JAPAN’S INFORMATION TECHNOLOGY CHALLENGE

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Japan has not only suffered from dismal macroeconomic performance over the past two decades, but it has lost its edge in areas of its greatest competitive strength, such as electronics, including information and communications technology (ICT) hardware. Meanwhile, it has failed to challenge the global leaders in areas of weakness, such as software and services, including ICT services. Japanese firms lag their competitors by many standard measures of industrial performance, such as growth, profits, and productivity. Japanese corporations continue to move manufacturing and other core functions abroad, while foreign companies are not attracted to Japan as a location for production.

So what went wrong? In short, recent developments in the global economy—including the decomposition of production and the services transformation described in the introduction to this volume—have severely undermined Japan’s institutional strengths and exacerbated its weaknesses. Yet that answer only begs another question: Why have the Japanese government and corporations failed to adapt better to these challenges? In this chapter, I argue that they have favored incremental reforms designed to reinforce valued institutions rather than to generate new sources of competitive strength. Specifically, Japanese firms have preferred strategies to preserve long-term relationships with workers, banks, suppliers, and other business partners, and to leverage the benefits of these relationships when possible. And these firms have lobbied the government to enact incremental reforms to facilitate corporate restructuring without undermining the traditional basis of their competitive advantage.

Japan’s IT challenge also reflects more fundamental long-term problems: an erosion in the confidence and capacity of the government bureaucracy, a relative decline in education and training standards, and a lag in international engagement. The March 2011 earthquake, tsunami, and nuclear crisis have only exacerbated Japan’s competitive challenge in the short term, straining government finances, disrupting supply chains, and constraining the power supply. In the longer term, however, the disaster could galvanize the government and industry to embrace more radical reforms.

Moreover, I postulate that the Japanese government has produced the wrong mix of industrial promotion and market liberalization in its ICT strategy. That is, the government’s primary error was not in failing to emulate the American model of tough antitrust policy and aggressive pro-competitive regulatory reform, nor in failing to preserve its own state-led industrial policy model. The government was right to pursue a strategy that combined state support with liberalization—but it produced the wrong mix. It failed to deliver strong state support where it was most needed and pro-competitive policies where they were most appropriate. In contrast, the South Korean and Nordic country governments devised more effective combinations of government policies for ICT sectors.

This chapter cannot prove or disprove these propositions, but it can achieve several more modest objectives. It will outline Japan’s competitive performance, and survey government and corporate responses to recent developments. It will review the evidence for the propositions above, deploying comparisons across time periods, nations, sectors, and companies to gain analytical leverage. Let us turn first to a quick survey of the facts of Japan’s competitive decline, and then review the elements of the argument in turn.

JAPAN’S DECLINE: THE FACTS

Japan’s postwar economic miracle did not quietly fizzle out, but rather exploded in grandiose fashion. In a period of market euphoria in the late 1980s—now referred to simply as “the Bubble”—investors poured money into the real estate and stock markets. When the Bank of Japan finally raised interest rates, the economy plunged into a prolonged slump from which it has never fully recovered.
Japan’s share of the global economy fell from 14.3 percent in 1990 to 8.9 percent in 2008, and Japan dropped from 3rd place in per capita gross domestic product in 2000 to 23rd in 2008.\(^2\)

Japan’s descent from industrial dominance arrived later, evolved more slowly, and varied considerably by sector – and yet the turn of fortunes was equally stunning. Japanese manufacturers’ global market share dropped from 76 to 3 percent from 1987 to 2004 in DRAM chips; from 95 to 20 percent from 1997 to 2006 in DVD players; from 100 to 5 percent from 1995 to 2005 in liquid crystal display panels; from 100 to 20 percent from 2003 to 2007 in car navigation systems; from 45 to 21 percent from 2004 to 2007 in solar energy panels; and from 90 to 48 percent from 2000 to 2008 in lithium ion batteries (See Figure 1).\(^3\) One government report estimates that Japanese electronics companies produced 70 percent of an iPod in 2005 but only 20 percent of an iPad in 2010.\(^4\) Japan’s share of OECD ICT goods exports dropped from 20.6 percent in 1996 to 12.1 percent in 2008 (See Table 1).

[Figure 1 here]
[Table 1 here]

Meanwhile, Japanese firms are losing market share in areas of weakness (less than 5 percent global market share) as well as areas of strength (greater than 25 percent of global market share).\(^5\) Japan’s share of OECD ICT services exports plummeted from 8.0 percent in 1996 to 0.8 percent in 2008 (Table 2). Japanese firms still have only 0.9 percent of the global market in applications software and 2.3 percent in system software. U.S. firms continue to dominate critical market segments, including operating systems (98 percent), search engines (96 percent), and database management software (85 percent).\(^6\)

[Table 2 here]

Japan also lags by some standard measures of business performance. Japanese corporate profits are considerably lower than foreign firms in key sectors: 58 percent of foreign firm returns in information technology and 36 percent in semiconductors.\(^7\) Japanese information technology (IT) firms had operating profits from 1 (Sanyo, NEC, Toshiba) to 8 percent (NTT Data), while their international competitors posted rates from 8 (Hewlett Packard) to 36 percent (Microsoft).\(^8\) Ministry of Economy, Trade, and Industry (METI) officials note with some alarm that Samsung’s profits have surpassed those of Japan’s top six electronics companies combined.\(^9\) Japan ranks 20th among 30 OECD countries in labor productivity.\(^10\) And Japan’s rate of corporate start-ups now lags behind corporate failures, meaning that the total number of firms is declining.\(^11\)

Japanese manufacturers continue to shift operations abroad. One METI survey finds that 90 of 170 companies responding were considering moving some or all of their manufacturing operations abroad; and some were even contemplating a shift of development functions (30 companies), research functions (8 companies), or headquarters functions (4 companies).\(^12\) Meanwhile, foreign companies are not attracted to Japan as a business location. In a survey of foreign companies selecting a location for Asian operations, Japan ceded first choice for overall operations and for R&D headquarters to China.\(^13\)

**JAPAN’S CHALLENGES**

Japan’s weak macro-economic performance contributed to declining industrial competitiveness because it left the government and the private sector with diminished resources to invest toward future productivity gains.\(^14\) Economic stagnation pushed government officials to stress macro-economic recovery over long-term growth, and corporate executives to favor cost-cutting over strategic investments. By the 2000s, the government’s budget deficit presented a major constraint on increases in government spending for IT infrastructure and R&D. The long-term appreciation of the yen undermined Japan’s export competitiveness and pushed manufacturers to move production abroad. Japan has suffered even more acute exchange-rate pressure since 2010 when the yen appreciated to the range of 80 yen to a dollar.

Furthermore, the changes in the global economy highlighted in this volume have posed particularly severe challenges for Japan. Specifically, the decomposition of production has undermined
the competitive advantage of Japanese business models that rely on integral production plus long-term relationships with suppliers, banks, and workers to foster incremental advances in production processes. Japanese manufacturers have maintained a stronger competitive position in products characterized by integral production (automobiles, digital cameras) than in those with more modular production (personal computers, cellular telephones). And the services transformation has tested Japanese manufacturers because it relies on capabilities in areas of their weakness—such as services, software, entertainment, and system integration—or on ties with firms that possess those capabilities.

The recent evolution of international competition in ICT sectors is not one discrete change but rather a cluster of developments, and these developments have affected different industrial sectors and different firms in Japan in distinct ways. So let us unpack the distinct challenges further before evaluating how Japanese firms and the government have responded. For example, the decomposition of production has hit Japan’s integrated electronics manufacturers particularly hard. In the United States, the disintegration of the production chain drove the transformation of the electronics and information industries. U.S. antitrust policies broke up the supply chain, and regulatory reforms in finance and telecommunications fueled user-driven innovation. This heralded the “Wintelist” era (named for Microsoft Windows plus Intel), in which integrated electronics firms such as AT&T or IBM no longer controlled technological standards, but shared control with downstream suppliers, including software companies and semiconductor specialists. In the earlier period, Japan’s integrated electronics producers were seen to have an advantage over American merchant semiconductor manufacturers because their computer divisions could subsidize their semiconductor operations. In the Internet age, however, this integration became a liability as Japanese electronics firms were slow to capture either the cost benefits of modular production or the innovative potential of independent software and components firms. Some Japanese electronics companies have sold facilities to manufacturing service companies, but they have done so more as a means of cutting costs than as a strategic reorganization of the production process.

Japanese companies have not simply been slow to react to the new competitive environment: they have been reluctant to undermine the institutional foundations of their competitive advantage. For example, these companies have benefitted from collaborative relationships with their suppliers in which the suppliers have customized components or software for them, have met specific standards for delivery or service, and have collaborated on product or process innovation. So they have been wary of moving toward a more arms-length relationships with distant suppliers or of standardizing technical interfaces.

The decomposition of production has fueled the shift toward more open architecture. Japan’s integrated electronic companies have favored proprietary technology, and they had considerable success with this model in Japan’s high-growth years. Yet the information economy operates on a different logic, with more open interfaces and user-driven innovation. Japanese electronics producers have been slow to embrace this transformation. They are wary of sharing technology for fear that this will help their competitors. A METI report on industrial competitiveness stresses that those firms that have been most successful, such as Cisco and Intel, have combined an open interface with a black box of proprietary technology, and recommends that Japanese firms adopt this approach.

The services transformation discussed in this volume refers not simply to the growth of services relative to manufacturing, but also to the integration of service functions into manufacturing. This also works to Japan’s disadvantage because it means that its weakness in services undermines its manufacturing sector as well. Observers have characterized Japan as having a “dual economy,” comprised of an internationally competitive sector focused in manufacturing and a domestic protected sector centered in services. And this dual economy has been characterized by a particularly wide gap in productivity between the two sectors. Hence a shift in the locus of growth in the global economy from manufacturing to services and toward greater integration of manufacturing and services implies a shift away from Japan’s comparative advantage.

The services transformation also involves the use of advanced software embedded in manufacturing, and yet Japan lags in many areas of software development. Arora, Branstetter, and Drev contend that this shift is the single most important factor in Japan’s competitive decline in the IT sector relative to the United States. They find that U.S. firms improved their relative performance over
the course of the 1990s but advanced most dramatically in those areas where software competence was most critical. Moreover, IT patents granted by the U.S. government—including hardware patents—increasingly cite software technology, yet Japanese firms were less likely to cite software than their competitors, suggesting that their innovations were less reliant on advances in software.\textsuperscript{23}

Japan is also not well situated to take advantage of the productivity gains of the services transformation because Japanese firms are unlikely to be either competitive providers or leading users of outsourced services. Most Japanese firms cannot take advantage of high-skilled outsourcing firms that operate in English, and cannot provide outsourcing in English. Meanwhile, the Japanese government has not substantially improved the climate for high-skilled immigrants such as software engineers. Furthermore, Japanese firms lag their U.S. counterparts in sophisticated IT systems and the integration of manufacturing and services that is at the heart of the services revolution.

Japanese firms’ strong orientation toward the domestic market rather than the global marketplace has hindered their ability to take advantage of both the decomposition of production and the services transformation. Commentators now commonly refer to this as the “Galapagos” phenomenon. That is, Japanese manufacturers develop high-quality products that are only suited for the Japanese market.\textsuperscript{24} In a classic example, Japanese electronics companies produce some of the most sophisticated cellular telephones in the world, and yet they have not succeeded in world markets because the handsets are not suited to global technical standards, their features are tailored to Japanese tastes, and their prices are too high.

Japanese firms have a strong record of innovation, but they have a greater capacity for incremental improvements in production processes than in breakthrough discoveries.\textsuperscript{25} This balance of strength and weaknesses reflects Japan’s comparative institutional advantages.\textsuperscript{26} In some sectors, however, breakthrough innovations have become more important in recent years while production improvements are less so. In the semiconductor industry, for example, U.S. makers have had the edge in innovation and Japanese producers have excelled in production—but the production advantage was more decisive in the lean production era while the innovation advantage is more critical today. In the 1970s and 1980s, U.S. firms could not keep up with Japanese rivals that emulated their technology and achieved better quality, higher volume, and lower costs in production. Now U.S. companies prevail because the innovation cycle has accelerated and designs have become more complex.\textsuperscript{27} Japanese firms continue to perform reasonably well in terms of patents overall, but they lag considerably in the fastest-growing sectors, such as software and information technology.\textsuperscript{28}

Japan also has a disadvantage in breakthrough innovation because it has relatively little new entry into the market. This means that Japanese firms have adjusted to new developments via incremental reform by existing companies rather than radical innovation by new companies. In the United States, some incumbent firms have struggled to adapt to the new environment, just like their Japanese counterparts. Meanwhile, firms with radically new business models, such as Cisco, Google, and Apple, have emerged as market leaders.

We should not be too surprised that the information revolution has not played to Japanese strength. Japanese institutions fostered the lean production revolution, and Japanese companies led the shift to that paradigm and profited from it. Likewise, U.S. institutions nurtured the Internet revolution, and U.S. companies have played the leading role.

While recent developments have challenged the Japanese model, not all of Japan’s institutional strengths are obsolete. Japan could still leverage its capable bureaucracy, strong government-industry ties, and close collaboration among firms, suppliers, banks, and workers as sources of competitive advantage. In fact, Japan has underemployed its advantages and allowed some to atrophy. In many areas, Japanese institutions offer both strengths and vulnerabilities. For example, Japanese firms have effective mechanisms for coordinating technical standards between government and industry and among industry players, but the Japanese government and industry have not been particularly effective in discerning when they should promote an industry technological standard, when they should adapt to an international or global standard, and when they should eschew coordination altogether.
Japanese corporations have leveraged the government’s incremental reforms since the 1990s to reduce costs and to enhance flexibility, but they have not fundamentally shifted from a strategy of quality manufacturing to one of modular production, rapid innovation, or open architecture. They have sought to preserve the valued institutions at the heart of the Japanese model, such as cooperative long-term relationships with workers, banks, and other firms. Yet they have been forced to make compromises in the process: downgrading if not abandoning the “lifetime” employment system, reducing levels of corporate cross-shareholding, and sometimes even compromising quality standards to cut costs.

We can analyze Japanese corporate strategies since 1990 by deploying Albert Hirschman’s concepts of “exit” (withdrawal) and “voice” (negotiation). The postwar Japanese economic model was characterized by government industrial policy, government-industry coordination, and long-term collaborative relationships between corporations and their workers, banks, and business partners. Corporations were constrained from “exit” from these relationships so they cultivated channels for “voice.” This then produced a distinctive pattern of corporate restructuring. When faced with an economic downturn, Japanese companies would favor voice over exit with their partners. In concrete terms, this meant that Japanese companies would negotiate wage restraint but not layoff workers; they would press their main banks for better terms but not abandon them; and they would squeeze primary suppliers but not cut them off.

Within these general patterns, however, corporate strategies varied considerably. Based on a statistical analysis of 2632 companies in the period 1990-2002, I found that companies in the service sector were bolder in restructuring than those in manufacturing, especially with regard to labor adjustment, and that firms with high levels of foreign ownership were more aggressive in restructuring. A structured comparison among ten case study companies in the period 1990-2005 confirmed these patterns. In addition, the cases showed that companies with foreign management, as opposed to portfolio investment, were the most aggressive. Electronics companies restructured more than automobile companies: they shifted further toward modular production, for example, by spinning off units to specialized contract manufacturers.

As a result, Japanese firms have suffered some erosion of the traditional sources of their competitive advantage, including the stable employment system, the main bank system, and corporate groups. Employers have preserved the stable employment system for regular workers by reducing the share of regular workers in the workforce. They have also downgraded long-term employment by shifting from a guarantee of employment at the home company to a guarantee of employment within a broader corporate group. And they have restrained wages and benefits to reduce costs and they have resorted to early retirement programs to accelerate attrition. Large corporations have moved away from reliance on a main bank, and corporations and their banks have reduced cross-shareholding ties. Manufacturers have loosened ties to some of their parts suppliers. They have become more selective in subcontracting relationships: strengthening partnerships that are critical to competitive advantage but procuring more standard items on a more purely cost basis.

Japan’s ICT hardware sector has been dominated by NTT “family” firms such as NEC and Fujitsu that worked closely with NTT, the dominant telecommunications service provider, in building up Japan’s communications infrastructure and developing high-quality equipment. These firms focused first and foremost on serving NTT and the large domestic market, and this impeded them from adjusting rapidly to the discontinuous technology of the Internet. NTT was strongly committed to asynchronous transfer mode (ATM) network technology, so it was very late in adopting the TCP/IP protocol. Likewise, NTT cultivated a closed digital standard for cellular phones, the personal digital cellular standard. Japanese cellular telephone makers gave priority to developing phones for NTT DoCoMo’s standards, undermining their ability to compete in the global market.

Japan’s ICT manufacturers may have been more aggressive than the auto companies in restructuring, but they have still essentially adhered to the incremental pattern described above. NEC, for example, engaged in a series of restructuring plans, beginning with modest cost-cutting plans and moving on to successive reorganization schemes including selling some production facilities to contract manufacturing companies. It merged its memory chip (DRAM) business with Hitachi in 1999, forming
Elpida Memory, Inc., to share costs and invest in new technology. It experimented with a surprisingly ruthless personnel system for white collar workers in 2002, in which managers would be asked to identify the bottom 10 percent of workers for possible demotion and a “rechallenge” program. In practice, however, it was never able to implement the program because managers designated less than 1 percent of their workers for the program. NEC also reassessed its relations with suppliers, reducing the overall number of suppliers, instituting a more systematic evaluation system for routine parts, but also reinforcing ties with core suppliers of critical technology.

Softbank, in contrast, brazenly diverged from standard Japanese business practices and aggressively challenged government policies, and it has remade Japan’s IT sector in the process. Softbank was founded in 1981 as a software distribution company. It made key investments in U.S. start-ups in the Internet field, most notably Yahoo, with spectacular results. It embraced labor turnover and rapid reorganization, aggressively pursued mergers and acquisitions, and ruthlessly restructured. It took advantage of the government’s telecommunications reform and relentlessly expanded its market share in broadband service to challenge NTT and to raise demand for its other Internet-related businesses. Softbank almost single-handedly drove down Japan’s broadband rates and dramatically increased usage. Softbank entered the cellular telephone service business in 2005, with the same aggressive market-expansion strategy. Softbank has encountered some notable setbacks as well as successes with its maverick business style, and relatively few other Japanese companies have successfully challenged the incumbents with novel business models.

If Japanese corporations have not revamped their strategies sufficiently to adapt to the information age, then why hasn’t the government been able to do more to transform the institutional context and to promote private sector reform? In the past, the government played the leading role in reshaping Japan’s market structure. So why not now? For one thing, the core manufacturers, such as NEC and Fujitsu, have lobbied for policies that would reinforce their existing competitive strengths rather than shift the terms of competition. “We want the government to implement policies that help us with our strategy,” explains Fujitsu’s Tetsuro Uruno. “We want to increase the size of the market, so the government could support this by promoting the ‘smart [digitally enabled] community,’ for example. And we want to upgrade our products and services, so the government might invest in R&D for basic technology, information security, or information technology for the agriculture or health sectors.”

Softbank, meanwhile, has pressed the government to build up the IT infrastructure and to break NTT’s incumbent advantage in the telecommunications market. “We do not need the government to boost exports of IT products,” declares Ted Matsumoto, Senior Executive Vice President. “But it should promote the best possible IT environment, with the cheapest and the best IT services. That is the real meaning of international competitiveness.” To understand the Japanese government’s IT strategy, however, we must not only identify industry policy preferences, but we also must examine how these preferences are mediated in the political arena.

GOVERNMENT STRATEGIES

Since 1991, the Japanese government has formulated its policies for industrial renewal and information technology in the context of macroeconomic weakness. Government officials focused initially more on short-term measures to support economic recovery and resolve the banking crisis than on long-term policies to upgrade technology, enhance productivity, or promote technology. Despite popular images of paralysis, however, government officials did not fail to act. They enacted a wide range of reforms, from corporate law to labor policy and financial regulation, designed to strengthen the legal infrastructure supporting markets and to facilitate corporate restructuring. They shifted away from government promotion and protection of industry and adopted selective pro-competitive regulatory reforms. They found themselves caught between two paradigms: unable to preserve the postwar model of government leadership and close collaboration among businesses and yet unable to shift decisively toward a liberal market model. To understand this pattern of reform and its pathologies, we must examine the political factors shaping the specific substance of those policies.
The government’s macroeconomic policy errors contributed to the economic crisis that began in 1991 and exacerbated it afterward. Specifically, the government failed to tighten fiscal and monetary policy in the late 1980s, fueling the asset bubble and making the ensuing crash much worse. It was then slow to ease monetary policy and to expand fiscal policy after the crash. And when it did deploy fiscal stimulus, it did so in a particularly ineffective stop-and-go pattern, with spending concentrated on public works projects that did not contribute to long-term economic growth. In addition, Ministry of Finance (MOF) officials initially responded to the financial crisis with their standard repertory of measures. They downplayed the crisis for fear that public disclosure could lead to panic; they worked closely with the distressed banks, offering regulatory breaks as necessary; and they asked stronger banks to support their weaker affiliates. They were slow to recognize that these tools would not work because the scale of the crisis was so huge, and they only turned to a more aggressive approach after the financial crisis deepened in 1997.

By the 1990s, Japanese government officials had already begun to move away from a state-led industrial strategy. They started to liberalize deposit interest rates in 1985, and they eased the regulatory barriers between commercial banks and stock brokerages in 1992. They privatized the telecommunications carrier, NTT, and introduced competition in the sector in 1985. They then enacted a series of reforms to strengthen the legal infrastructure underpinning markets and to give corporations greater ability to reduce costs and to increase returns. The government’s distinctive approach to market reforms reflected the preferences of Japanese industry. Japanese corporations sought to reduce costs while preserving their long-term collaborative relationships with workers, financial institutions, and other corporations, and the government sought to deliver reforms that would facilitate that.

The government gave employers more flexibility by allowing dispatch workers (agency temps), thus permitting a new tier of temporary workers that could be hired and dismissed at will. And it enhanced the institutional infrastructure for labor mobility by allowing private employment agencies. At the same time, however, it reinforced the long-term employment system for regular workers by codifying rules restricting layoffs. Meanwhile, the government enacted a daunting array of revisions to corporate law to give companies more options for restructuring. It permitted companies to buy back their own shares and to issue stock options; it reformed procedures to facilitate corporate spinoffs and mergers and acquisitions; and it permitted companies to adopt a U.S.-style committee board system while not requiring them to do so. The Ministry of International Trade and Industry (MITI, which became METI in 2000) also sought to promote corporate restructuring more directly, combining tax relief, regulatory breaks, subsidies, and low-interest loans to support companies to reduce capacity or invest in growth areas. It also tried to promote start-ups by eliminating capital requirements for incorporation.

The government moved most decisively in finance with the “Big Bang” reforms of 1996. It opened foreign exchange markets; deregulated brokerage commissions; liberalized mutual fund, pension and trust markets; loosened restrictions on new financial instruments; lifted the ban on holding companies; allowed banks, securities houses, and insurance companies to enter one another’s lines of business through holding companies; and shifted the MOF’s supervisory duties to a new Financial Supervision Agency. The government also enacted substantial accounting reforms, including mark-to-market accounting for financial instruments and consolidated reporting for subsidiaries above a certain threshold of ownership.

In the realm of information technology, the Ministry of Posts and Telecommunications (which merged into a new ministry in 2000, now called the Ministry of Internal Affairs and Communications) had advocated competition in telecommunications since the 1980s because ministry officials had more of a rivalry than a collusive relationship with NTT, and they recognized that they could augment their own power and status by allowing competition. The ministry lost some of its pro-competitive fervor after 1997, however, when it forged a delicate political compromise that broke up NTT into one long-distance carrier and two regional carriers under a holding company structure. The government’s IT Strategy Council unveiled an ambitious reform program in 2000, combining pro-competitive regulation, investment in infrastructure, improvements in the legal apparatus supporting electronic commerce, and measures to support electronic government. The ministry subsequently pressed NTT to lower
interconnection charges and to lease unused lines, fueling a remarkable price war in digital subscriber lines.\textsuperscript{36} Japan’s broadband service rates dropped to the lowest in the world by 2002.\textsuperscript{37} And Internet penetration surged from 21.4 percent in 1999 to 57.8 percent in 2002 and 78.0 percent in 2009.\textsuperscript{38}

By the early 2000s, the economy finally entered a stable recovery. Prime Minister Junichiro Koizumi (2001-06) heralded a program of “structural reform,” including the privatization of the postal system and the reform of special public corporations, aimed more at transforming politics than liberalizing the economy. He sought to save the ruling Liberal Democratic Party (LDP) by dismantling the public works machine, thereby attracting voters disenchanted with the old LDP politics. Koizumi was given credit for liberalizing the Japanese economy, but for the most part market reforms during his term followed the incremental pattern of his predecessors.

Koizumi’s political strategy worked brilliantly in the 2005 Lower House elections, but his successors – Shinzo Abe (2006-07), Yasuo Fukuda (2007-08), and Taro Aso (2008-09) – could not emulate his success. They lacked his personal charisma; they undercut some of his political reforms; and they struggled to guide the party. Abe declared that he would shift greater attention to promoting innovation, since productivity increases would have to drive economic growth since Japan’s population was no longer rising. Yet Abe did not stay in office long enough to make meaningful progress in this area.

When the global financial crisis hit in 2008, Japan briefly appeared insulated because the financial sector had just completed a round of restructuring and it had not invested heavily in hedge funds or the U.S. housing market. But the crisis eventually struck Japan hard through a different route, as a sharp drop in global demand devastated exporters. The Japanese government responded with a relatively modest fiscal stimulus, as officials were concerned with the country’s enormous fiscal deficit.

THE DPJ ERA

In August 2009, the LDP, which had dominated Japanese politics for more than 50 years, fell from power in a stunning loss to the Democratic Party of Japan (DPJ). The DPJ had appealed to voters looking for a change by pledging to alter the basic logic of Japanese politics. The DPJ vowed that politicians would finally assert their proper authority over bureaucrats, and the government would scrutinize government spending and reduce wasteful public works spending. The DPJ represented a wide spectrum of views on both domestic and foreign policy issues, although it was slightly less nationalistic and more favorable toward welfare spending than the LDP. It had closer ties to labor unions and looser ties with business interests. The DPJ manifesto was remarkably short on specific policy proposals, especially given that Japan was mired in a severe economic crisis.

The DPJ administration disbanded the Council on Economic and Fiscal Policy (CEFP), which had coordinated economic policy under Koizumi. In its place, it created a National Strategy Headquarters that was supposed to integrate overall economic and foreign policy planning. The administration was hampered from the start by a dual power structure in which Prime Minister Yukio Hatoyama led the government and Secretary General Ichiro Ozawa ran the party. Both Hatoyama and Ozawa had advocated a stronger cabinet closer to the British “Westminster” system, in which the cabinet would exercise authority over the bureaucracy and the party. But this vision could not be realized since the party’s strongest leader, Ozawa, found himself outside the government due to a political finance scandal. Moreover, the new National Strategy Headquarters could not take the lead on economic reform, because its nominal leader, Yoshito Sengoku did not have Ozawa’s support. In any case, the administration gave top priority to its goal of reshaping politics and the policy process, moving slowly and awkwardly on policy issues. The government only unveiled its new growth strategy in December 2009, with further details in June 2010, pledging to cut corporate tax cuts, boost disposable income, promote exports and increase IT investment.

The growth strategy’s schemes for industrial and IT policy incorporated proposals that had emerged from the ministries. By 2010, METI and MIC officials were remarkably candid in their assessment of Japan’s declining competitiveness, and they were proposing some creative policy...
responses. Yet in the DPJ era, the strained ties between political leaders and the bureaucrats would make it particularly difficult to implement these plans.

METI reports on industrial competitiveness proposed that the government should resurrect elements of an industrial policy: increasing financial support for research, actively coordinating Japanese companies, and aggressively market Japanese products abroad. Akira Kawamoto, Deputy Director-General, Economic and Industrial Policy Bureau explains the ministry’s turn in thinking: Up until the financial crisis, we had been saying that we should leave things to the private sector. But then we asked ourselves: Is that enough? The results had not been good. So we concluded that the private sector alone was a weak driver of growth. The government would have to take a more proactive role – although it would certainly not be wise or practical to go back to Japan’s traditional industrial policy. The reports argued that Japan would have to shift from a reliance on manufacturing, particularly in automobiles, to growth sectors: infrastructure (railways, electric power, water), the environment and energy, culture industries (fashion, entertainment), health care, and high technology (robots, aerospace). They stressed that the government would have to actively support Japanese infrastructure exports to emerging markets and developing countries via government aid and lending. They recognized the global trends highlighted in this volume: the integration of manufacturing and services and the modularization of production. And they asserted that the government must re-establish strategic collaboration among politicians, bureaucrats and industry and foster government-industry-academic ties to promote research and development in order to compete in this new environment. Both METI and MIC reports advocated a dramatic increase in investment in IT. Koichi Akaishi, Senior Director of METI’s Information Policy Division declares:

We propose a radical change in thinking. We should no longer think of investment in IT as a cost. We should think of it as costless – since costs decrease so quickly – and develop business strategies based on that presumption.

One METI report offers three explanations for Japan’s weakness in IT: insufficient investment, a flawed strategy on standards, and too much focus on the domestic market. The DPJ government’s first Minister of Internal Affairs and Communications, Kazuhiro Haraguchi, departed from standard practice by announcing his own personal “vision” for Japan’s IT revival. Haraguchi had been strongly influenced by Masayoshi Son, the president of Softbank, who advocates 100 percent national penetration for fiberoptic broadband, electronic books for public schools, and aggressive regulation and even further breaking up NTT to promote competition. “We have a more liberal approach to telecommunications policy than the United States,” Haraguchi insists, “we want to enhance competition.” When Prime Minister Naoto Kan reshuffled his cabinet in September 2010, however, Haraguchi found himself out of a cabinet spot and unable to press forward this vision.

JAPAN’S GOVERNANCE PROBLEM

The Japanese government has responded to declining industrial competitiveness with incremental adjustments, not bold reform. In some sense, the government’s caution is warranted. The government has sought to give corporations more flexibility to restructure while preserving the strengths of the Japanese model, including stable employment relations and coordination among firms. Moreover, the government’s approach has reflected the preferences of the Japanese people, who have been wary of reforms that would deliver higher financial returns at the expense of greater risks. Thus the government’s reluctance to deliver bold liberal market reforms reflects the normal functioning of the political system and not its failure. Nonetheless, the Japanese government’s policy record reveals some troubling weaknesses, particularly when it comes to the information technology sector. By abandoning its own state-led model and yet not adopting a liberal market model either, the government risked undermining Japan’s comparative institutional advantages without cultivating a viable alternative. It is tempting to blame Japan’s incoherent economic strategy on the pervasive political instability since the LDP first lost power in 1993. The unwieldy coalition that replaced the LDP lasted
less than a year, giving way to a series of LDP-led coalition governments, frequent realignment among
the opposition parties, and a long series of forgettable prime ministers. Koizumi was the notable
exception during this period, yet even he did not substantially alter the trajectory of economic reform
beyond postal privatization and the banking clean-up. Some of the signature Koizumi structural
reforms, such as the reform of the special public corporations, were well under way before Koizumi
took office. And on many other issues, such as labor policy or corporate governance reform, the
bureaucracy simply continued on a path of incremental adjustments.

Yet Japan’s postwar political system has rarely been characterized by strong political leadership
on economic policy issues. Thus I would contend that Japan’s lack of a coherent economic strategy
since 1990 reflects a decline in bureaucratic leadership more than political volatility. The core
economic ministries, particularly METI and MOF, have experienced a profound loss of prestige,
confidence, and power. The government officials themselves have lost faith in the government’s ability
to enhance Japan’s competitiveness. Meanwhile, politicians have made bureaucrat-bashing a major
theme in their political strategies. This shifts the blame for economic problems from politicians to
bureaucrats, it appeals to popular disillusionment with the bureaucracy, and it gives divided political
parties an issue to unite them.

When the DPJ took power, its attempt to uproot bureaucratic power and to overhaul the policy
process rendered Japan’s economic policy apparatus even less effective. The ministries were
gridlocked for several months at least, as the ministers (who are politicians) tried to get up to speed on
the policy issues, and the civil servants were stymied from moving forward in the absence of clear
directions from their political leaders. This gradually evolved into greater tension in the case of some
ministries, notably the Ministry of Health, Labor and Welfare and the Ministry of Land, Infrastructure
and Transport, and to fragile cooperation in others, such as METI and the Ministry of Foreign Affairs.

On March 11, 2011, Japan was hit by a 9.0 earthquake centered offshore the Tohoku
(northeastern) region prefectures of Fukushima, Miyagi, and Iwate. The ensuing tsunami rose more
than 50 feet in some areas, killing more than 20,000 people, and wiping out many coastal communities.
The earthquake and tsunami also struck the Fukushima Daiichi nuclear power plant, leading to
explosions, meltdowns, and the worst nuclear disaster since Chernobyl. In the short term, the
earthquake exacerbated the country’s fiscal crisis and delayed progress on economic reforms. The
government passed supplementary spending bills for recovery and reconstruction in May, July, and
November, and it announced that it would review its economic growth strategy in light of the disaster.
The disaster also disrupted supply chains in automobiles, electronics, and other key manufacturing
sectors. Some Japanese firms were forced to rely more heavily on non-Japanese suppliers to maintain
production. Meanwhile, DPJ and LDP politicians engaged in petty political gamesmanship despite the
gravity of the situation. The LDP and even some members of the ruling party pressed Prime Minister
Naoto Kan to resign, and he ultimately relented in late August.

In the longer term, however, the earthquake could push Japanese leaders to consider bolder
reforms. The disaster certainly brought some of Japan’s key challenges to the surface: the fiscal deficit,
anemic growth, technology, energy, and the environment. Before the earthquake, the government’s
long-term energy plan had aimed at increasing Japan’s reliance on nuclear energy from about 30
percent of electricity generation to 50 percent by 2030, adding 14 new nuclear reactors. After the
quake, the government suspended plans for new reactors, closed one reactor due to safety concerns, and
reviewed safety at all the other reactors. With so many reactors out of service, the country experienced
a severe power shortage and the government set guidelines for energy conservation. The government’s
Reconstruction Design Council issued its first report in June 2011, advocating special economic zones
in the Tohoku region, with fewer regulations and tax breaks to stimulate investment, plus support for
the development of renewable energies.

THE WRONG POLICY MIX?

Recent developments in the global economy have undermined the strengths of the Japanese
business model and exacerbated its weaknesses, yet does that mean that the model is obsolete? In
conclusion, let us review three alternative interpretations of Japan’s competitive decline, all of which capture elements of Japan’s dilemma.

Proposition 1: Japan has failed to shift toward a new business model better suited for the information age. The global economy has moved in a direction where Japanese institutional advantages are less salient and U.S. advantages are paramount. It is no accident, of course, that U.S. companies have fared well in the information age, since the U.S. government, companies, and institutions drove the shift to the new paradigm. This paradigm rewards those features characteristic of the U.S. model: low barriers to entry, fluid labor markets, open technical standards, modular production integrated into global supply chains, and robust competition in product markets, telecommunications, and financial services. Japanese government and industry have publicly called for a shift toward a liberal market model for two decades, yet their reforms have been incremental and many have been designed to reinforce existing institutional strengths rather than to generate new ones.

Japan may not have converted to the U.S. model, yet other countries – notably the Nordic countries and South Korea – have not done so either and yet have been highly successful in key ICT sectors. Moreover, Japan’s traditional strengths are not irrelevant in the information age. A competent bureaucracy, dense government-industry networks, strong bank-industry ties, good labor-management relations, and tight coordination between manufacturers and their core suppliers remain potential sources of competitive advantage today, just as they were in the past.

Proposition 2: Japan has failed to preserve its own institutional strengths. The Japanese government has diminished administrative capacity as the central ministries have lost authority and loosened ties with industry. Japan has experienced a slow erosion of the core features of its distinctive model, including long-term cooperative relationships among firms, workers, banks, and suppliers.

Japan has indeed reformed its model, but for the most part the government and industry have favored tactical adjustments designed to give firms the flexibility they need to compete in hard times. On balance, this has made Japanese firms more competitive, not less. The government and industry retain the institutions of coordination, such as industry associations, but both government and industry are much less confident in deploying these capabilities.

There is some evidence, however, that Japan is losing ground at a more fundamental level. Japan shows troubling signs of decline in social performance, including education, an area of remarkable success in the postwar era. In international tests for middle-school students, Japan dropped from first place to fifth in math and from first to third in science from 1981 to 2007. In 2009, the World Economic Forum ranked Japan 31st in the world in the quality of the education system, 33rd in the quality of math and science education, and 25th in Internet connectivity in the schools. Japan has 7,700 doctorates in science and engineering compared to 28,000 for the United States and 14,900 for China, 12,200 for Germany, and 9,400 for the United Kingdom. Japan has also lost some of its social solidarity as economic inequality has risen, with a Gini coefficient increasing from 23.9 in 1993 to 37.9 in 2008.

Meanwhile, Japanese are becoming less engaged internationally. This does not bode well for Japan’s ability to remedy some of its key weaknesses in the information age, such as its lack of software programmers. Japan is sending fewer students abroad, although more foreign students are coming to Japan. Even so, only 0.7 percent of Japan’s higher education graduates come from abroad, compared to 29 percent for Australia, 26 percent for Canada, 16 percent for the United Kingdom and 13 percent for the United States. Among current higher education students, only 3.5 percent come from abroad, compared to 29 percent for Australia, 26 percent for the United Kingdom and 6 percent for the United States. Japan remains behind in English-language education, whereas China, South Korea, and other East Asian countries have made considerable improvements in recent years.

Proposition 3: The Japanese government has produced the wrong mix of policies to adapt the Japanese model to new circumstances. In this view, Japan was right to combine market liberalization with selective efforts at state-led industrial policy and government-industry coordination, but it delivered the wrong mix. It proceeded too slowly with pro-competitive reform where it was most needed, and too tentatively with state support where it was most appropriate. After all, those countries that have been most successful in key ICT sectors – the Nordic countries and South Korea, in particular – have also deployed more successful mixed strategies.
To sort out the characteristics of a right mix from a wrong mix of policies, one would have to confront the daunting task of specifying the relationships between government policies, institutional capabilities, and market success in the information age. I attempt to unpack these relationships here as a first step toward considering how better to analyze them.

We cannot make useful generalizations about the linkage between national institutions and industrial performance at the aggregate level. We can begin by suggesting that Japan’s distinctive set of institutions gave it a comparative institutional advantage in some sectors, such as automobiles or electronics, but a disadvantage in others, such as services, software, biotechnology, or aerospace. But these broad sectoral advantages were really embedded in more specific functional advantages. That is, Japan was better able to forge labor-management cooperation, train engineers, provide stable finance via the banking system, foster coordination across industry, and achieve incremental improvements in production. Meanwhile, the United States was better able to foster labor mobility, finance new ventures via equity markets, breed entrepreneurs, promote competition, support basic research, and generate breakthrough innovation.53

So to apply our understanding of these functional advantages to the ICT sector, we would have to disaggregate the analysis by both type of policy and industrial subsector. For example, we might suggest that a strong central government with a well-trained bureaucracy and close ties between industry and finance would be better able to increase overall investment in the sector and to build up the ICT infrastructure. Likewise, tight government-industry and industry-industry networks could facilitate the coordination of technical standards or training programs. At the same time, however, a government with close ties between the regulator and the incumbent telecommunications carrier, or a government in which industrial promotion and regulation are fused in the same ministry, would be less well positioned to promote effective competition. So a “smart” state in the information age would have to know how best to capitalize on its capabilities for guiding investment and for mobilizing sectoral networks while recognizing when it should promote competition or to ease restrictions on international trade and investment.

With respect to subsectors, the capacity to guide investment would be most critical in areas where competition requires massive investments, such as memory chips, solar panels, and auto batteries. The South Korean government and industry have been particularly effective in challenging the Japanese leaders in precisely these areas. One METI report notes that South Korea has fewer firms in key sectors, so these firms have a larger domestic market in absolute terms even though the South Korean economy is considerably smaller than the Japanese economy. The report credits the South Korean government with orchestrating industrial consolidation under the “big deal” after the Asian financial crisis, and suggests this has helped South Korean firms to outspend their Japanese rivals in sectors where the scale of investment is critical.54 In contrast, the promotion of effective competition is more essential in telecommunications services to lower prices and thus promote usage and innovation. To its credit, the Japanese government made substantial progress in this area in the early 2000s, but by that time the United States and South Korea were well ahead.55

In this light, the Nordic states and South Korea have outperformed Japan with a better mix of policies in recent years. As Darius Ornston argues in this volume, Denmark, Sweden and Finland did not dismantle corporatist institutions, but rather redeployed them to support growth in high-technology sectors. In contrast to Japan, these countries have experienced an improvement in macro-economic performance since the mid-1990s and an improving competitive position in the ICT sector. They have neither relied on traditional corporatist coordination, nor have they embraced rapid market liberalization. Instead they have redesigned collaboration among government, industry and labor to increase investment in human resources, foster risk capital, and boost R&D in high technology sectors.

South Korea provides an even closer comparative fit for the Japanese case. South Korea and Japan began in similar positions in 1990s, albeit with Japan holding a clear technological lead in most high-technology sectors. South Korea and Japan had both succeeded in the postwar era with a state-led growth strategy combined with strong government-industry ties and a highly organized private sector. And yet in recent years South Korea has been gaining market share in IT products while Japan has been losing share, and South Korea has outstripped Japan in the development of IT services and the expansion of IT usage. The South Korean government has been more aggressive than the Japanese
government with market reforms since the Asian crisis of 1997. It moved sooner than Japan to promote competition in telecommunications and support IT diffusion.56 It aggressively pursued bilateral free trade and investment packages. It encouraged Korean industry to adjust to international technical standards. Meanwhile, the Korean government has provided stronger support for IT infrastructure investment and for IT-related R&D, and it has pressed more aggressively for coordination and consolidation in key sectors.27 Japanese officials are acutely aware that Japanese industry has lost ground to South Korea. METI’s Kawamoto summarizes his own position rather succinctly: “While we were talking about leaving things to the private sector,” he laments, “South Korea passed right by us with a state-led model.” Overall both the Japanese and South Korean governments have opted for a mixed strategy: neither fully adhering to the old state-led model nor dramatically switching to a neoliberal one. Yet the South Korean government and corporations have crafted a more effective combination.

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3 METI, “Jouhou keizai kakushin senryaku (gaiyou)” [Information Economy Renovation Strategy (Summary)] (May 2010), 3; METI, “Sangyou kouzou,” 22.
6 “Jouhou keizai,” 5.
8 Average operating profits for 2005-08 from METI, “Jouhou keizai,” 6. This report notes that Japanese electronics firms achieved better results in 2009, but that cuts in research and development spending account for a substantial share of the increase in profits (p. 10).
9 Interviews, Tokyo, May-June 2010.
14 The Japanese government and the private sector have maintained relatively stable rates of R&D spending since 1990 as a share of GDP, but slow growth has naturally constrained total R&D spending. According to OECD Science, Technology and R&D Statistics, during the 1990-2009 period government-financed R&D spending has ranged from 0.52 (in 1997) to 0.66 percent of GDP (in 1995), and industry-financed R&D spending has ranged from 1.90 (in 1994) to 2.69 percent of GDP (in 2008).
19 Borrus and Zysman, “Globalization With Borders.”

Herbert Kitschelt argues that Japan excels in sectors characterized by medium to long production runs and amenable to incremental production improvements, such as office machines, appliances, consumer electronics, and electronic components. Japan lags in sectors that require huge public investments in basic research and breakthrough innovation such as aerospace, biotechnology, and software. “Industrial Governance Structures, Innovation Strategies, and the Case of Japan: Sectoral or Cross-National Comparative Analysis?,” *International Organization* (1991) 45: 453-93. Likewise, Peter Hall and David Soskice (2001, 38-39) contend that liberal market economies like the United States excel in radical innovation that is critical in dynamic technology sectors such as biotechnology, semiconductors, and software. Radical innovation is also important for system-based products, such as telecommunications or defense systems, and for service sectors, such as advertising, corporate finance, or entertainment. Coordinated market economies like Japan and Germany excel in incremental innovation that is that more critical for capital goods manufacturing, such as machine tools, consumer durables, engines, and specialized transport equipment. “An Introduction to the Varieties of Capitalism,” in Hall and Soskice, eds., *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (Oxford: Oxford University Press, 2001), 36-44.


Vogel, *Japan Remodeled*, 157-204.


Interview with Tetsuro Uruno, General Manager, Government Relations Division, Fujitsu, Ltd., Tokyo, June 2, 2010.

Interview with Ted Matsumoto, Senior Executive Vice President, Softbank Mobile Corp., Tokyo, June 3, 2010.


The U.S. Gini coefficient has risen from 40.8 in 1997 to 45.0 in 2007, while the figure has fallen from 35.8 in 2000 to 31.4 in 2009 in South Korea, and from 30 in 1994 to 27 in 2006 in Germany: Central Intelligence Agency, *The World Factbook 2010* (Washington D.C.: CIA, 2010).

Japanese students studying abroad declined from 60,424 in 2004 to 44,768 in 2009, while the numbers increased over the same period for students from South Korea (96,885 to 125,165), China (343,126 to 510,314), the United States (41,181 to 53,251), and Germany (56,410 to 91,928); United Nations Educational, Scientific and Cultural Organization, *Global Education Digest: Comparing Education Statistics Across the World* (Montreal: UNESCO Institute for Statistics, 2006-2011). Meanwhile, foreign students studying in Japan rose from about 40,800 in 1990 to 60,800 in 2000 to more than 120,000 in 2008; Cabinet Office, “Kyoukoku no guroubaru senryaku” [A Global Strategy for Education] (2010).

Average TOEFL examination scores for 2010 were 70 for Japan, 76 for Taiwan, 77 for China, and 81 for South Korea: Educational Testing Service, “Test and Score Data Summary for TOEFL Internet-Based and Paper-Based Test” (Princeton: ETS, 2011).

South Korea leads the world with over 90 percent of households having broadband access, compared to 60-70 percent for the United States and Germany and less than 60 percent for Japan: 2009 data from OECD Information Technology Outlook (2010), 179.

South Korean government and industry R&D spending as a share of GDP has been roughly comparable to that of Japan, but South Korea leads all OECD countries by a large margin in government funding of business R&D (direct and indirect) plus tax incentives for R&D at 0.34 percent of GDP (compared to 0.23 for the United States and 0.15 for Japan): OECD Science, Technology and Industry Outlook (2010), 5.