

The East Asian Industrial Policy Experience: Implications for the Middle East

Marcus Noland and Howard Pack

Marcus Noland, senior fellow, has been associated with the Institute since 1985. He was a senior economist at the Council of Economic Advisers in the Executive Office of the President of the United States and has held research or teaching positions at the Johns Hopkins University, the University of Southern California, Tokyo University, Saitama University, the University of Ghana, the Korea Development Institute, and the East-West Center. He won the 2000–01 Ohira Masayoshi Award for his book *Avoiding the Apocalypse: The Future of the Two Koreas*. He is also the author of *Korea after Kim Jong-il* (2004) and coauthor of *Industrial Policy in an Era of Globalization: Lessons from Asia* (2003), *No More Bashing: Building a New Japan–United States Economic Relationship* (2001), *Global Economic Effects of the Asian Currency Devaluations* (1998), *Reconcilable Differences? United States–Japan Economic Conflict* with C. Fred Bergsten (1993), and *Japan in the World Economy* with Bela Balassa (1988). Howard Pack has been a professor of economics and professor of business and public policy at the Wharton School since 1986, and professor of management there since 1995. He is the author of *Productivity, Technology and Industrial Development* (Oxford University Press, 1987) and *Structural Change and Economic Policy in Israel* (Yale University Press, 1971) and coauthor of *Industrial Policy in an Era of Globalization: Lessons from Asia* (2003).

Abstract

Japan, South Korea, and Taiwan are regarded as primary examples of countries that have derived great benefits from increasing integration with the international economy, without surrendering national autonomy in the economic or cultural spheres, by pursuing decidedly nonneutral policies with respect to the promotion of specific sectors and activities. This working paper addresses a series of questions in an attempt to assess the relevance of their experiences for the contemporary Middle East: Was industrial policy a major source of growth in these three economies? Can these outcomes be duplicated in the Middle East today, or do special circumstances or changes in the international policy environment prevent replication of the East Asian experience? Given the revealed costs and benefits, is replication advisable? And, if not, are there other, positive lessons that Middle Eastern countries can derive from the experiences of the East Asians?

Note: This working paper was originally prepared for the ECES conference “Rethinking the Role of the State: An Assessment of Industrial Policy in MENA,” November 13, 2005.

JEL codes: L5, O38, O14

Keywords: Industrial policy, Asia, Middle East

Copyright © 2005 by the Institute for International Economics. All rights reserved. No part of this working paper may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by information storage or retrieval system, without permission from the Institute.

In the policy realm, the orthodox terms of engagement with the global economy have been enshrined in the “Washington Consensus” of secure property rights, fiscal discipline, sectorally neutral tax and expenditure policies, financial liberalization, unified and competitive exchange rates, openness to foreign trade and investment, privatization, and deregulation. However, disappointing results in the Middle East and other regions, and the Asian financial crisis of the late 1990s, have contributed to a crisis of faith in Washington and elsewhere.

One response has been to augment this package with so-called second generation reforms such as strengthening prudential supervision of financial markets, decreasing labor-market rigidities, and competition policy. Another impulse has been to reconsider the more dirigiste policies that the Washington Consensus was believed to have marginalized. Japan, South Korea, and Taiwan are sometimes regarded as the primary examples of countries that have derived great benefits from increasing integration with the international economy, without surrendering national autonomy in the economic or cultural spheres, by pursuing decidedly nonneutral policies with respect to the promotion of specific industrial sectors, in effect beating the West at its own game.

Consideration of these alternatives, in turn, suggests a series of questions for policymakers considering these alternative paths:

- Was industrial policy, defined as selectively promoting individual sectors, a major source of growth in these three economies?
- Can these outcomes be duplicated in the Middle East today, or do special circumstances or changes in the international policy environment prevent replication of the East Asian experience?
- Given the revealed costs and benefits, is replication advisable?
- And if not, are there other, positive lessons that Middle Eastern countries can take away from the historical experience of the East Asian countries?

This working paper proceeds as follows. We begin by examining the theoretical rationales for industrial policy, defined as policies aimed at shifting economic activity toward sectors expected to offer superior growth prospects—after all, if the status quo is optimal, then there is no justification for selective policy interventions. We next examine the historical experiences of the East Asian countries and evaluate the impact of the industrial policies on welfare and growth in these economies. We then assess whether the policies pursued in East Asia a generation ago would lead to the same results in the Middle East today. Then, in light of our evaluation of the costs and benefits entailed in an activist industrial policy, we ask the bottom line question of whether adoption of a policy package similar to that implemented in East Asia a generation ago is advisable. We conclude

with some reflections on the positive lessons that the East Asian experience may have for the contemporary Middle East.¹

MOTIVATION

The successful application of an industrial policy involves a series of steps. First, policymakers (typically at the national level) must identify some kind of market failure that generates a sub-optimal outcome from the standpoint of (national) interests and design the correct policy intervention to address this departure from optimality. This initial task is essentially an analytical one: to identify an existing market failure and devise the appropriate policy response. It is also, of course, necessary to be able to execute the policy effectively and to ensure that the process is not subverted by corruption nor captured by the favored industry.²

The earliest analytical justifications for industrial promotion policies took the form of “infant industry” or dynamic comparative advantage arguments. The basic analytical insight is that in a firm, or in an industry characterized by declining costs as a function of output or experience (“learning by doing”), a newly established firm may have some latent competitive advantage that cannot be realized because existing producers have already established production and moved down the average cost curve, precluding entry by initially high-cost competitors. In this situation, policies such as a temporary production subsidy or trade protection to make entry into the market viable may enable the high-cost “infant” to move down its cost curve and become a low-cost “adult.” Even in this simple case, there is no *prima facie* case for government intervention—in principle, the financial sector should be willing to finance the initial losses. To justify first-best measures such as subsidies or second-best ones such as tariffs requires invoking reasons such as myopia, risk aversion, or limited lending ability for the unwillingness of financial firms to provide loans.

From early bubbles such as the Dutch tulip mania to the Asian crisis of the late 1990s, it is clear that financial actors are often deficient. In the case of countries such as Japan and South Korea that suppressed the financial sector and directed industry and firm-specific loans as a part of industrial policy, the banking sector (as noted below) was itself in need of significant improvement in operating procedures. In principle, this implies that any selective economic policies should simultaneously address the weakness of the financial sector along with that of manufacturing or other services. Indeed, there might be an argument for initially strengthening the banking sector, perhaps

¹ These issues are explored in more detail in an earlier monograph (Noland and Pack 2003) and a forthcoming paper (Pack and Saggi 2005).

² For an extensive discussion of the requirements, see World Bank (1993).

by allowing foreign financial intermediaries into the country, before pursuing targeted sectoral policies or some other first-best measure.

In contemporary global capital markets, the simple version of the infant industry argument runs into a difficulty: Since there are foreign producers that have achieved low production costs due to their head start, investors can determine the prospects for the domestic infant industry from the experience of existing foreign producers. If domestic investors lack such information, foreign lenders ought to have it, and the infants could in principle borrow internationally rather than locally. A potential answer to this question is that investors may believe that just because an industry has succeeded abroad does not necessarily imply that it will also succeed at home. But this explanation can be consistent with the very hypotheses underlying the infant industry argument (that the infant will in fact succeed) only if investors are not fully rational.

Many elaborations on this argument have been developed; among the most salient are those that relate to uncertainty and the information needed to implement a welfare-enhancing policy. Dixit and Grossman (1986) note that in general equilibrium, policymakers need to know the nature of the dynamic cost reductions not only in a single industry but in all industries: In the presence of multiple industries characterized by such potential externalities, policy may actually reduce welfare relative to the market equilibrium if it shifts resources toward one sector of dynamic comparative advantage and away from another where the learning is even larger.

A sophisticated version of this argument about the information demands on policymaking is developed by Klimenko (2004), who models industrial policy as a process of Bayesian experimentation and evaluation by policymakers seeking to discover comparative advantage under incomplete information about the nature of world markets. Klimenko demonstrates that even an optimally designed experimentation strategy may push a country away from its long-run comparative advantage, leading to specialization in “wrong” or “inferior” activities, and suggests that a more decentralized process of entry and experimentation by private firms is more likely to tend toward the full information social optimum. One component of his argument is that even as it moves the economy away from the preferred equilibrium, industrial policy may appear successful to the policymakers as the preferred industries are performing well enough to reinforce the decisionmakers’ prior beliefs; in essence, the targeted industries are doing “well enough.” That even problematic policies might not generate obvious signals of failure is a particularly intriguing notion insofar as real world implementation of such targeting policies is characterized by a political economy in which vested interests will develop to perpetuate policies, as will be emphasized below.

A more subtle industrial policy justification involves coordination failures across sectors, an argument that goes back to the Rodenstein-Rodan’s “big push” and has subsequently been elaborated in various ways (e.g., Rodenstein-Rodan 1943; Pack and Westphal 1986; Okuno-Fujiwara

1988; Murphy, Shleifer, and Vishny 1989; Trinitade 2005). Pack and Westphal, for example, consider the case of a pecuniary externality in which one industry produces an input for another subject to a scale effect on average costs. The downstream (upstream) industry would be viable if there were some way to assure the existence of sufficient supply (demand) for the other industry's product. An industrial policy through which the government acts as the precommitment mechanism is one way of solving this coordination failure. Most, if not all, of these arguments are developed in the context of what are implicitly closed economy models—i.e., there is no possibility of simply importing the needed input or achieving scale economies by exporting.

A different argument for intervention is introduced by Hausmann and Rodrik (2003), who note that the cost of production of a good depends upon an unknown total factor productivity (TFP) level that is learned from production itself, and thus firms must undertake a sunk investment. If the project turns out to allow production that is competitive with the rest of the world, it is possible that this information diffuses to other companies that also initiate production, and the initial firm cannot recoup its investment. There will be too little investment, a standard result when a firm generates externalities whether in production, research, or training that are general rather than firm specific.³

If an industry in a less developed country is characterized by large amounts of technical expertise and there is sufficient entrepreneurship so that new firms are likely to enter quickly, the potential underinvestment may be significant and warrant some form of encouragement. But the considerable empirical literature on technology acquisition suggests that the entry process is likely to be slow, and the first firm will have a considerable period during which it will not face much competition from local firms.⁴ The identification and acquisition of the appropriate equipment, negotiating and putting into place knowledge obtained from technology licensors or consultants, the hiring of managers and skilled workers, and the learning of the “software” of production all take considerable time. Moreover, follower firms may be hesitant to enter for a considerable period, understanding that their lack of command of the relevant production technology may prevent them from easily attaining the same TFP level as the initial firm rather than a lower one that may forestall competitive success. Such technological barriers may generate sufficient rents for the initial firm, though intervention would be warranted if such temporary monopolies were eroded too quickly to allow the collection of sufficient profits to cover the initial sunk cost. Precise evaluation of such prospects is likely to be a daunting task for governments.

A fourth distinct justification for an activist industrial policy is international rent-shifting. The strategic trade literature delineates the situation in which some kind of fixed costs or

³ Baldwin (1969) made an almost identical argument and Pack and Westphal (1986) note the externality accruing from the activity of initial exporters.

⁴ For reviews of the process of the acquisition of knowledge of manufacturing technology, see Evenson and Westphal (1995) and UNIDO (2002).

indivisibilities limit the number of entrants and create naturally oligopolistic industries, which accrue oligopoly rents such as might be observed in the competition between Airbus and Boeing in wide-bodied jets or Kodak and Fuji in photographic film (Helpman and Krugman 1989).⁵ Depending on the particular situation, taxes, subsidies, or trade policies can capture these industries and their associated rents raising national welfare, or in the case of Airbus a multicountry consortia.⁶ Unlike the infant industry and coordination failure justifications, the rent-shifting of the strategic trade literature is explicitly zero-sum in nature—one country's gain is the other's loss—and not surprisingly, the possibility of retaliation must be considered.

The possibility of having to adjust the policy to changing circumstances—in this case retaliation by a trade partner—raises the more general issue of policy implementation and adjustment, necessitating the combination of analytics with the administrative or decision-making capacity of the political system.

At the simplest level, industrial policy interventions must be calibrated—it is possible to tax or subsidize too much as well as too little, for example. But this is not solely an analytical issue: For an industrial policy to be successful, the political system has to actually deliver the desired policy. Industrial policies by their very nature involve the distribution of rents, which is an inherently political activity, and a proper evaluation of industrial policy must consider the political economy of policy formation and implementation as well as the analytical issues.

One can imagine a variety of sources of implementation failures, from simple lack of administrative capacity to the inability to resist rent-seeking by vested interests, undermining a well-conceived policy. Moreover, it is not enough to simply get the intervention right once and for all in a static sense: Policy has to be altered as changing conditions require. Again, this is not purely an analytical issue—the political system has to be able to implement these changes as needed. Ultimately it may be necessary to terminate the policy—either because it has outlived its initial justification or because it was a mistake to begin with. Again, while this decision has an analytical component, in the context of the creation and distribution of rents internally, it importantly is a political decision.

THE EAST ASIAN EXPERIENCE WITH INDUSTRIAL POLICY

⁵ Itoh and Kiyono (1987) develop an analytically distinct version of this argument that does not require oligopoly and raises the activist country's welfare by shifting the terms of trade rather than capturing rents.

⁶ Welfare improvement requires that the deadweight cost of taxes raised to pay the subsidies should have a present discounted value (PDV) that is less than the PDV of additional producer surplus stemming from the industry's establishment. It is far from evident in the case of Airbus that the strategy has been welfare improving despite its increasing market share.

During their periods of most intensive activist industrial policies, roughly from the early 1950s through the 1980s in Japan, and from the 1960s through the 1980s in Taiwan and South Korea, a variety of policies were applied. The specifics differed across the three economies and changed over time in each. Nevertheless, one can identify some commonalities that might be taken as the core of an East Asian industrial policy model.

Each of these governments promoted research and development, through direct and indirect subsidies to R&D activities carried out by private firms, setting research priorities and identifying particular sectors for favorable treatment, and establishing national labs and special public-private research consortia. In some sense, these “innovation policies” would seem to have the greatest justification in terms of promoting activities in which social returns may exceed private returns.

The East Asian governments also took an interesting, but not sector-favoring, policy toward acquiring foreign technology. Japan and South Korea, for example, did not encourage foreign direct investment in sectors in which it was technologically feasible to enter but instead encouraged the development of indigenous competence through the liberal use of foreign consultants and technology-licensing agreements (Komiya, Okuno, and Suzumura 1988; Enos and Park 1988).

Yet the resources devoted to R&D supports or technology licensing were dwarfed by less obviously justifiable policies to channel capital to preferred sectors, projects, and firms. Capital channeling was executed through direct subsidies, indirect subsidies through state-owned or dominated banks, and preferential tax breaks such as accelerated depreciation on investments.

In addition to preferential access to capital, preferred sectors were at times sheltered from internal competition by lax competition policies and from external competition by restrictions on international trade and investment, in effect creating “bastion markets” in which protected incumbent producers extracted rents from domestic consumers.

Taken together, one can interpret these policies as comprising a coherent package of targeted industrial upgrading in which the government established priorities, encouraged the accumulation of technical capacity in targeted sectors, pushed resources into private firms operating in those sectors, and encouraged the accumulation of additional rents by local incumbents to provide them with a financial cushion to support entering new product and geographical markets. The question is whether this strategy delivered more rapid growth or improved welfare in reality than what would have been observed counterfactually under a more orthodox policy mix.

Evaluation of Impact

A number of studies employing a variety of methodologies have attempted to evaluate the impact of the policies applied. This literature tends to be the most developed for Japan, the largest and most

advanced of the three economies, and the least developed for Taiwan, presumably reflecting its size and unusual political status.

A number of studies have used regression models to examine the impact of industrial policy interventions either on TFP growth at the sectoral level (e.g., Beason and Weinstein 1996 and Lawrence and Weinstein 2001 for Japan and Lee 1996 for South Korea) or in the Japanese case, on altering the international terms of trade (Noland 1993). These studies do not uncover any consistent evidence that industrial policy interventions raised TFP or captured strategic sectors—indeed, their results could be read to suggest that industrial policy interventions actually slowed productivity growth, an issue to which we will return momentarily. Studies that have focused on public support for basic R&D have tended to reach more benign conclusions (Noland 1996, Branstetter and Sakakibara 2002).

Likewise, in the case of South Korea, attempts to document interventions to capture interindustry externalities and thereby expand the production set of the economy, assessed either directly through the input-output table (Pack 2000) or indirectly via time-series econometric analysis (Noland 2004), suggest that these conditions were generally not widespread. While industrial policy interventions may have had a positive impact in some cases, quantitatively they could not have been the primary explanation for South Korea's extraordinary growth performance during this period. An upper-bound estimate of the increase in the TFP growth rate for the Korean and Japanese manufacturing sectors is about 1 to 1.5 percent per annum (Pack 2000). Given that manufacturing accounted for roughly 30 percent of GDP during the period of intense industrial policy efforts, industrial policy could have accounted for a maximum of .5 percent of annual growth during the period in which both nations were growing at 8 to 10 percent per year. Most of the growth was accounted for by physical and human capital accumulation.

Finally, there are a large number of case studies of various industries, projects, and initiatives, reaching a predictably indeterminate and contradictory set of conclusions. The case studies have the advantage of unearthing considerable institutional detail of interest (for example, how Japanese firms behaved strategically in their participation in government-led consortia, which counted actual or potential rivals among the participants), but by their very nature the case studies are limited in their ability to pose counterfactuals.

In sum, a number of studies using a variety of methodologies exist that attempt to evaluate the industrial policies pursued by Japan, South Korea, and Taiwan. A comprehensive review of this evidence is beyond the scope of this paper, but it is fair to say that evidence supporting the existence of growth-accelerating impact of industrial policies is modest (Noland and Pack 2003). While it is relatively easy to document the impact industrial policy interventions in all three countries had on the composition of output and trade (i.e., resources were indeed being shifted), attempts to formally

model the impact of industrial policy interventions uniformly uncover little, if any, positive impact on productivity, growth, or welfare. This is perhaps surprising given the theoretical potential for welfare-enhancing interventions, the conventional view that these governments were intervening in a fairly active and constructive way, and the evident growth performance of these three economies over the relevant period. The question immediately arises as to why this might be the case.

The Political Economy of Ineffectiveness

Why would policymakers consistently intervene in ways that did not apparently enhance welfare? One possible answer is that the informational requirements for successful industrial policy interventions is not trivial and that policymakers simply did not get the interventions right. Another, and possibly more persuasive explanation, is that these interventions were not undertaken by politically insulated technocrats, but rather the actual pattern of interventions observed were largely determined by political competition among various self-interested groups.

Sectoral promotion policies can be applied to any sector of the economy, including agriculture or services, though typically one thinks of industrial policy in terms of manufacturing, particularly the most advanced technology sectors within manufacturing. Clearly, Japan, South Korea, and Taiwan all pursued selective intervention policies to promote preferred high-technology sectors. But an examination of the pattern of direct and indirect subsidies suggests that resource transfers were worse than indiscriminate: They went predominantly to politically organized declining natural resource sectors.

In the interests of brevity we report only the data for Japan, which is the best documented of the three economies; similar arguments could be made with respect to the other two. Figure 1 reports on-budget subsidies from the early 1950s through the early 1980s. The lion's share went to agriculture, forestry, and fisheries (mostly rice farming, in fact). Agriculture and mining accounted for almost 90 percent of on-budget subsidies during this period. The share of on-budget subsidies going to high-technology development was minimal.

In the context of a parliamentary system, the pattern of on-budget subsidies presumably reflected the preferences of Japan's elected politicians. However, Japan also had a system of off-budget subsidies, about half as large as the on-budget subsidies. The allocation of these subsidies was controlled by Ministry of Finance bureaucrats, who might be thought of as being less susceptible to political capture by special interests than the elected politicians. Off-budget subsidies are reported in figure 2. While in comparison with the on-budget subsidies, the pattern of off-budget expenditures exhibits much more variation over time, the industry and technology category was not a major

beneficiary, peaking at around 20 percent in 1958, and falling steadily thereafter, dropping below 5 percent in 1972 and never recovering.

This pattern of expenditure is important because subsidies are financed by taxes that generate deadweight losses in the taxed sectors. Table 1 presents Japanese sectoral tax data that has been normalized so that a positive number represents a net inflow. For the most part, Japanese manufacturing was taxed in order to provide subsidies for other sectors (such as agriculture and mining). Again, it is revealing that the one manufacturing sector that was a net beneficiary was textiles—an exemplar of a large, established declining sector. The implicit message is that this pattern of resource transfers was determined by political, not analytical, considerations. To calculate the net impact of industrial policy would require a detailed analysis of its general equilibrium effects that include the net impact of tariffs, interest subsidies, and increased taxes on each sector.

This is not to say that Japan did not support the development of supercomputers or other high-technology products and sectors. It did. However, the fundamental pattern was to tax manufacturing, transferring resources to agriculture, mining, and possibly uncompetitive service sectors, and recycle a relatively small share of those revenues in industrial promotion expenditures. The industrial policies on which we normally focus amounted to partially compensatory policies in the context of a system in which the manufacturing sector was taxed on a net basis.

Export Targeting

The picture painted thus far is not a particularly positive one. However, the East Asians appear to have gotten at least one thing right, namely their emphasis on performance in international markets as a barometer of success. Export orientation essentially accomplished three things: It provided a vent for output (it is hard to imagine a closed economy that could maintain the productivity of capital if it were trying to produce a range of products for the domestic market); it impeded the development of balance of payments problems; and finally, export performance provided a clear, neutral standard to evaluate the performance of firms receiving industrial policy favors.

In the case of South Korea, export targets were specified in considerable detail by product, market, and exporting firm. As one practitioner put it, the export figures “were the only statistics that could not be faked”—they were easily confirmable from bills of lading emanating from a single dominant port (a situation also holding in Taiwan and to a lesser extent, Japan) and partner-country records. Aside from data concerns, exports were interpreted as a relatively clean measure of the relative competitiveness of domestic producers—local firms might be able to charge high prices in the small, protected domestic market, but this was not possible in the global marketplace. In addition, it is often argued that exporting was subject to positive externalities. The econometric

evidence on this point is ambiguous, but if such externalities exist, their occurrence simply reinforces the usefulness of the export metric.

Firms that did not achieve their targets were not subject to penalty; however, the targets were sometimes negotiated jointly with wastage allowances (a form of subsidy), and support was terminated to laggards. (From a comparative perspective, the latter is quite important—unlike the import substituting industrialization strategies contemporaneously employed elsewhere in the world, the East Asians were fairly ruthless in terminating support to underperformers and making continued protection in the domestic market contingent on export performance [World Bank 1993].) In South Korea, the president received monthly briefings on export performance, and the firm achieving the highest export performance could receive the national medal of honor, a public presidential commendation, and material benefits including relaxed tax surveillance (Westphal and Kim 1982).

In this context, it is intriguing to observe that despite the considerable external threats posed by North Korea and China, respectively, the authoritarian governments of both South Korea and Taiwan sought legitimacy through economic prosperity. South Korean strongman Park Chung-hee once remarked, “In human life, economics precedes politics or culture,” (Sakong 1993, 24) and his highly visible personalized support for successful exporters was a characteristic that other authoritarians, past or present, seldom exhibit.

APPLICABILITY TO THE MIDDLE EAST

The discussion thus far suggests that the application of industrial policy in East Asia had modest benefits at best. Yet even modest results, if sustained over a long period, could cumulatively have an appreciable impact on income. So the question is if similar policies can be applied today or whether changes in the international system impede their pursuit, and if the adoption of such policies is possible, would they be likely to generate similar, modest benefits?

Is it Possible to Reproduce the East Asian Policy Package?

Middle Eastern countries contemplating the adoption of East Asian-style industrial policies today face two constraints that the East Asians themselves did not.⁷ The first is ideological opposition by the international financial institutions. Ideological opposition would appear to be the greatest with

⁷ Import substituting industrialization, intensively followed by Egypt for several decades, was an unsuccessful effort in industrial policy. For evaluations, see Hansen and Marzouk (1965) and the papers contained in Becker et al. (1975).

respect to the International Monetary Fund (IMF) and the least in the regional multilateral development banks, with the World Bank occupying an intermediate position.

In the case of the IMF, the solution is simple, though possibly hard to achieve—maintain a healthy balance of payments and avoid borrowing from the Fund. If a country does not have a Fund program, then the Fund has little influence over policy. The Malaysian Media Super Corridor may be a good or a bad idea, but it is a Malaysian idea, and as long as Malaysia does not go to the Fund to borrow, then the Fund cannot constrain the policy.

In the case of the multilateral development banks, the ideological terrain would appear to be broader, and one can find acceptance of mild industrial policies within these organizations. It is hard to envision the World Bank or the Asian Development Bank drawing a line in the sand with respect to something like the Malaysian Media Super Corridor.

Probably more important than attitudes at the international financial institutions have been changes in the nature of the global trade regime. The establishment of the World Trade Organization (WTO) is relevant for two reasons. First, the WTO has tightened the rules on export subsidies, making some of the practices implemented by the East Asians a generation ago illegal today. However, countries with annual per capita incomes of less than \$1,000 are exempt from these strictures, so the poorer countries of the Middle East are free to subsidize exports—if they have the resources to do so. More generally, there are rules that establish what kind of subsidies are permissible (such as for regional development), so a sufficiently dedicated government could probably figure out ways to circumvent the constraints and make their practices WTO-compliant.

More important than the changes in the rules per se have been changes in the dispute settlement mechanism and the willingness of the major players to use it. East Asian industrial policy activism coincided with the Cold War and occurred under the institutional context of the General Agreement on Tariffs and Trade (GATT), which was notable for its lack of a functional dispute settlement mechanism. As a consequence, when the East Asians did things like subsidize exports, there was no effective way to sanction them through the GATT, and, in any event, the tendency was to turn a blind eye toward these practices for diplomatic reasons.

The creation of a new, effective dispute settlement system within the WTO provides the dominant countries a stronger tool for pursuing their economic interests, and the end of the Cold War has removed a major inhibitor to using it. So, for example, Japan, the European Union, and the United States successfully pursued a case against Indonesia's automobile development policies in the WTO.

In sum, the environment for middle-income countries pursuing industrial policies is less favorable than it was a generation ago, though not unduly restrictive.

Are the Results Likely to be Reproducible?

If the international system does not effectively bar the implementation of industrial policies, the question becomes whether a similar set of policies adopted by Middle Eastern countries today would be expected to yield the same results attained by the East Asians previously? There are three reasons to believe that the East Asian experience reflected exceptional circumstances that are not likely to be reproduced.

The first is that the East Asians may have been “deceptively poor,” and much of their outstanding growth performance reflected convergence from a perturbed state back to a long-run steady-state growth path. As seen in table 2, in the 1950s, Japan and South Korea were unusual in that the level of human capital embodied in the workforce was high relative to the contemporaneous level of income, presumably because most of the capital stock had been destroyed in the Second World War and the Korean War, respectively. (Comparable data for Taiwan are not available but would probably exhibit a similar pattern, though for somewhat different reasons.) Japan had been one of the few countries with the technological sophistication to produce aircraft carriers in the 1930s. The Koreans had been able to maintain at least some production in all industrial sectors following the expulsion of Japanese colonists in 1945, indicating that they had achieved a certain level of technical mastery. Table 2 suggests that these were capable populations that simply did not have much physical capital to work with. In comparison, the one Middle Eastern country for which data are available, Turkey, appears more “normal”—similar to Argentina, Italy, Mexico, and Spain.

Furthermore, not only did the Asians have a high level of human capital relative to income, abetted by favorable demographics, but they also accumulated it more rapidly than other similarly situated nations. Moreover, the share of students receiving training in engineering and science, presumably of relative value in the production of industrial traded goods, was high.

Similarly, accumulation of physical capital was relatively rapid, reflecting investment rates of 35 percent of GDP for several decades in contrast to considerably lower rates in most Middle Eastern countries. In short, at least some of what happened in East Asia would appear to be simply an example of neoclassical convergence from an unusual starting point.

Paradoxically, the East Asians may have also benefited from their unusual endowments, specifically their lack of natural resources, in two ways. The factor endowments of the East Asian trio are different from almost every other country in the world—and vastly different from two Middle Eastern countries, Tunisia and Turkey, for which comparable data are available. Figures 3 and 4 are projections of labor, capital, human capital, and arable land endowments onto a two-dimensional diagram. The average world endowment is represented by the intersection in the center of the triangle of the three rays emanating from its vertices. As one gets closer to the corner, the relative

abundance of that factor increases. So, for example, in figure 3, it is clear that the three East Asian countries are very land-scarce (i.e., they are far from the land vertex), and that Japan has a higher capital-labor ratio than South Korea, which, in turn, has a higher capital-labor ratio than Taiwan.

Given their factor endowments, one would expect these economies to begin manufacturing activities relatively early in their development (as measured by per capita income) and to specialize relatively intensely in these activities. As capital was accumulated, real wages increased monotonically, reinforcing backward linkages and contributing to social peace. Under these conditions, industrial policies are effectively “leaning with the wind” and would be expected to be relatively noncontroversial politically. In contrast, the two Middle Eastern countries for which there are comparable data, Tunisia and Turkey, look more like Brazil. It is theoretically possible that once one moves beyond the two-factor model, capital accumulation in more resource-abundant countries may actually reduce real wages (Leamer 1987). Whether this theoretical possibility is obtained or not, the economic and social dynamic of more resource-abundant countries, especially one in which there is an important rural landlord class, are likely to be more conflict ridden than what was experienced in East Asia. Indeed, the lack of resource-derived rents in East Asia removed a source of clashes over state control and contributed to political stability.

The third reason relates to the initial, and probably irreproducible, condition, namely the comprehensive land reforms that all three countries undertook in the decade 1945–55. In Japan, large rural holdings were broken up by the US Military Occupation authorities. In South Korea and Taiwan, land was confiscated from Japanese colonists, and following land reforms in rivals North Korea and China, respectively, the South Korean and Taiwanese governments undertook similar reforms with US support. The result was “growth with equity” (table 3). It is difficult to imagine even the most progressive governments in the Middle East undertaking the sort of reforms undertaken in Japan during the US occupation, in Taiwan following the conclusion of the Chinese revolution and the decampment of the Kuomintang to Taiwan, or in South Korea following the Korean War. While the reforms in Egypt in the early 1950s after the overthrow of King Farouk led to some land reform, it was less extensive than that in the East Asian nations.

In sum, one could characterize postwar Japan, South Korea, and Taiwan as economies that had experienced varying degrees of industrialization, undergone substantial political upheavals, and initially were attempting to reestablish production in sectors in which they had at least some prior experience. Even after this was achieved and they began to enter new industries and activities, they remained well behind the technological frontier defined by the United States and were essentially engaged in catch-up along a reasonably well-defined industrial path. There are multiple reasons to believe that industrial policy was not the key to the rapid growth experienced by the East Asians in

the second half of the 20th century and that adoption of a similar set of policies elsewhere today would not generate the same results achieved in East Asia a generation ago.

IS ADOPTION OF THE EAST ASIAN PACKAGE ADVISABLE?

Thus far we have argued that industrial policies in East Asia had modest, and possibly irreproducible, benefits. Are there any costs or unintended side effects that would militate against the adoption of an East Asian–style package? The short answer is “yes.” This particular development strategy appears to be associated with two related costs that should be weighed against the strategy’s putative benefits: encouragement of corruption and discouraging the acquisition of skills in the financial system.

Rent-seeking and corruption were encouraged by the simple fact that the state was handing out favors. As might be expected, the number of firms and industries seeking to benefit from these policies steadily increased over time, and in the case of Taiwan, this was the explicit reason that the government moved toward a more functionally oriented commercial policy in the 1980s. An open issue is why, despite the acknowledged existence of corruption in all three economies, they lie closer to Denmark than to Nigeria in well-known cross-national surveys such as those done by Transparency International, PricewaterhouseCoopers, and the World Bank (figure 5).⁸ It appears that in all three economies corruption has been concentrated at the top of the political system with decisions then implemented in a relatively efficient manner by a competent state bureaucracy (figure 6).⁹ The East Asians have by and large avoided the sort of “cascading” corruption that imposes a much larger burden on the economy (Shleifer and Vishny 1993).

Figures 5 and 6 also report data for Turkey and Egypt that generally show poorer performance than the East Asians on these criteria. Admittedly in some sense this is comparing apples and oranges: It would be appropriate to compare East Asian scores on these measures from the 1960s or 1970s, when they were implementing these industrial policies, with those of the Middle Eastern countries today where the adoption of these policies is contemplated. Unfortunately, the relevant data do not exist for the earlier period. It may be the case that the East Asian governments were much more corrupt or much less capable in the earlier period and that transparency and competence have improved as incomes have risen. This is certainly possible. Nevertheless, the large divergences between the scores of the two groups of countries must give one pause when it comes to increasing the discretionary economic policymaking power of the government in the Middle Eastern countries today. Consider, for example, the South Korean monthly meeting that reviewed exports.

⁸ To ensure the comparability of the alternate sources, the rankings were computed on the basis of 35 countries covered in all three studies.

⁹ Civil service positions in all three countries appear to convey both relatively high social status and remuneration. See World Bank (1993, chapter 4) and Campos and Root (1996).

Although international data in importing countries are available to cross check local information, the potential gain to firms from bribing officials tabulating exports recorded on bills of lading is substantial.

Related to the issue of corruption is the issue of financial-sector repression, which was required to implement the capital-channeling policies. All three East Asian economies developed bank-centered financial systems, amenable to state influence. State influence in the allocation of capital, together with the fact that during the relevant period in all three cases industrial firms were largely following a technology path established by the US and other advanced countries, which simplified management decisions, encouraged a bureaucratization of the banking function. As a consequence, bankers did not develop the necessary skills to evaluate alternative business plans and models. While we would not go so far as to blame the banking problems that all three experienced in the 1990s (with expected net clean-up costs amounting to more than 10 percent of GDP in each case), on selective intervention policies, the industrial policy legacy clearly contributed to their financial-sector difficulties.

ARE THERE POSITIVE LESSONS FROM THE EAST ASIAN EXPERIENCE?

The preceding analysis is unlikely to convince anyone that the adoption of an activist industrial policy is the key to East Asian success: The evidence on the effectiveness of these policies is not overwhelming, there are reasons to believe that they were abetted by unique historical conditions and are unlikely to be reproduced, and there are real costs that have to be weighed against the benefits. As our survey of the evidence suggests, the benefits may be sufficiently small, and the long-term risks sufficiently large, that nations may be well advised to avoid the extraordinarily difficult task of the ex ante identification of likely successful sectors. But in closing it is worth asking the question, does this discussion suggest that there are other, positive lessons for contemporary Middle Eastern countries that can be derived from the historical experiences of the East Asian countries?

The East Asians did a good job of maintaining macroeconomic stability—Taiwan continually ran budget surpluses, and while Japan and South Korea sometimes ran deficits, these were generally modest. Inflation was generally moderate, real exchange rates were relatively stable and competitive, levels of external debt were generally low, and with the exception of a couple of episodes in the case of South Korea, balance of payments difficulties were avoided. Rates of physical and human capital accumulation were high. The striking thing about the East Asians is that they maintained high rates of saving and investment for a sustained period, in both physical and human capital. (With regard to the latter, the number of engineers that each of these three societies produced during their growth spurt is striking.) The secret of their success was not so much rapid rates of TFP

growth but simply maintaining decent rates of TFP growth in the face of adding 30 percent of GDP to the physical capital stock year after year.

On the macroeconomic management criteria, while not achieving the standards set by the East Asian countries, most Middle Eastern countries have done reasonably well. Likewise, rates of human and physical capital accumulation, while not attaining East Asian rates, have been similar to a broader set of comparators. So one lesson that could be derived from the East Asian experience is simply do better on the commonly accepted prerequisites for growth.

This is not the whole story, however. While rates of human capital accumulation in the Middle East have been comparable to those observed in a broadly defined set of comparators, though slower than observed in East Asia, there appears to have been divergence in educational quality. There is evidence that the quality of Middle Eastern education, at least in the contemporary period, has been substandard.¹⁰ Middle Eastern universities are notably absent from survey rankings of the world's top universities, while each of the East Asian trio place multiple institutions among the world's best.¹¹ Again, the comparison may be unfair—one should compare the Middle Eastern universities today with the East Asian universities of yesteryear. But historically the East Asian universities were themselves more connected to economic growth with the aforementioned high enrollments in engineering and science, though it is not clear that this was an outcome of government intrusion into students' decisions as much as a response to growing demand in the industrial sector, which itself reflected the need for industrial firms to lower costs in order to export.

In comparison with the East Asian countries, the Middle Eastern countries appear weaker on indicators of microeconomic and institutional quality, though as in the case of the governance indicators presented in the previous section, the comparison is inexact, since we cannot compare the situation in the Middle East today with the conditions that existed in East Asia a generation ago. However, it is notable that there is evidence that the impact of these microeconomic and institutional indicators is on TFP growth rather than capital accumulation, suggesting that problems in these areas really represent a kind of deadweight drag on productivity growth and by extension on welfare (Pack and Noland 2005).

In sum, the Middle Eastern countries lag the East Asians across a variety of indicators of economic achievement. The relative gap is the smallest with respect to macroeconomic stability and

¹⁰ On the quality of Arab education systems, see the UNDP's *Arab Human Development Reports 2002 and 2003* and for a view focusing on science education, see *Chronicle of Higher Education* (2004).

¹¹ In separate surveys conducted by the *Times of London* and Shanghai Jiao Tong University, no Middle Eastern and North African (MENA) country's university made the top 200 in the *Times* survey and the top 500 in the Shanghai survey, making it the only region to achieve this dubious distinction. See *Times Higher Education Supplement*, www.thes.co.uk/statistics/international_comparisons/2004/top_ (accessed April 22, 2005) and Institute of Higher Education, Shanghai Jiao Tong University, <http://ed.sjtu.edu.cn/rank/2004/Statistics.htm> for rankings and links to the study methodologies.

appears to be larger with respect to microeconomic and institutional factors and the quality and relevance of education.

Both South Korea and Taiwan of the 1960s and 1970s and the Middle East of today share a common characteristic, though. Both “exported” large numbers of highly educated people. Reversal of this brain drain was a contributing factor to high-technology development in the East Asian economies in the 1980s and 1990s. These returnees played an important role in the industrial development of South Korea and Taiwan, encouraged by the cultural pull of the homeland (particularly in relation to raising children) and sometimes supported by public policy that consciously targeted emigrant engineers and scientists. For example, in the case of Taiwan, the government established a science park and provided tax and financial inducements for Taiwanese abroad to return to Taiwan and establish high-technology firms. Much of today’s booming high-technology sector in Taiwan can trace its origins to firms established by returnee scientists and engineers under these programs. Even if returnees do not establish new high-technology firms, simply reversing the brain drain would amount to raising the social rate of return on educational investment, conceivably by a significant margin.

The North American Arab community is relatively small: The 2000 US census identifies 850,000 people of exclusively Arab ancestry and a larger group of 1.2 million people if those of mixed ancestry are included (Brittingham and de la Cruz 2005). In addition there are roughly 195,000 Arabs in Canada, with another 40,000 having mixed Arab and European ancestry, according to Canadian government statistics (Statistics Canada 2001). Lebanese and Egyptians are greatly overrepresented relative to their population share within the Middle East region.

The Arab-American community is on average both richer and better educated than the US population as a whole. In Canada, average and median household incomes are generally a bit lower than the national average, except in the case of Egyptians. Presumably, this earning power is related to educational attainment: The proportion of adult Arab-Americans with a bachelor’s degree (41 percent) was more than half again as large as for the nation as a whole (24 percent). In Canada, the share of Arabs with a bachelor’s degree (30 percent) is more than twice the national rate (12 percent). Indeed, in Canada the share of Arab females with a bachelor’s degree (24 percent) is double the national standard—in noticeable contrast to the status of Arab-European women. Egyptians display the highest rate of educational attainment in both the US and Canadian data. In North America, Arabs are disproportionately employed in management, scientific, and professional occupations.

The data on Arab-Europeans are less informative. This is unfortunate since due to both numbers and proximity, one might expect the European returnee channel to be a more probable one. On the basis of European government census data, one can identify roughly 4 million Arab immigrants and first-generation descendants, with the number of Moroccans alone in Western

Europe nearly double that of all Arabs in North America.¹² Unfortunately the fragmentary nature of the data prevents doing the same sort of systematic demographic analysis as for the United States and Canada. The data that exist, however, paint a pointillist portrait very different from the generally successful assimilation of the small North American Arab population: While on average Arab-Americans are richer and better educated than the typical American, educational attainment among European Arabs is disproportionately low and unemployment is unusually high.

The issue is whether returnees from the diaspora could play a similar role in spurring economic development in the Middle East today that they did a generation ago in South Korea and Taiwan. By way of comparison, the most prominent “sender” countries—Morocco, Algeria, Egypt, and Lebanon—today are less politically repressive than Taiwan or South Korea were in 1973 or 1980, the years that the Institute for Technological Research and Innovation (ITRI) and the Hsinchu Science Park, respectively, were established, as measured by the Polity IV scores.

Income relative to the OECD is noticeably lower today in the Arab countries than it was in the 1970s in the two East Asian countries, however, implying that an Arab returnee would be making a greater leap than his or her Taiwanese or South Korean counterpart had made a generation earlier. Among the non oil-based Middle East economies, Tunisia stands out with an income level 28 percent of the OECD average—almost precisely the mid-point defined by the Taiwanese and South Korean data from the 1970s, indicating that it is approaching the relative income position that the Asians had attained when they began attracting large numbers of returnees. At the same time, improvements in telecommunications have vastly improved access to information, so in some ways the degree of self-imposed isolation from one’s former life would be less decisive than in the case of the Taiwanese or Koreans in the 1970s. This could be both a blessing and a curse: One would feel less removed from life elsewhere, yet this greater awareness could contribute to feelings of regret.

The potential channels of human capital technology transfer would appear to be the greatest between North America and the Eastern Mediterranean on the one hand and Western Europe and the Maghreb on the other. But for this transfer to be effective, the countries of return will have to make themselves more attractive destinations. This would include improvements in the security of property rights and social stability. The brain drain will not be reversed unless returnees are confident that they will not be subject to economic predation and that their families will be safe. It may also be necessary to develop specific policy supports to lure back entrepreneurs, as was done in the case of

¹² For several reasons, these figures understate the actual number of European Arabs and should be regarded as a lower bound: Some countries (e.g., the United Kingdom) do not report the relevant data; in many other cases, only a single nationality (usually Moroccan) is identified and not all Arabs; in most cases, only foreign-born residents are counted and not their children; and all of the figures pertain only to legally documented migrants and their descendents, so illegal immigrants, who are likely to be more important in the European than in the North American context, are not counted.

Taiwan. Generic improvements in the protection of property rights and physical security would also make the local environment more attractive to foreign counterparts and investors more broadly.

These considerations underscore the fundamental message of the East Asian experience: Improvements in the economic environment in the macroeconomic, microeconomic, and institutional dimensions are more likely to contribute to accelerated growth and enhanced welfare than sector-specific “picking winner” strategies.

References

- Baldwin, Robert E. 1969. The Case against Infant Industry Protection. *Journal of Political Economy* 77: 295–305.
- Beason, Richard, and David E. Weinstein. 1996. Growth, Economies of Scale, and Targeting in Japan (1955–1990). *Review of Economics and Statistics* 78, no. 2: 286–95.
- Becker, Abraham, Bent Hansen, and Malcolm H. Kerr. 1975. *The Economics and Politics of the Middle East*. New York: American Elsevier.
- Branstetter, Lee, and Mariko Sakakibara. When Do Research Consortia Work Well and Why? Evidence from Japanese Panel Data. *American Economic Review* 92, no. 1: 143–59.
- Brittingham, Angela, and G. Patricia de la Cruz. 2005. *We the People of Arab Ancestry in the United States*. Washington: US Census Bureau.
- Campos, E.J., and Hilton Root. 1996. *The Key to the Asian Miracle: Making Shared Growth Credible*. Washington: Brookings Institution.
- Chronicle of Higher Education. 2004. The Arab World's Scientific Desert (March 5).
- Dixit, Avinash, and Gene Grossman. 1986. Targeted Export Promotion With Several Oligopolistic Industries. *Journal of International Economics* 21: 233–50.
- Enos, John L., and U-hui Pak. 1988. *The Adoption and Diffusion of Imported Technology: The Case of Korea*. London: Croom Helm.
- Evenson, Robert E., and Larry E. Westphal. 1995. Technological Change and Technology Strategy. In *Handbook of Development Economics* 3a, ed. Jere Behrman and T.N. Srinivasan. Amsterdam: North Holland.
- Hansen, Bent, and Girgis A. Marzouk. 1965. *Development and Economic Policy in the UAR (Egypt)*. Amsterdam: North-Holland.
- Hausmann, Ricardo, and Dani Rodrik, 2003. Economic Development as Self-Discovery. *Journal of Development Economics* 72: 603–33.
- Helpman, Elhanan, and Paul R. Krugman. 1989. *Trade Policy and Market Structure*. Cambridge, MA: MIT Press.
- Itoh, Motoshige, and Kazuharu Kiyono. 1987. Welfare-enhancing Export Subsidies. *Journal of Political Economy* 95, no. 1: 115–37.
- Kaufmann, Daniel, Aart Kraay, and Pablo Zoido-Lobaton. 1999. *Governance Matters*. Policy Research Paper 2196. Washington: World Bank.
- Klimenko, Mikhail M. 2004. Industrial Targeting, Experimentation, and Long-Run Specialization. *Journal of Development Economics* 73: 75–105.
- Komiya, Ryutaro, Masahiro Okuno, and Kotaro Suzumura. 1988. *Industrial Policy of Japan*. San Diego:

Academic Press.

Lawrence, Robert Z., and David E. Weinstein. 2001. Trade and Growth: Import-led or Export-led? Evidence from Japan and Korea. In *Rethinking the East Asian Miracle*, ed. Joseph E. Stiglitz and Shahid Yusuf. Oxford: Oxford University Press.

Leamer, Edward E. 1987. Paths of Development in the Three-Factor, n -Good General Equilibrium Model. *Journal of Political Economy* 95, no. 5: 961–99.

Lee, Jong-wha. 1996. Government Interventions and Productivity Growth in Korean Manufacturing Industries. *Journal of Economic Growth* 1, no. 3: 391–414.

Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny. 1989. Industrialization and the Big Push. *Journal of Political Economy* 97, no. 5: 1003–26.

Noland, Marcus. 1993. Industrial Policy and Japan's Trade Pattern. *Review of Economics and Statistics* 75, no. 2: 241–48.

Noland, Marcus. 1996. Research and Development Activities and Trade Specialization in Japan. *Journal of the Japanese and International Economies* 10, no. 2: 150–68.

Noland, Marcus. 2004. Selective Intervention and Growth: The Case of Korea. In *Empirical Methods in International Trade*, ed. Michael G. Plummer. Cheltenham, UK: Edward Elgar.

Noland, Marcus, and Howard Pack. 2003. *Industrial Policy in an Era of Globalization*. Washington: Institute for International Economics.

Ogura, Seiritsu, and Naoyuki Yoshino. 1988. The Tax System and the Fiscal Investment and Loan Program. In *Industrial Policy of Japan*, ed. Ryotaro Komiya, Masahiro Okuno, and Kotaro Suzumura. San Diego, CA: Academic Press.

Okuno-Fujiwara, Masahiro. 1988. Interdependence of Industries, Coordination Failure, and Strategic Promotion of an Industry. *Journal of International Economics* 25: 25–43.

Pack, Howard. 2000. Industrial Policy: Growth Elixir or Poison? *World Bank Research Observer* 15, no. 1: 47–68.

Pack, Howard, and Marcus Noland. 2005. *The Middle East in the World Economy*. Washington: Institute for International Economics, forthcoming.

Pack, Howard, and Kamal Saggi. 2005. The Case for Industrial Policy: A Critical Survey. *World Bank Research Observer* (forthcoming).

Pack, Howard, and Larry E. Westphal. 1986. Industrial Strategy and Technological Change. *Journal of Development Economics* 22: 87–128.

Psacharopoulos, George. 1973. *Returns to Education*. San Francisco: Jossey-Bass.

Rodenstein-Rodan, Paul N. 1943. Problems of Industrialization of eastern and Southeastern Europe. *Economic Journal* 53: 202–11.

Rodrik, Dani. 1994. King Kong Meets Godzilla: The World Bank and the East Asian Miracle. In *Miracle or Design? Lessons from the East Asian Experience*. Policy Essay 11. Washington: Overseas Development Council.

SaKong, Il. 1993. *Korea in the World Economy*. Washington: Institute for International Economics.

Shleifer, Andrei, and Robert W. Vishny. 1993. Corruption. *Quarterly Journal of Economics* 108, no. 3: 599–618.

Statistics Canada. 2001. *2001 Census of Canada: Data and Analysis*. Available at www12.statcan.ca/english/census01/home/index.cfm.

Trindade, Vitor. 2005. The Big Push, Industrialization, and International Trade: The Role of Exports. *Journal of Development Economics* 78: 22–48.

UNIDO (United Nations Industrial Development Organization). 2002. *Industrial Development Report 2002/2003*. Vienna: United Nations.

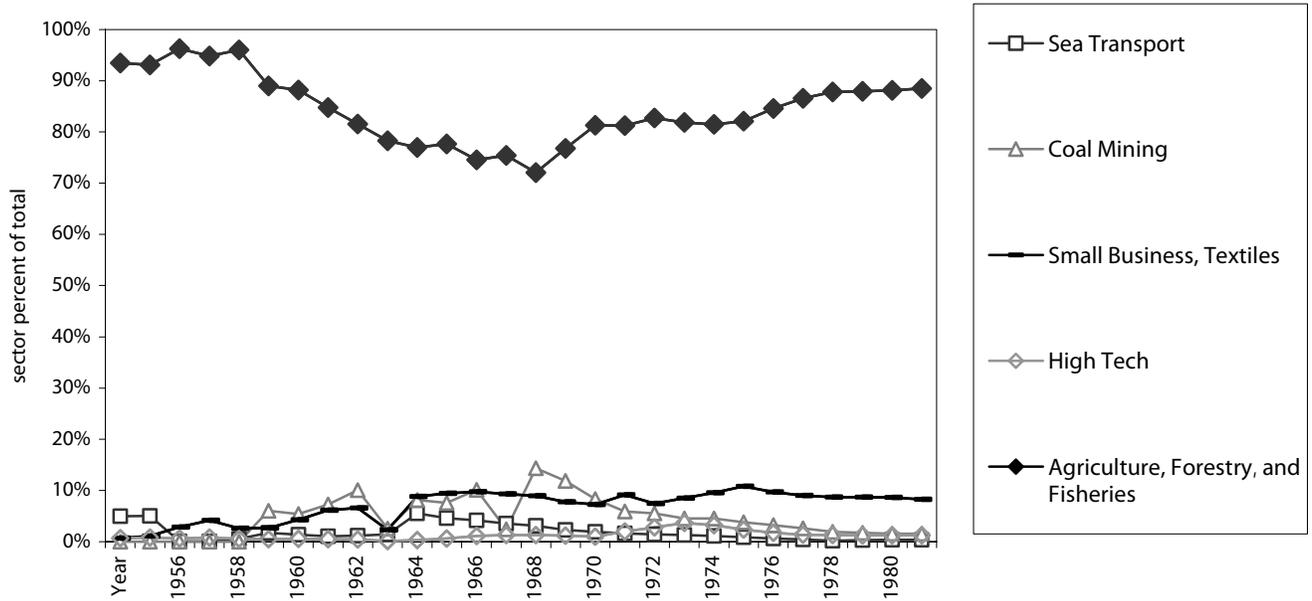
UNDP (United Nations Development Program). 2002. *Arab Human Development Report 2002*. New York: United Nations.

UNDP (United Nations Development Program). 2003. *Arab Human Development Report 2003*. New York, United Nations.

Westphal, Larry E., and Kwang Suk Kim. 1982. Korea. In *Development Strategies for Semi-Industrial Economies*, Bela Balassa and Associates. Baltimore, MD: Johns Hopkins University Press.

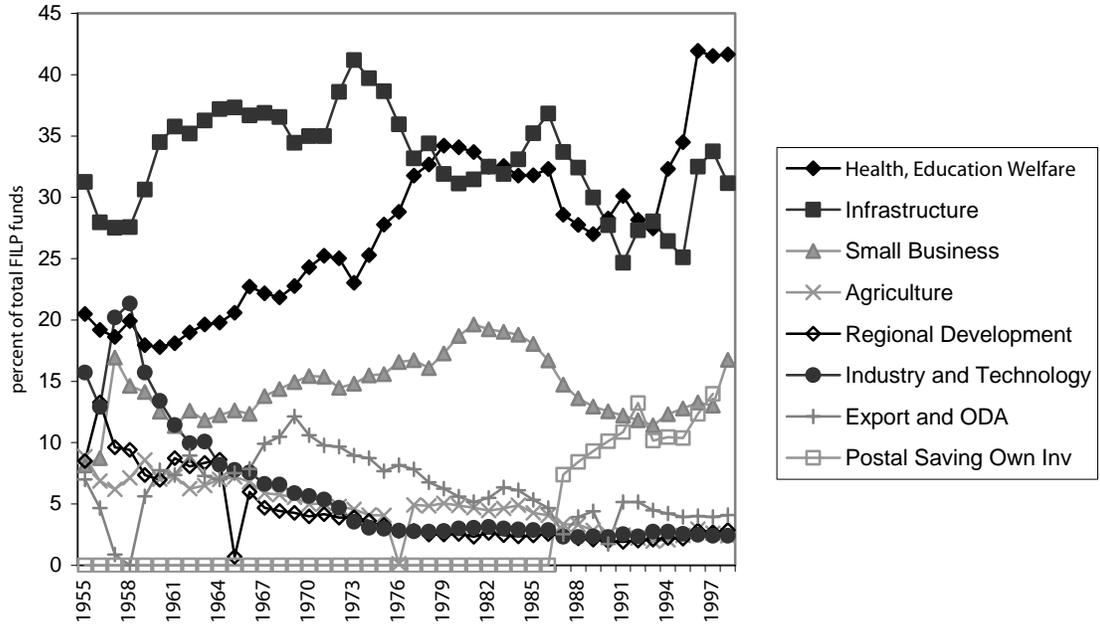
World Bank. 1993. *The Asian Miracle*. Washington.

Figure 1 Sectoral composition of on-budget subsidies in Japan, 1955–81



Source: Ogura and Yoshino (1988, table 1).

Figure 2 Patterns of off-budget expenditures in Japan, 1955–98



FILP = Fiscal Investment and Loan Program

Source: Ministry of Finance, *Fiscal and Monetary Statistics Monthly* (FILP Volume).

Table 1 Normalized sectoral tax rates in Japan

Industry	1955–90		1955–73		1974–90	
	Normalized tax rate	Industry rank	Normalized tax rate	Industry rank	Normalized tax rate	Industry rank
Electrical machinery	-0.403	8	-0.26	8	-0.56	10
General machinery	-0.403	8	-0.26	8	-0.56	10
Transportation equipment	-0.403	8	-0.13	7	-0.56	10
Fabricated metal	-0.069	7	-0.26	8	-0.35	8
Petroleum and coal	-0.009	3	0.3	3	0.14	3
Precision instruments	-0.403	8	-0.26	8	-0.35	7
Ceramics/stone/glass	-0.009	3	0.3	3	-0.56	10
Pulp and paper	-0.891	13	-0.13	6	0	5
Chemicals	-0.009	3	-1.72	13	0.04	4
Basic metals	-0.069	6	0.3	3	-0.35	8
Processed foods	-0.736	12	-1.52	12	0	5
Mining	6.658	1	0.92	2	1.04	1
Textiles	0.719	2	11.68	1	0.5	2

Source: Beason and Weinstein (1996, table 1).

Table 2 Human Capital Index and per capita income, mid-1950s

Country	Year	Human Capital Index	Per capita income	Ratio of Human Capital Index to per capita income
Japan	1955	1673	519	3.2
The Philippines	1956	738	277	2.7
Korea	1955	494	217	2.3
Israel	1954	1200	609	2
Thailand	1955	302	181	1.7
Greece	1956	693	468	1.5
Malaysia	1957	334	351	1
United States	1955	2293	2443	0.9
Italy	1956	787	971	0.8
Turkey	1955	267	365	0.7
Argentina	1955	760	1059	0.7
Mexico	1955	352	637	0.6
Spain	1955	389	652	0.6

Notes: Human Capital Index is educational expenditure embodied in the labor force. See Psacharopoulos (1973). Values for Japan, Mexico, Spain, Turkey, and the United States are interpolated from 1950 and 1960 observations; values for Greece and Italy are interpolated from 1951 and 1961 observations; values for Argentina and Thailand are interpolated from 1947 and 1960 observations. Per capita income is the purchasing-power-adjusted figure in international dollars from the Penn World Tables.

Source: Noland and Pack (2003).

Table 3 Distributional indicators, circa 1960

Country	Gini coefficient for income	Gini coefficient for land
Japan	0.4	0.47
Korea	0.34	0.39
Taiwan	0.31	0.46
Simple average	0.35	0.44
Argentina	0.44	0.87
Brazil	0.53	0.85
Egypt	0.42	0.67
Hong Kong	0.49	n.a.
India	0.42	0.52
Indonesia	0.33	n.a.
Kenya	0.64	0.69
Malaysia	0.42	0.47
Mexico	0.53	0.69
The Philippines	0.45	0.53
Singapore	0.4	n.a.
Thailand	0.41	0.46
Turkey	0.56	0.68
Simple average	0.46	0.64

Source: Adapted from Rodrik (1994).

Figure 3 Endowment triangle: Labor, physical capital, and land (1968 data)

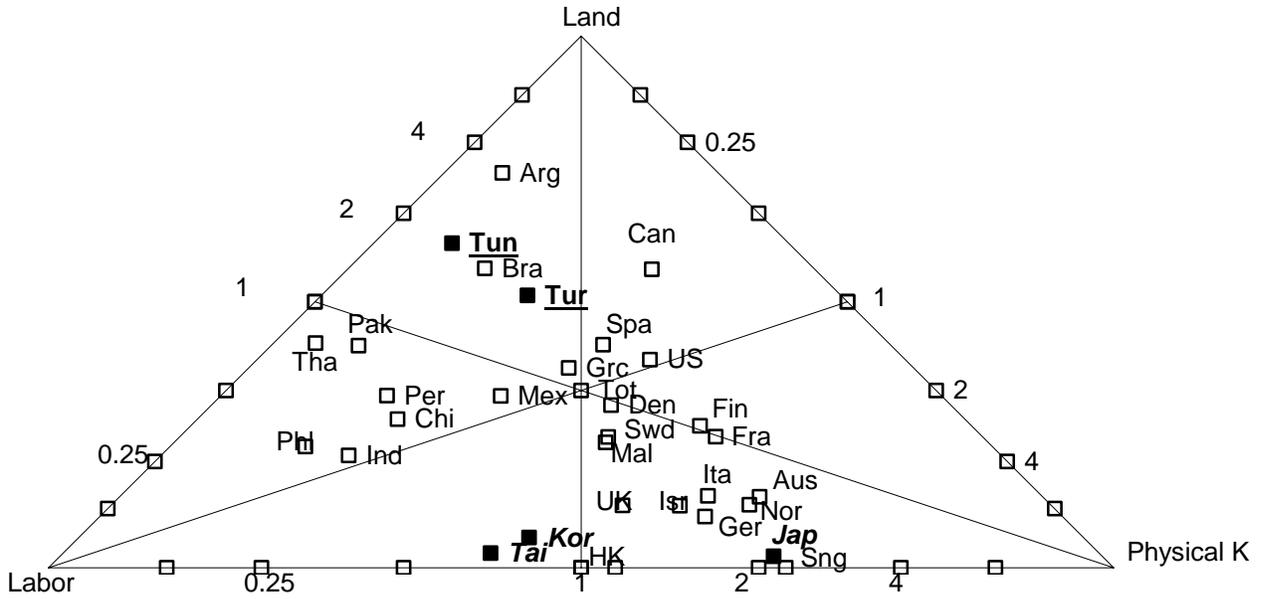
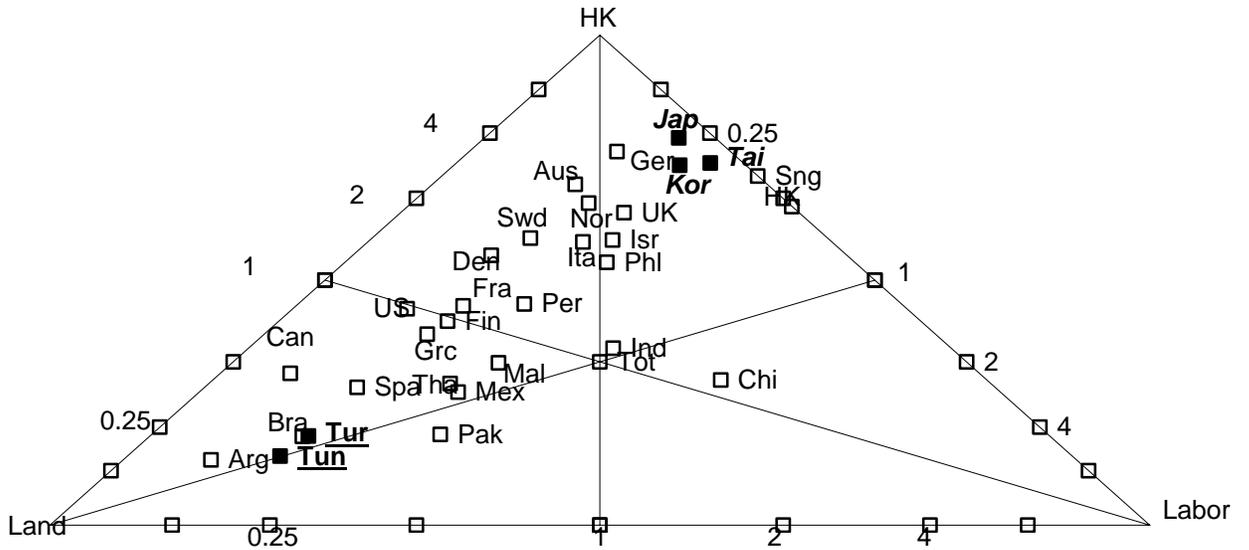


Figure 4 Endowment triangle: Labor, human capital, and land (1968 data)



HK = Human Capital

Figure 5 Corruption rankings for Japan, Korea, Taiwan, Turkey, and Egypt

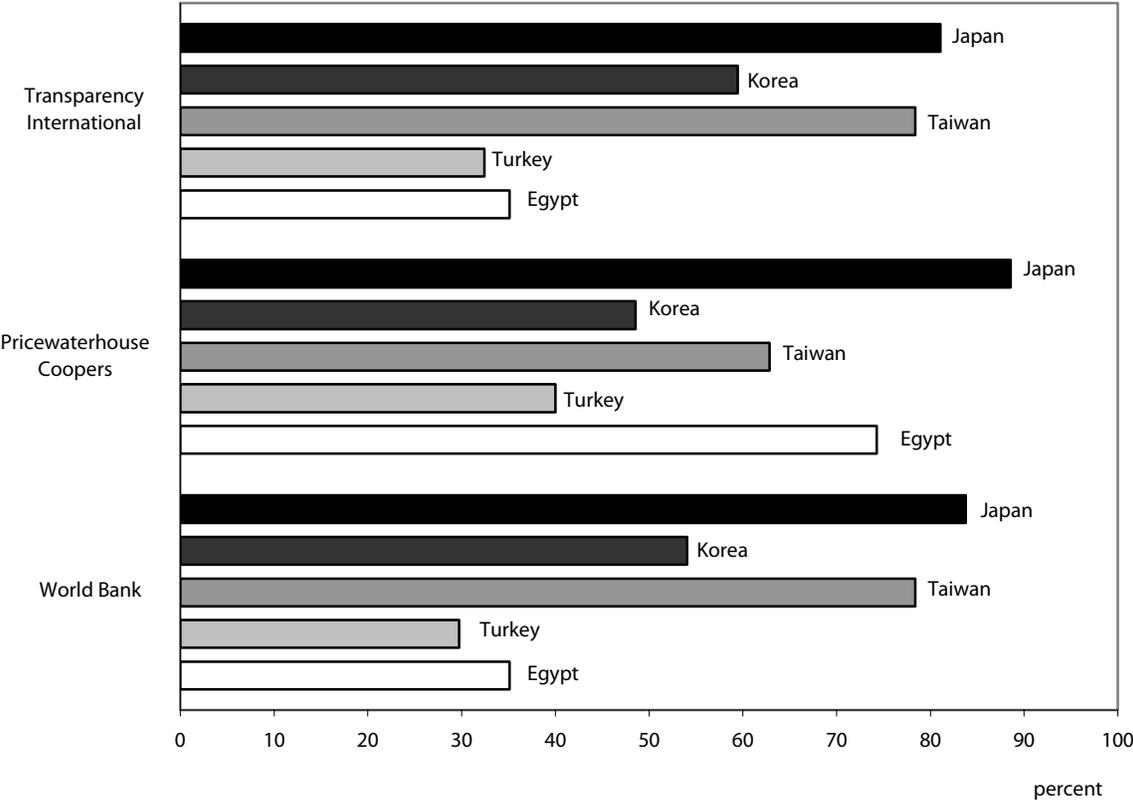


Figure 6 Governance rankings for Japan, Korea, Taiwan, Turkey, and Egypt

