The Right Target for the Third Arrow

Corporate Managerial Efficiency in Japan Compared with the United States

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Introduction

Japan has reinvented its economic model before. Following the Meiji Restoration, the Japanese rapidly industrialized by intentionally borrowing from the West. After the Second World War, Japan achieved a second economic miracle, rising from the ashes to become the world's second largest economy in only a quarter century. During the 1980s its industrial might came to be feared around the world; indeed, many in America warned that Japan might soon overtake or even "buy up and own" America. This rapid development became known as the "Japan Model" and has since been emulated throughout East Asia as a development template.

In the past two decades, however, Japanese corporations have tended to rest on their earlier accomplishments. The Japanese economy has stagnated and leading Japanese brands have been knocked down from their once pre-eminent positions.

Now Prime Minister Shinzo Abe is attempting an aggressive reform program in order to revitalize the Japanese economy. Can he succeed? We believe he can, but only if he aims his "third arrow" of structural reform at the right target. That target should be the inefficient and unaccountable way that Japanese managers allocate capital.

The Three Arrows of Reform

As is well known, Mr Abe is attempting to revive Japan's economy with "three arrows": renewed fiscal stimulus, aggressive monetary easing and structural reform. We believe the third of these is crucial. Japan's experience since the financial crisis of 1989-90 illustrates the limits of a Keynesian fiscal policy. For twenty years, from 1993 until 2012, the government's deficit averaged 6.2 per cent. This led to a massive increase in the government's debt: relative to GDP, net debt increased by a factor of eight. But the pay-offs in growth were miserable. In real terms, per capita gross domestic product rose by 15 per cent over the entire period of two decades, a compound annual growth rate of just 0.7 per cent. Conventional wisdom attributes the failure of policy to insufficient size, bad timing or yen appreciation. It is true that the nominal exchange rate appreciated substantially – by around 50 per cent, comparing 1994 with mid-2012. But because of sustained Japanese deflation, the real rate actually depreciated by (at peak) close to 40 per cent.

It is therefore a mistake to attach too much importance to the first of Mr Abe's "three arrows" of macroeconomic reform. The ¥10.3 trillion fiscal stimulus he has announced certainly implies a large deficit (in excess of 10 per cent of GDP), but we have seen such deficits before (in 2009), and with public debt already at such very high levels – by far the highest of any major economy in the world – there must be doubts about the sustainability of the policy. Stabilizing the debt at its current level would require swinging from a primary deficit (before interest payments) of 8 per cent to a surplus of 3.2 per cent.

Similarly, the monetary stimulus cannot be counted on to save Japan if yen depreciation is its only major consequence. Real success hinges on whether or not Prime Minister Abe's

handpicked Governor of the Bank of Japan, Haruhiko Kuroda, is able to break Japan's deeply entrenched deflationary psychology. His current program involves doubling the monetary base and setting a 2 per cent inflation target. But there is no guarantee that this will work. The economics profession has had some experience in altering inflationary expectations with a decisive policy "regime change". But we have had little experience in altering deflationary expectations, especially when these are being accompanied by a strong demographic headwind in the form of a shrinking workforce.

Second, there is a real potential risk in Kuroda's policy. Success in raising inflation expectations could push up JGB yields faster than nominal growth and nominal tax revenue. But with interest payments already absorbing nearly a quarter of the Japanese budget, that is not something the Ministry of Finance can tolerate. Keeping the yield curve from steepening means waging a battle with markets. Recent volatility in the JGB market suggests that the outcome of that battle is uncertain.

However, monetary easing coupled with yen depreciation offers an outstanding opportunity to introduce the Prime Minister's third arrow: structural reforms to focus on economic restructuring in the private sector. The economics profession knows well that monetary and fiscal policy can buy time, but cannot by themselves increase the rate of long term economic growth. Whether or not they pay off for a society depends on what the economy does with the time bought. Economic restructuring can be painful, particularly for corporations with business practices that have become entrenched through decades of stagnation. However the temporary gains in international competitiveness caused by yen depreciation and the enhanced ability to push through price increases and increase margins in an environment of rising inflation expectations can certainly go far to ease these pain of adjustment. However, if a lower yen and

higher inflation expectations are not accompanied by corporate restructuring, Japan will simply have made itself poorer with lower purchasing power both at home and abroad.

The crucial component for the success of Abenomics must therefore be the so-called "third arrow" of structural reform. Fiscal and monetary stimulus without effective reforms will not, in our view, achieve lasting success. Mr Abe appears to understand this. At various times, he has talked of ending the protection enjoyed by Japan's farmers, doctors and pharmaceutical companies; reducing the labor market's rigidities; improving education; cutting through over-complex regulation; and opening utilities up to competition. His recent commitment to the Trans-Pacific Partnership (TPP) is seen in the United States as a good sign, given its negative implications for Japan's powerful farm lobby. In the longer run, that will allow Japan access to more markets, where its products can compete more effectively. From a political perspective, this certainly looks like a bold move ahead of July's Upper House elections.

On the other hand, structural reform (or "growth strategy", as it is called in Japan) is subject to bureaucratic infighting. To give just one example, the Ministry of Economy, Trade, and Industry apparently wants drastic tax measures (such as the reduction of Japan's high effective tax rate for corporations), but has apparently run into the strong opposition of the Ministry of Finance, traditionally concerned with fiscal sustainability. According to the *Nihon Keizai Shinbun*, on May 15th a leading official said: "We are doing the TPP, so let's postpone the painful reforms. We cannot plunge into them before the July Upper House elections."

Elections aside, exactly what structural reforms does Japan need? The World Economic Forum conducts an annual survey of executives as part of its Global Competitiveness report, asking them to identify "the most problematic factors for doing business" in Japan. To begin

with, executives are highly critical of government: tax rates are the number one complaint, followed by policy instability, inefficient bureaucracy and government instability. We can identify Japan's structural problems even more precisely on the basis of the raw data gathered by the WEF. Here are the specific areas of competitiveness where Japan ranks in the bottom half of the world (72nd out of 144 or lower), beginning with the worst:

1. General government debt 144th
2. Government budget balance 143rd
3. Imports as a percentage of GDP 143rd
4. Agricultural policy costs 142nd
5. Hiring and firing practices 134th
6. Extent and effect of taxation 113th
7. Total tax rate as % of profits 108th
8. Wastefulness of govt. spending 91st
9. Prevalence of foreign ownership 90th
10. Business costs of terrorism 90th
11. Burden of government regulation 87th
12. Women in labor force 87th
13. No. of procedures / days to start a business 87th
14. Mobile phone subscriptions per 100 82nd
15. Quality of management in schools 80th

The more Mr Abe can address these issues, presumably, the happier Japanese business will be. But numbers 1, 2, 6 and 7 look very unlikely to improve in the near future, given the dire fiscal position. That essentially leaves trade liberalization and labor market deregulation

including a long overdue increase in female participation. (Low cellphone usage is surely the least of Japan's worries.)

Conspicuous by its absence from the list above is the idea of changing the way that corporate Japan deploys capital, and in particular the way that managers are held to account (or not) by shareholders. Yet we believe that precisely this should be the primary target of Mr Abe's third arrow.

Measuring the Japanese Problem

Even the most cursory international comparisons show the deterioration in Japan's economic competitiveness and the relatively inefficient management of Japanese corporate assets. For example, Organization for Economic Cooperation and Development (OECD) estimates imply that in 2011 the Japanese private capital stock amounted to ¥2137 trillion,[1] a year in which it generated private sector GDP of ¥370 trillion.[2] This would imply a private sector capital to output ratio of 5.78 to 1. By contrast, the private capital stock in the United States amounted to $35.2 trillion and generated private sector GDP of just over $12 trillion,[3] implying a capital to output ratio of just 2.93 to one. Stated plainly, each unit of Japanese private sector capital produces only one half the amount of output generated by a unit of American private sector capital.

The same differential shows up glaringly in the return on capital in publicly traded corporations in both countries. In Japan the total gross assets of these companies (both financial and non-financial) amounted to ¥1848 trillion in 2011 but generated net profit of just ¥32trillion.[4] This is a return on gross assets of just 1.7 percent. By contrast gross assets of

publicly traded companies in the United States amounted to $35.9 trillion and generated value added of $1.379 trillion,[5] a return of 3.8 percent, more than twice as high. (Obviously, statistics like these may reflect differences in terms of leverage and the precise mix of financial and nonfinancial assets and liabilities.)

Defenders of the *status quo* tend to explain such differentials by saying that "Japan is different". And so it is. But the issue is whether these inherent differences are the primary cause of the relatively inefficient deployment of Japanese capital, or whether capital could be better deployed if Japanese management paid more attention to the return on assets and the interests of shareholders. During the last three decades America has embraced the notion that the primary obligation of management is return to shareholders. By contrast, Japan has tended to cling to the notion that there are a variety of "stakeholders" involved that need to be satisfied. The primary problem with the "stakeholder" model is that it leaves management with no one to whom it is ultimately responsible. As a result, sub-par results go unaddressed and uncorrected.

If shareholders are ill-served by Japanese managers, do other stakeholders benefit? In fact, the data presented below also suggest that Japanese workers are underpaid relative to their American counterparts and that overall Japanese GDP, including tax revenue to the government, is also reduced. The relatively inefficient management of Japanese corporate capital is not only depressing profits; it is also depressing wages, GDP and tax receipts.

Controlling for Non-Managerial Differences Between Japan and America

Managers are not expected to achieve perfection; rather they are expected to optimize, to get the most they can out of what they have. Economists model this by looking at "factor endowments",

or what the manager has to work with in terms of land, labor, technology, and national custom. For example, one of the most obvious differences between Japan and America is the availability of land. Japan is a crowded and fully developed country with little "green field" space available. Japanese managers cannot create new land but instead must cope with the relative scarcity of land as a cost of doing business, one that is higher than that faced by most of their international competitors.

The availability of land does represent a problem for Japanese management. In the non-financial corporate sector in Japan, for example, land represents 29 percent of the fixed capital.[6] In America, by contrast, land represents just 9 percent.[7] Thus, we need to adjust the expected return on assets in the non-financial corporate sector for the relative scarcity of this factor of production in Japan. If one does this to the OECD numbers presented above, the disparity of return and of value added per unit of capital narrows. When we did not adjust for the scarcity of land, the ratio of private capital to private GDP was 5.78 in Japan and 2.93 in America – a ratio of two to one. If one takes land as a "free good" – eliminating it from the calculation – the ratio in Japan drops to 4.05 vs. 2.66 in America, a ratio of roughly one-and-a-half to one. In other words, the discrepancy is reduced, but it is far from eliminated.

But not all factors of production work against the ability of Japanese management to produce high returns relative to America. By most metrics, the Japanese workforce is better educated than its American counterpart. Yet, the average cost of labor in Japan is below that of America. Employment in Japan is roughly 55 million people[8] compared with roughly 135 million in America.[9] Total labor compensation in Japan is ¥245 trillion,[10] or about ¥4.4 million yen per worker. At an exchange rate of ¥100 to the dollar, that is about $44,000 per worker and

at an exchange rate of just ¥80 to the dollar it amounts to $55,000 per worker. By contrast, American workers have total compensation of $8.8 trillion[11] or about $65,000 per worker.

Stated plainly, the availability of highly skilled but lower paid Japanese workers should enhance the profitability of Japanese corporations. Other things equal, it should also lead to a substitution of labor for capital in Japan relative to America and a relatively lower reliance on capital per unit of output. But the reverse is true. The capital-output ratio in Japan is higher than in America, as is the capital-labor ratio.

The causality therefore probably works in reverse. The relatively poor management of Japanese resources by the corporate sector means that less output is produced per unit of labor and per unit of capital. Thus *both* capital and labor receive relatively lower returns in Japan than in America. A refocusing of Japanese management on more efficient use of capital is therefore likely to benefit all stakeholders – both shareholders and workers – as the resulting greater output per unit of input gets shared among all factors of production.

It goes without saying that labor is a more important factor of production than land and that the advantages Japanese corporations have in the availability of cheaper labor almost certainly outweigh the disadvantages of relatively scarce land. In order to set up a test of whether or not the "Japan is different" hypothesis can explain the relatively less efficient returns obtained by Japanese non-financial capital, we adopt the standard cliometric approach of giving the benefit of the doubt to all factors tending to confirm the hypothesis, so that if the hypothesis is then rejected under these assumptions, we can assume that it does not stand. Thus we completely ignore the fact that Japanese management has an advantage in cheaper labor and treat land as a

"free good". This leads us to consider only the relative productivity of the reproducible fixed capital in the non-financial corporate sector in Japan and the United States.

Table 1 presents the data from the National Income and Flow of Funds Accounts for the non-financial corporate sector in both the United States and Japan. For the sake of comparability and ease of exposition we convert the data at an exchange rate of ¥100 to the dollar. We use the same exchange rate to evaluate the value of output in the non-financial corporate sector, so the exchange rate assumption is not material to the key metric – the value added per unit of capital in the sector.

As the table shows, the reproducible fixed capital in the American non-financial corporate sector is roughly $12 trillion compared with $6.76 trillion in Japanese non-financial sector. Differences and data ambiguity lead us to a range of estimates of the value added in the Japanese non-financial corporate sector of between $2.77 trillion and $3.32 trillion in comparison to value added in the American non-financial corporate sector of $7.38 trillion. Thus while the capital stock in the non-financial sector in America is 78 percent larger than in Japan, the output of that sector is between 122 percent and 165 percent larger. Output per unit of reproducible fixed capital in America is thus between 25 and 49 percent greater in America than in Japan.

This is an astonishing advantage since reproducible fixed capital is not something to which one ascribes an inherent national advantage. The equipment and software portion of this type of capital is an internationally traded good. The structural component is not, but since land is omitted from the calculation, one is simply comparing the value of buildings. The "bricks and

mortar" component of buildings is also an internationally traded good and the technology involved in construction is internationally competitive as well.

Reproducible fixed capital also appears to account for roughly 35 percent of the total production input in both America and Japan. (In America a larger share of national output goes to labor and in Japan that extra share appears to go to land.) Thus, if Japanese management were to deploy its reproducible fixed capital stock as efficiently as its American counterparts, total value added in the Japanese non-financial corporate sector would rise by between $290 billion and $476 billion, or by between six and nine percent of Japanese GDP. Since these are gains in efficiency and not in cost, they would "drop to the bottom line" on the income statement and would roughly double the total profitability of the non-financial corporate sector in Japan. By any standard these are large efficiency gains and large economic gains. They should also be understood as *minimums* regarding the efficiency gains to be had through more efficient deployment of capital.

Industry-Specific Comparisons of Value Added Per Worker

The previous section considered efficiency gains to be had in the Japanese non-financial corporate sector simply through the more efficient deployment of reproducible fixed capital. The examination was limited to this one particular factor of production in order deliberately to *underestimate* the prospective gains available to Japanese management and refute the argument that the efficiency differentials are due to nation-specific factors. But, of course, when one factor of production is inefficiently deployed it is quite likely that others are as well. Table 2 considers the evidence from specific sectors in America and Japan with regard to value added per worker.

We would stress that these differentials are most likely not due to any fault by the worker. Japanese workers are known as talented and hard working. Rather, they are most likely attributable to poor management, so that adopting American management techniques would likely lead to major efficiency gains.

The results upend most common assumptions about the relative economic strength of Japan. For example, the manufacturing sector in Japan has roughly 9.5 million workers compared to 11.7 million in America. Yet the 25 percent extra workers in America produce almost 75 percent more manufacturing value added. By far the biggest differential is in the utilities sector. Japanese utilities providing water, gas, and electricity actually hire more workers than do their American counterparts – but this larger workforce only produces 40 percent of the value added of American utility sector.

The construction industry illustrates a productivity disadvantage similar to manufacturing. America has roughly one-third more construction workers than does Japan but these workers produce 82 percent more value added meaning that each worker is about 35 percent more productive, a differential almost identical to that of manufacturing. Transportation shows a similar pattern. Japan has 3.3 million workers in the sector compared with 4.3 million in America. But the value added in the sector in America is 84 percent higher, implying a 54 percent productivity advantage.

Distribution of goods to the consumer through the wholesale and retail trade also illustrates an American advantage, although here the restructuring forces at work in Japan have already had some effect. America has almost twice as many workers in this sector as does Japan

– 20.2 million compared with 10.4 million, but value added in the sector is only 134 percent higher. Thus, output per worker is only 20 percent higher in America in this sector.

The fact that the productivity differentials from sector to sector is telling. Finance, Insurance and Real Estate (FIRE) is one area that has already been transformed in Japan, largely due to the entry of American corporations. Large American multinational banks operate in Japan and some of the large public sector banks that failed have been sold to American owners. Thus, although this is known as an industry in which America supposedly has an advantage, the productivity differentials here are less apparent. America has 7.7 million workers in FIRE compared with 2.5 million in Japan – three times as many – but these workers have value added that is only 3 ¾ times as much, or about one-sixth higher in per worker terms. This is the lowest figure for any major private sector segment and is almost certainly reflective of the greater openness of Japan to foreign management and ownership in the FIRE sector. What we propose is therefore to use FIRE as a model for other sectors of the Japanese economy.

There is one industry in which Japan would be ill advised to copy America: government. American government employs more than 22 million workers compared with less than 4 million in Japan. The value added in the sector, by contrast is 4.38 times as much, meaning that government workers in America are only 75 percent as productive as their Japanese counterparts. This is probably more a negative reflection on American government than a positive one on the efficiency of Japanese government. For example, Table 2 shows that, although the governmental sector and the manufacturing sector in America have roughly similar value added, the government sector has nearly twice as many employees.

The case of government highlights the point that there is nothing inherent in the Japanese workforce that condemns it to be less competitive than its American counterpart. Quite the contrary; the relatively higher productivity in the Japanese governmental sector suggests that Japanese workers are every bit as capable as their American counterparts. What are lacking in Japan are the managerial techniques used elsewhere to make maximum use of this talented population.

What Japan Can Learn from America

So what precisely can the Japanese government do to encourage Japanese corporations to allocate capital more optimally? It can streamline the regulatory process. It can allow companies and employees to enter into working arrangements more freely. And it can introduce tax reform that not only lowers the corporate tax rate to competitive global levels, but also makes it easier for companies to shutter failing divisions, spin off businesses that would operate better as stand-alone entities and provide for tax free stock mergers. This would enhance Japan's growth potential.

But the influence of government on corporate behavior can only go so far. Ultimately, the Japanese will have to reconsider its governance structure, which revolves around its primary bank, insider directors and cross-ownership. Many companies such as Sony have already implemented important changes, for example having a majority of its directors from outside the company. But for Abe's third arrow to be effective, Japanese corporations will have to do more than this. They will have to re-think basic concepts of their corporate governance.

Companies attract capital primarily from investors who are interested in earning a satisfactory rate of return on their capital. Certain institutions are satisfied with earning a return relative to a benchmark; others, like hedge funds, are interested in an absolute rate of return that is much higher, usually above 15-20 percent *per annum*. In any case, most investors would rather earn more than less. It is the role of boards of directors to hold management accountable to its shareholders, to hire and fire CEOs, to set their compensation, to approve acquisitions, to approve the annual budget and to assist in the company's overall strategy. Shareholders rely on board members to use their best judgment and to be rational, evidence-based and prudent in representing their interests.

While many boards do an excellent job in discharging their duty, some boards stray from their duties. They may become overly enamored of or intimidated by a powerful Chief Executive; they may as a group, grow old and calcified and lack a diversity of thought or perspective; they may not employ a rational evidence-based framework in their decision-making. Hence, as a general rule, we recommend that in order to align board member interests with shareholders in economic terms, not just in spirit, they should receive a meaningful portion of their director fees in stock. Only in that way are interests truly aligned. Secondly, the role of the major shareholder should be reconsidered as it has been in the United States. In the U.S., is not unusual for large "activist" owners to join boards in order to add significant value.

For Abe's third arrow of reform to be effective, then, Japanese corporations will have to start rethinking the relationships between management teams, boards of directors and the shareholders they serve. Management teams and boards need to see their shareholders – even ones who insist upon painful change – as partners rather than adversaries. As a last resort,

shareholders need to have the ability – just like citizens in democracy – to replace their elected officials.

Reshaping corporate Japan may be painful at first. But in order for companies to grow, they will have to become more efficient first. In the United States this process was initiated over the course of the 1980s and was spurred by the great boom in mergers and acquisitions, which led to enormous gains in both productivity and growth, as well as producing some or the strongest companies in the world. Japan has a unique opportunity to begin this process now.

Conclusion

The data presented here show that the differentials in output and profitability highlighted by international comparative statistics are not attributable to innate Japan-specific factors. Even when the extra cost imposed by the scarcity of land in Japan is accounted for, Japanese companies use the capital stock available to them in a less efficient manner than their American counterparts. Moreover, across private sector industries, labor productivity in America is significantly higher than in Japan, but not in government.

Historically, as we have seen, Japan has shown itself to be both a great student and a great teacher in management techniques. So there is no reason to believe that it cannot happen again. The key to the success of Prime Minister Abe's reforms will therefore be the adoption of new managerial techniques by the Japanese corporate sector. Some of these techniques will likely be developed within Japan as they were during the post-War period. However, a great many are also likely to be adopted from abroad. Emulating the success of others is usually the fastest and cheapest way of undertaking reforms. Opening Japanese management and corporate

ownership to the international marketplace would seem to be an obvious step, and the data suggest that the payoff from such a move would be huge.

Japan's economy is at a crossroads. Its corporate sector has the chance to reclaim its earlier role as one of the most admired in the world. But to do so it will have fundamentally to change the way it operates. If, with the government's encouragement, it does so, then all of Japan will benefit from the consequent increase in growth and, ultimately, wealth creation – and Prime Minister Abe will deserve his place in history alongside great economic reformers like Ronald Reagan and Margaret Thatcher.

Table 1

Non-Financial Corporate Sectors
(2011 Annual, $ Billion Assuming ¥100=$1)

	US	Japan
NonFinancial Assets		
Land	1,123	2,818
Structures	7,687	
Equip+Software	4,314	
Fixed Assets	12,001	6,760
Inventories	1,967	613
Total Nonfinancial	15,091	10,191
Financial Assets		
Assets	14,882	8,155
Liabilities (not corp stock)	13,621	7,691
Net Financial	1,261	465
Total	**16,352**	**10,655**

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Table 2

Employment & Value Added in Key Sectors

	Employment		Value Added	
	Japan	USA	Japan	USA
Construction	4,097	5,533	264	530
Manufacturing	9,482	11,727	871	1,732
Wholesale & Retail	10,368	20,214	669	1,751
F.I.R.E.	2,532	7,697	796	3,058
Transport	3,285	4,300	228	448
Utilities	591	553	115	298
Government	3,817	21,950	411	1,994

Notes

[1] Christophe Kamps (2005), "New Estimates of Government Net Capital Stocks in 22 OECD Countries 1960–2001," https://www.ifw-kiel.de/forschung/datenbanken/netcap, updated to 2012 with data from OECD Economic Outlook, vol. 2012, Statistical Annex, table 21, Potential GDP and Productive Capital Stock.
[2] Japan Economic and Social Research Institute.
[3] US Bureau of Economic Analysis, National Income and Product Accounts Table 1.1.5 Gross Domestic Product and Fixed Asset Accounts Table 2.1. Current-Cost Net Stock of Private Fixed Assets, Equipment and Software, and Structures by Type.
[4] Bloomberg data for all members of the Topix Index as of June 1, 2013.
[5] Bloomberg data for all members of the Russell 3000 index as of June 1, 2013.
[6] Economic and Social Research Institute, 2011 National Account Closing Balance Sheet for Non-financial corporations, http://www.esri.cao.go.jp/en/sna/data/kakuhou/files/2011/tables/23si11_en.xls.
[7] U.S. Federal Reserve Flow of Funds data.
[8] Japanese Cabinet Office.
[9] U.S. Bureau of Labor Statistics Employment Situation, Table B1, http://www.bls.gov/news.release/empsit.t17.htm.
[10] Economic and Social Research Institute, 2011 National Accounts -- Income and Outlay Accounts classified by Institutional Sectors -- Generation of Income Accounts, http://www.esri.cao.go.jp/en/sna/data/kakuhou/files/2011/tables/23i11_en.xls.
[11] U.S. Bureau of Economic Analysis, National Income Accounts, Table 2.1, Personal Income and Its Disposition.
[12] U.S. data from Federal Reserve's Flow of Funds, Japanese data from Economic and Social Research Institute, 2011 National Account Closing Balance Sheet for Non-financial corporations, http://www.esri.cao.go.jp/en/sna/data/kakuhou/files/2011/tables/23si11_en.xls.
[13] U.S. 2011 Employment from Bureau of Labor Statistics Current Employment Survey (Payroll) Survey at http://data.bls.gov/pdq/querytool.jsp?survey=ce, Japanese employment data from ESRI 2011 National Accounts, Table 3. Employed Persons, Employees and Hours Worked classified by Economic Activities, http://www.esri.cao.go.jp/en/sna/data/kakuhou/files/2011/tables/23s3f_en.xls. U.S. value added from Bureau of Economic Analysis GDP by Industry http://www.bea.gov/iTable/index_industry.cfm. Japanese value added from ESRI, Table 3. Gross Domestic Product classified by Economic Activities (at current prices), http://www.esri.cao.go.jp/en/sna/data/kakuhou/files/2011/tables/23fcm3nf_en.xls.