c]	2090[c]	416[c]
Singapore	24	n.a.	n.a.	n.a.	2[a]	5713[a]	476[c]
Korea	35	95	98	97	3[a]	4162[a]	583[a]
Thailand	n.a.	50	83	76	0[d]	116[e]	n.a.
Indonesia	6	17	73	68	n.a.	n.a.	n.a.
India	n.a.	12[a]	55[a]	n.a.	1 [c]	n.a.	n.a.
China	n.a.	23	77	n.a.	1[a]	926[a]	..
Argentina	30[a]	67[a]	84[a]	78[a]	0[a]	895	366[a]
Brazil	9[a]	30	100	77	1[b]	46[c]	394[c]
Mexico	17	27	89	72	1[b]	432[c]	219[c]
Selected Industrialized Countries							
Japan	40	58	101	98	3[a]	5546[a]	572[c]
France	29	56	113	98	2[a]	3300[c]	1739[c]
Germany	24	n.a.	100	n.a.	3[a]	3386[a]	1063[c]
UK	32	59	97	91	2[a]	3033[a]	n.a.
USA	61	82	94	88	3[a]	4770[c]	n.a.
Source: World Bank WDI 2009. Figures refer to the year 2007 unless otherwise is indicated. Notes: a 2006's figures, b 2005's figures, c 2004's figures, d 2003's figures, e 2001's figures							

Table 12 Inward FDI as Percentage of Gross Domestic Fixed Capital Formation

	1970-79	1980-89	1990-99	2000-06	2003	2004	2005	2006
Turkey	0.9	0.9	1.9	9.7	4.7	5.4	13.8	25.3
Malaysia	13.9	10.3	18.5	14.1	10.8	19.1	15.2	20.1
Hong Kong	9.6	18.7	21.9	78.7	40.6	95.0	90.4	103.9
Singapore	15.8	26.2	28.9	59.7	52.2	77.5	57.6	79.5
Korea	3.0	0.8	1.8	3.2	2.4	4.5	3.1	1.9
Indonesia	10.7	1.6	3.9	-0.1	-1.3	3.4	13.5	6.4
Thailand	2.3	3.3	7.5	15.2	15.2	14.0	17.5	16.5
China	n.a.	1.6	11.1	8.6	8.3	7.7	7.7	6.1
India	n.a.	0.2	1.6	4.1	3.0	3.2	2.9	6.3
Argentina	1.3	3.4	14.4	13.8	8.4	15.6	12.7	13.6
Brazil	4.3	3.1	7.8	16.7	11.3	15.3	9.5	10.5
Mexico	2.9	6.8	11.9	15.2	12.7	16.7	13.3	11.7
Source: UNCTAD Handbook of Statistics online database.								

Table 13 Export Growth in Turkey, 1971-2006

		Dependent Variable: Log of Real Exports (lnX) in Turkey				
	OLS with HAC s.e.		DOLS (-1, 1)		FMOLS	
	Eq. (6.3)	Eq. (6.2)	Eq. (6.3)	Eq. (6.2)	Eq. (6.3)	Eq. (6.2)
Explanatory Variables:						
Log of world income (ln*W*)	0.82**	1.62**	0.48	1.63**	0.80**	1.59**
Log of relative prices (ln*PX*)	-1.84**	-0.06	-2.39**	-0.12	-1.92**	0.17
Shift dummy (*lib*)	-59.25**	0.33	-82.23**	0.31	-69.21**	0.37§
Interaction dummy (*lib*ln*W*)	0.82**		1.15**		0.99**	
Interaction dummy (*lib*ln*PX*)	1.97**		2.58**		1.79**	
Constant	-23.93*	-81.50**	-0.66	-81.41**	-22.78	-80.71**
Diagnostic statistics						
R^2	0.99	0.98	0.99	0.98	0.98	0.97
Omit *lib*ln*Y lib*ln*PM*	11.07					
Serial correlation	36	36	33	33	35	35
Number of observations			-4.23*	-3.45	-4.23*	-3.45
Engle-Granger tau-stat			-23.84*	-23.28*	-23.84*	-23.28*
Engle-Granger z-stat			-4.23*	-2.90	-4.23*	-2.90
Phillips-Quliaris tau			-23.74*	-13.61	-23.74*	-13.61

Notes:
** indicates significance at the 1% level; * significance at 5% level, and § at the 10% level.
In DOLS estimations, *lib*, *lib*ln*W*, and *lib*ln*PX* are estimated as deterministic regressors.
Unit root tests failed to reject the presence of a unit root for explanatory variables.
Data sources are the same as in Appendix B, except for the relative price variables which are obtained from real exchange rates reported by Bahmani-Oskooee and Mirzai (2000).

Table 14 Import Growth in Turkey, 1971-2006

	Dependent Variable: Log of Real Imports in Turkey						
	OLS with HAC s.e.			DOLS (-1, 1)		FMOLS	
	Eq. (6.6)	Eq. 6.6)'	Eq. (6.5)	Eq. (6.6)	Eq. (6.5)	Eq. (6.6)	Eq. (6.5)
Explanatory Variables:							
Log of domestic income (ln*Y*)	1.04**	0.37	2.24**	0.51	2.09**	1.12**	1.93**
Log of relative prices (ln*PM*)	-0.70	-0.30	-0.37*	-0.31	-0.65	-0.61*	-0.80*
Shift dummy (*lib*)	-33.39**	-51.83**	0.06*	-53.57**	0.09	-36.48**	0.25
Interaction dummy (*lib*ln*Y*)	1.42**	2.02**		2.02**		1.34**	
Interaction dummy (*lib*ln*PM*)	-0.59	0.69		8.80		10.90	
AR(1)		0.51**	0.82				
Constant	-11.91	7.19	-40.79**	3.43	-38.41**	-13.46	-34.98**
Diagnostic Statistics							
R^2	0.99	0.99	0.97	0.99	0.98	0.98	0.97
Omit *lib*ln*Y lib*ln*PM*	15.10**	3.32*					
Serial correlation	[0.004]	[0.16]	[0.73]				
Number of observations	36	36	36	33	33	35	35
Engle-Granger tau-stat				-3.92[§]	-2.18	-3.92*	-2.18
Engle-Granger z-stat				-35.06**	-8.68	-35.06**	-8.68
Phillips-Quliaris tau				-3.55	-2.32	-3.55	-2.32
Phillips-Quliaris z				-19.43[§]	-9.95	-19.43[§]	-9.95

Notes:
** indicates significance at the 1% level; * significance at 5% level, and [§] at the 10% level.
In DOLS estimations, *lib*, *lib*ln*W*, and *lib*ln*PX* are estimated as deterministic regressors.
Unit root tests failed to reject the presence of a unit root for explanatory variables.
Data sources are the same as in Appendix B, except for the relative price variables which are obtained from real exchange rates reported by Bahmani-Oskooee and Mirzai (2000).

Table 15 Export Growth in Malaysia, 1971-2006

	Dependent Variable: Log of Real Exports in Malaysia						
	OLS with HAC s.e.			DOLS (-1, 1)		FMOLS	
	Eq. (6.3)	Eq.(6.3)'	Eq. (6.2)	Eq. (6.3)	Eq. (2)	Eq. (6.3)	Eq. (6.2)
Explanatory Variables							
Log of world income (ln*W*)	1.13**	1.56**	1.89**	1.18**	1.46**	1.12**	1.41**
Log of relative prices (ln*PX*)	-0.02	0.03	0.09	0.26	-1.14§	0.04	-0.74§
Shift dummy (*lib*)	-67.71**	-26.33	-0.02	-77.46**	0.002	-60.80**	0.19
Interaction dummy (*lib*ln*W*)	1.04**	0.42		1.19**		0.94**	
Interaction dummy (*lib*ln*PX*)	0.84	0.13		0.97		0.62	
AR(1)		0.70**	0.78**				
Constant	-50.35**	-76.78**	-97.33**	-54.79**	-65.00**	-50.31**	-63.94**
Diagnostic statistics							
R^2	0.99	0.99	0.99	0.99	0.98	0.99	0.98
Omit *lib*ln*Y lib*ln*PM*	18.71**	0.23					
Serial correlation	[0.05]	[0.62]	[0.66]				
Number of observations	36	36	36	33	33	35	35
Engle-Granger tau-stat				-3.40	-2.64	-3.40	-2.64
Engle-Granger z-stat				-19.26§	-10.46	-19.26§	-10.46
Phillips-Quliaris tau				-3.36	-2.69	-3.36	-2.69
Phillips-Quliaris z				-18.70§	-11.05	-18.70§	-11.05

Notes:
** indicates significance at the 1% level; * significance at 5% level, and § at the 10% level.
In DOLS estimations, *lib*, *lib*ln*W*, and *lib*ln*PX* are estimated as deterministic regressors.
Unit root tests failed to reject the presence of a unit root for explanatory variables.
Data sources are the same as in Appendix B, except for the relative price variables which are obtained from real exchange rates reported by Bahmani-Oskooee and Mirzai (2000).

Table 16 Import Growth in Malaysia, 1971-2006

	Dependent Variable: Log of Real Imports in Malaysia					
	OLS with HAC s.e		DOLS (-1, 1)		FMOLS	
	Eq. (6.6)	Eq. (6.5)	Eq. (6.6)	Eq. (6.5)	Eq. (6.6)	Eq. (6.5)
Explanatory Variables						
Log of domestic income (ln*Y*)	1.10**	1.60**	1.13**	1.40**	1.11**	1.36**
Log of relative prices (ln*PM*)	-1.00**	-0.41§	-1.17**	-0.06	-1.02**	-0.15
Shift dummy (*lib*)	-12.77**	0.09	-15.04**	0.16	-12.33**	0.25**
Interaction dummy (*lib*ln*Y*)	0.59**		0.66**		0.58**	
Interaction dummy (*lib*ln*PM*)	0.28		0.13		0.31	
AR(1)		0.72**				
Constant	-12.81**	-21.85**	-14.45**	-15.30**	-13.17**	-14.92**
Diagnostic statistics						
R^2	0.99	0.99	0.99	0.99	0.98	0.97
Omit *lib*ln*Y lib*ln*PM*	26.04**					
Serial correlation	[0.20]	[0.73]				
Number of observations	36	36	33	33	35	35
Engle-Granger tau-stat			-5.61**	-2.88	-5.61**	-2.88
Engle-Granger z-stat			-33.98**	-12.48	-33.98**	-12.48
Phillips-Quliaris tau			-5.65**	-2.87	-5.65**	-2.87
Phillips-Quliaris z			-28.81**	-12.32	-28.81**	-12.32

Notes:
** indicates significance at the 1% level; * significance at 5% level, and § at the 10% level.
In DOLS estimations, *lib*, *lib*ln*W*, and *lib*ln*PX* are estimated as deterministic regressors.
Unit root tests failed to reject the presence of a unit root for explanatory variables.
Data sources are the same as in Appendix B, except for the relative price variables which are obtained from real exchange rates reported by Bahmani-Oskooee and Mirzai (2000).

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