Why Did Japan Stop Growing?

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1. Introduction

The Japanese economy has been stagnating for almost two decades. Some recent research suggests that at the end of the 1990s the economy fell into a deeper paralysis that differed from previous "normal" recessions (Hamada, Kashyap, and Weinstein, 2011). By the middle of the 2000s a recovery seemed to have taken hold, but with the global financial crisis of 2008 Japan has slipped back into recession and deflation. The governments after the onset of the global financial crisis (one led by the Liberal Democratic Party and two led by the Democratic Party of Japan) have proposed various policies to restore economic growth, mainly through fiscal stimulus, but, overall, they have been ineffective.

Rather than focusing on the immediate growth challenges associated with the fallout from the global recession, we take a long-term view. The Japanese stagnation did not start in 2008. The problem goes back at least to the collapse of stock and land prices in the early 1990s, and we trace the major causes of stagnation to the failure of Japan to adjust to various challenges that emerged starting as far back as the 1970s.

Prior to the 1970s, the Japanese economy enjoyed a very rapid pace of economic growth. But, during the 1970s important factors that supported this rapid growth started to disappear. First, Japan was catching up with more advanced economies such as the U.S. Thus, Japan could no longer grow just by imitating or importing new technologies from the advanced economies. The practices and economic institutions that worked well during the catch-up phase were not so well-suited for a more mature economy.

Second, financial globalization and the collapse of the fixed exchange rate regime meant that by the end of the 1970s that Japan could not rely on an undervalued currency to boost its

exports. Japan had to rearrange its production system and other economic institutions to cope with globalization.

Third, Japan's population structure was shifting and becoming increasingly elderly. The aging meant slower growth of the labor force. The aging and the declining fertility also reduced the domestic saving that supported economic expansion during the rapid economic growth period.

The end of catch-up phase, globalization, and the rapid aging together created a major challenge to the Japanese economy. Japan has yet to successfully meet these challenges.

Worse, there were some subsequent policy mistakes, which turned stagnation into paralysis in the late 1990s. For example, regulatory forbearance on problems in the banking sector created the situation where zombie banks were supporting zombie firms, which hurt growth by stifling the process of creative destruction (Caballero, Hoshi, and Kashyap, 2008). Mistakes in monetary policy created prolonged deflation and entrenched deflationary expectations. Fiscal policy allocated too much money to ineffective spending programs and created a massive debt build up that now will require wrenching adjustment.

Although the Japanese economy started to recover in the mid 2000s under the reform-minded Koizumi government, the global financial crisis in 2008 put it back into recession. Looking back, the "recovery" of Japan was not robust, and Japan needs to change its policy direction for sustained growth to emerge.

There have been a lot of discussion and research into the causes and remedies for Japan's stagnation, often called the "lost decade." This paper differs from many of those attempts in taking a longer horizon.[1] We see the challenge that the Japanese economy faces as comparable in magnitude to those at past historical turning points, including the opening of the country in the

[1] Our analysis builds on a few recent studies that also take a longer term perspective such as include Blomström, Corbett, Hayashi, and Kashyap (2003), Ito, Patrick, and Weinstein (2005) and the ESRI Project led by Koichi Hamada, Anil Kashyap, and David Weinstein (2010)

mid-19th century, the turmoil in the 1920s, and the devastation after World War II. How Japan confronts the challenge is likely to influence its future for several decades.

One important reason why Japan has not successfully responded to the challenges is that the status quo has been mostly satisfactory. Thanks to the rapid economic growth in most of the post-war period, Japan is a rich country now. Therefore, except for a few very severe crises, there has been little pressure to confront these issues. Without a clear vision on what Japan could achieve, it is hard to grasp what Japan is losing. One important goal of this paper is to come up with a clear view of what is possible for Japan in rest of the 21st century.

The paper is organized as follows. In Sections 2 through 4, we start by identifying the challenges that Japan faced after the rapid economic growth era. Section 2 points out that a slowdown in economic growth was an inevitable consequence of a successful catch up. As Japan's GDP per capita rose, the growth rate fell. The end of the catch up phase, however, is not the whole story. We show that some advanced countries such as the U.S., Canada, and the U.K. continued to grow at the rate higher than Japan even after they reached a similarly high level of GDP per capita. Hence, the right question is what can Japan do to grow like the U.S., Canada and the U.K?

Section 3 identifies rapid aging as one factor that made Japan's adjustment to the end of rapid economic growth more challenging compared to many other advanced economies. Not only were the effects of aging more pronounced in Japan, but the aging effects started to manifest at the same time as the catch up phase of economic growth ended. In addition, the sustainability of the export oriented nature of Japan's growth posed another serious challenge.

Section 4 reviews this hurdle and shows that Japan needs to change from an export-oriented growth economy that uses imported technologies to try to catch-up to one focusing on its domestic market and own innovation.

Sections 5 through 7 identify three important impediments that have interfered with Japan's adaptation to the new environment. Section 5 shows that protection of incumbent firms (and their workers) against macroeconomic shocks in the 1990s stifled the competitive process of creative destruction that is essential for innovation and productivity growth in a mature economy. The section is mainly based on the work by Caballero, Hoshi, and Kashyap (2008). Section 6 examines the role of various government regulations in further reducing the productivity growth, especially in non-manufacturing industries. Finally, Section 7 discusses problems and growth reducing consequences of the monetary, fiscal and banking policies that were implemented to respond to macroeconomic shocks in the 1990s.

There was a period recently when Japan had a reform minded government and experienced a brief recovery of economic growth. The government, led by Prime Minister Junichiro Koizumi, started several economic reforms that appeared to steer the Japanese economy in the right direction. Section 8 is devoted to an analysis of several major reforms that the Koizumi government tried. A detailed discussion of major reform programs are in the Appendix.

Section 9 concludes by summarizing the findings and drawing lessons that Japanese policy makers should learn in order to restore economic growth. We close with a brief evaluation of the New Growth Strategy, which is the current government's attempt to do that.

2. End of Rapid Economic Growth

For many years the Japanese economy grew very rapidly. From the mid 1950s to mid 1970s, the average growth rate of the real GDP was around 10% per year, but growth then began slowing. Figure 1, using data based on the 1968 System of National Accounts, shows the real growth rates from 1955 to 2000. The figure clearly shows a first slowdown in the mid 1970s and then a second, more pronounced drop during the 1990s. Figure 2, using the current vintage of national accounts data, shows real GDP growth rates from 1981 to 2009. Although the growth seems to have returned briefly in the mid 2000s, Japan stopped growing again after the global financial crisis of 2008-2009. The purpose of this report is to explain the stagnation that began in the 1990s and deduce what policies might help reverse it.

Economists have demonstrated that long term growth patterns are generally well described by the so-called "neoclassical" model of growth. This model focuses on the supply side of the economy and we will use it to organize our discussion of potential causes of the slowdown. To quantify these alternatives, consider the simplest version of the neoclassical model:

$$Y = AF(K, L) \tag{1}$$

where Y is the level of output, K is the amount of capital input, and L is the amount of labor input in the economy as a whole and A denotes the level of technology.[2] Written this way, the model presumes technological progress raises output by making both labor and capital more productive (rather than favoring capital or labor).

[2] We also make the standard technical assumptions that the function F(·) is assumed to be homogeneous of degree one and the marginal product of each input is positive but declining with respect to the level.

If we also assume that capital and labor are each paid their marginal product (as would be the case if neither had any market power), one can show that the growth rate of output can be decomposed into three parts.

$$\%\Delta Y = \%\Delta A + \alpha\%\Delta K + (1-\alpha)\%\Delta L \tag{2}$$

where %Δ is the operator to take the percentage change of the variable (for example, %ΔY denotes the growth rate of output in percentage points) and α is the share of profits (income to capital) in total national income (and correspondingly 1-α is the share of labor income). This representation attributes output growth as coming from three sources: increases in capital (the second term of the right hand side of the equation), increases in labor (the third term), and/or from technological progress (the first term).

One can rearrange (2) to describe output per (quality adjusted) labor input term as arising from either increases in the ratio of capital to labor or from technological progress:

$$\%\Delta\left(\frac{Y}{L}\right) = \%\Delta A + \alpha\%\Delta\left(\frac{K}{L}\right) \tag{3}$$

Since the marginal product of capital declines as the capital intensity (K/L) increases, the second term in (3) naturally falls as the economy grows. This observation also implies that countries that are initially poor can grow very quickly by having high rates of capital growth, but more importantly it tells us that eventually growth will be governed by technological progress (i.e. pure productivity improvements). Historically technological progress among rich countries has been somewhat similar, which means that countries have a tendency to converge to a common rate of technological progress. Part of what explains Japan's slowdown is the transition from being a poor economy that was catching up with other advanced countries through strong investment to becoming a rich country whose growth was limited by productivity improvements.

To see this clearly Figure 3 shows the trend GDP per capita for G7 countries measured in year 2000 US dollars (converted using the purchasing power parity) from 1970 to 2005. The trend estimates were calculated using a standard statistical method developed by Hodrick and Prescott (1997).[3] Figure 4 shows the growth rate of the trend compared to the level of the trend. This presentation allows us to compare the growth rates across countries when each reached a given standard of living.

The figure shows that most of the countries experienced slowdown of growth as the real GDP per capita moves from the mid $10,000s to the low $20,000s. Compared with the other G7 countries, Japan continued to have a higher growth rate even when the GDP per capita crossed the $20,000 level, but then the growth rate declined much more rapidly than elsewhere.

The figure also shows that the countries do not converge to a single rate of growth. Instead, as per-capita income broached roughly $25,000 we see the countries split into three groups. First, the U.S., the U.K., and Canada seem to be converging to a steady state growth rate of around 1.7%. Second, France, Germany, and Japan seem to be converging to the growth rate of about 1.0%. Finally, the growth rate has continued to fall and seems to be approaching zero for Italy. These differences, if sustained, are extremely important. When per-capita incomes grow at 1.7 percent per year, incomes double in 41 years. In contrast, when the growth rate is 1 percent, then it takes 69 years for income to double.

But Japan's path is also interesting. Trend growth rate declined very rapidly once GDP per capita reached a little over $20,000 (around 1990) and for a time looked as if it was on the Italian trajectory. But in the early 2000s growth recovered slightly so that Japan seems to have settled in with France and Germany.

[3] Specifically we set the smoothing parameter in their algorithm to 400.

The figure motivates several questions that we analyze in the rest of the report. What accounts for the sharp growth deceleration? What happened in the 2000s to reverse Japan's freefall? What can Japan do to match the higher long-term growth rate that the U.S., the U.K. and Canada seem to enjoy?

3. Aging and economic growth

One factor that may explain the rapid decline of trend growth rate compared to other countries is aging of the population. Figure 5 shows the proportion of the old (65 years old or above) to the total population for G7 countries. Japan had relatively low share of elderly people during the 1960s and the 1970s, but the ratio subsequently increased very rapidly. By 2022, 30 percent of all Japanese citizens will be aged 65 or older, which is nearly twice the percentage in the U.S.

The neo-classical growth model implies that the long-term growth rates of per capita GDP declines when the aging proceeds rapidly. Note that the decomposition in equation (3) is written in per worker terms and the labor input (hours) is adjusted for distribution of different worker skill levels. Thus, letting N be the total population, equation (3) can be re-written as:

$$\%\Delta\left(\frac{Y}{L}\frac{L}{N}\right) = \%\Delta A + \%\alpha\Delta\left(\frac{K}{L}\right) + \%\Delta\left(\frac{L}{N}\right) \tag{4}$$

This formulation highlights the fact that as aging leads workers to retire or cut back on hours worked, per-capita growth necessarily declines because the last term in the equation becomes negative.

In addition to the effect of reducing labor participation and declining hours, the rate of quality improvement of labor may also suffer from aging if the skill improvement of old workers

tends to be lower than that for young workers. Sommer (2009) shows peak earnings occur in Japan as workers reached their late 40s. He also shows that in contrast to the U.S., earnings drop noticeably shortly after that stage, so that by the time the workers reach their late 50s, they are earning roughly 30% below the peak level.

4. Japan's Export-led growth

The neoclassical model assumes that as long as goods are produced efficiently there will be a buyer, so we can abstract from demand in estimating long term growth. But if demand stagnates, the expanded productive capacity resulting from technological progress will not be used effectively and will be wasted. The demand side problems have been evident in Japan for more than 15 years. One clear symbol of this is the persistent deflation that has prevailed since the mid 1990s. Given its depressed domestic demand, Japan has relied heavily on selling to foreigners.

Table 1 shows the contributions of external demand to the economic growth and the average ratios of exports on GDP for G7 countries for the period from 1995 to 2009. Japan's has the highest dependence on external demand. This is especially surprising because Japan's exports relative to GDP are small. Thus, Japan has had an odd combination of output being produced to satisfy external demand, while demand in the large domestic market has stagnated.

The reliance on the external demand is a legacy from the rapid economic growth period. Under the Breton Woods System of exchange rates, Japan benefited from a fixed and undervalued currency that made exports extremely competitive. The combination of a young, skilled workforce with a stable, undervalued exchange rate delivered high growth. The collapse of the Breton Woods regime in the early 1970s put an end to this strategy. The economic success

of Japan and emergence of competing export-oriented economies in East Asia changed the competitive environment for the Japanese exporters.

As Rajan (2010, Chapter 2) argues, an export-oriented growth strategy backed by close relationships between a country's government, banks, and industrial firms has been a successful formula for poor countries to become much richer. Japan and other Asian economies, including China, used this strategy to grow successfully. When the developing economy is small compared with the rest of the world, it can continue to depend on external demand. But as the economy grows larger, depending too much on external demand becomes increasingly difficult.

Another problem of the export-oriented strategy is the absence of market forces in guiding the allocation of resources. Rajan (2010) points out that protecting domestic firms against market forces so that they can develop organizational capacities may make sense during the catch-up phase of growth when a country can grow just by importing new technology and accumulate capital. As the economy matures, however, a well functioning market to sort out efficient from inefficient production arrangements becomes essential. The problem with an export-oriented strategy is that it tends to suppress the market mechanism which usually creates acute problems in the non-manufacturing sector, particularly the service sector, where there is no discipline from international competition.

Table 2 compares the experience of Japan with the recent growth experience of China. For Japan, export led growth was no longer enough to lift the economy (China is likely to face a similar problem in the near future). Going forward Japan needs to rely on vibrant domestic markets and we next review some of the problems in domestic markets that have impeded growth.

5. Growth Impediment #1: Zombie lending and depressed restructuring

One of the big problems that emerged in the 1990s was the rise of what Caballero, Hoshi, and Kashyap (2008) call zombie firms. A zombie firm can be defined as an unproductive and unprofitable firm that should exit the market place but stays in business with help from its creditors or the government. By continuing to operate and hanging onto the workers that should be reallocated to more productive firms, zombie firms impede the efficiency of the economy. Healthy firms are able to grow less quickly, and over time if the zombies' presence becomes large enough, productivity growth falls.

Zombies were spawned in the aftermath of the collapse of asset prices in the early 1990s and subsequent recession. The large loan losses during this period left many banks with very little capital. The banks, therefore, faced two options: recognize the losses, and try to raise capital and find new customers, or deny the problems and continue to roll over loans while hoping for improvement. Most banks, encouraged by the government to support existing firms, took the latter option.

Caballero et al. (2008) explain how the presence of zombies discourages healthy and productive firms from entering new markets or expanding their operations. In particular, because the stronger firms would be forced to compete with the subsidized weak firms to sell products, hire workers or borrow money, the zombies depress activity. Only the non-zombies with highest productivity and profitability are able to survive competition with zombies. As a result, the productivity of the industry (and the whole economy) suffers when there are many zombie firms.

Identifying zombies is challenging since banks have no incentive to confess that they are keeping customers on life support with subsidized credit. To come up with a quantitative

measure Caballero et al. (2008) attempt to estimate what expected credit costs should be and look for firms that are being charged less than what would be expected. Importantly, measurement is also hampered because specific lending arrangements between banks and borrowers are not disclosed. Hence, they give all firms the benefit of the doubt and assume that they are able to get funding at the most favorable possible rates; effectively they assume that every firm is as credit-worthy as the strongest companies in the economy. For example, if the highest rated firms are able to borrow at a 0.5 percent interest rate in the commercial paper market, then Caballero et al. (2008) assume that this rate would be available to all commercial paper borrowers. By making similar assumptions for each type of borrowing they construct the lowest possible amount of interest payments that a firm could reasonably be expected to pay. Zombies are defined as those firms which somehow manage to pay less than the lower bound.

Figure 6, taken from Caballero et al. (2008), shows two estimates of the prevalence of zombie firms in the Japanese economy. The top panel shows the proportion of zombies measured based on simply on the number of firms, while the bottom panel looks at zombie prevalence by comparing total assets residing in zombies to total assets in all firms. Both measures show that the zombie firms increased rapidly during the 1990s when Japan entered a recession following the collapse of the so-called "bubble economy". The proportion of zombies stayed high into the early 2000s.

Figure 7 shows the cross-industry breakdown of the zombies (based on the asset percentage definition). One striking observation is that the zombies were much more pervasive in the domestic parts of the economy: in manufacturing, which accounts for virtually all exports, the percentages are low, while in the service sectors the zombie percentages are much higher. One possible explanation is that the manufacturing sector is continuously subject to global

competition so that banks would realize that propping a firm up was potentially very expensive. In contrast most of the service sector firms face limited foreign competition. Also the average firm size is much smaller for non-manufacturing firms and these small and medium sized enterprises have historically been very active politically in lobbying politicians for favors. Regardless of whether this conjecture about the explanation for the cross-industry differences is correct, if zombies are a problem it looks like they will affect non-manufacturing industries much more than manufacturing.

The central hypothesis offered by Caballero et al. is that the zombies impede the healthy firms. To test this proposition one needs a benchmark for what the healthy firms would do absent the presence of zombies. Caballero et al. use regression analysis to construct the benchmark and look for distortions in the behavior of the healthy firms that can attributed to competing with zombies. They consider three different regression specifications which are estimated for a panel of publicly listed companies in Japan. The specifications are:

$$\text{Activity}_{ijt} = \delta_1' D_t + \delta_2' D_j + \beta \text{nonz}_{ijt} + \chi Z_{jt} + \varphi \text{nonz}_{ijt} * Z_{jt} + \varepsilon_{ijt} \quad (5)$$

$$\text{Activity}_{ijt} = \delta_3' D_{jt} + \beta \text{nonz}_{ijt} + \varphi \text{nonz}_{ijt} * Z_{jt} + w_{ijt} \quad (6)$$

$$\text{Activity}_{ijt} = \delta_3' D_{jt} + \beta \text{nonz}_{ijt} + \varphi \text{nonz}_{ijt} * Z_{jt} + \theta s_{ijt} + v_{ijt} \quad (7)$$

The proxies for economic "activity" that are to be explained are either investment in fixed assets, employment growth, or the total factor productivity growth.[4] These specifications differ depending on the implied forecast for what would happen in the absence of zombies. The simplest, baseline specification (5) regresses an activity variable on an indicator variable that allows for different values for each year and industry (D_t and D_j respectively). This amounts to proposing that knowing the year and the industry is an adequate summary for what investment,

[4] The subscripts i, j, and t denote an individual firm, an industry, and a year respectively.

employment or productivity would be. In addition, this specification (and all the others) allows for different estimates of activity for zombies and non-zombies. The non-zombie dummy variable (nonz) takes the value 1 when the firm is not considered to be a zombie in that year. Activity is also presumed to depend on the proportion of the assets in the industry held by zombies (Z). The final "interaction" term in the equation (nonz times Z) captures the possibility that non-zombie firms behave differently when their industry has many zombies than when few zombies are present.

For investment and employment growth regressions, the zombie hypothesis predicts the interaction coefficient to be negative. As the number of zombies increases in the industry, healthy firms cut back their investment and employment growth. For TFP growth, the zombie hypothesis makes the opposite prediction, that the coefficient be positive. To successfully compete with zombie firms, non-zombies are required to have extra high productivity. Thus, in each case the regressions can be read as asking the question what happens to activity for non-zombies when it has to confront additional zombies over and above what we already would expect based on average activity for the whole economy in a given year and for the average performance in the industry.

Notice that most standard theories of industry dynamics would make opposite predictions to the zombie hypothesis. For example, if a firm's competitors are weak, standard theories would suggest that this would be a good time to hire more workers or to invest in more equipment to steal market share. Likewise, a firm with poor productivity growth would be expected to survive more often when its competitors are weak.

Specifications (6) and (7) are estimated to allow for more complicated counter-factual scenarios. Specification (6) includes a dummy variable for each industry-year combination

instead of the year-specific dummies and the industry-specific dummies. This allows us to account for any factor that influenced all the firms in an industry in a specific year. Although this makes it impossible for us to estimate the impact of the increase in the zombie index (which is measured at industry level) on individual firms in general, it is still possible to estimate its differential impact on the non-zombies.

Specification (7) introduces the firm specific sales growth in addition to the year-industry combination specific dummies. This is an attempt to control for differences in profitability at firm level. In other words, besides holding fixed the conditions for all firms in a given industry in a given year, this equation also accounts for the average activity of a firm with a given level of sales growth.

Table 3 again from Caballero et al. (2008), reports the regression results. The first three columns show the coefficient estimates and their standard errors (in parentheses) for specification (5). The middle three columns are for specification (6), and the last three columns are for (7). In all of the specifications, the sign of the interaction coefficient are as predicted by the zombie hypothesis and in most cases the coefficient is statistically significantly different from zero. Thus, the regressions suggest that an increase of zombie firms hurt the non-zombies in the same industry and reduces the investment and the employment growth of those otherwise healthy firms. More zombie firms also increase the productivity gap between the non-zombies and the zombies, because the non-zombies have to be extra profitable in order to survive.

We next explore the cross-industry impact of the zombies. The productivity growth of an industry where there are many zombies is expected to be low not only because there are many unproductive zombies, but also because the zombies prevent the entry of new productive firms. Figure 8, again taken from Caballero et al. (2008) plots the total factor productivity growth from

1990 to 2000 against the change in the (asset weighted) zombie index from the 1980s to the 1990s in the industry. As expected the industries that experienced large increases in zombies had low productivity growth.

Taking this one step further, Figure 9 compares the total factor productivity for the manufacturing sector to that for the parts of non-manufacturing sector which are considered to have suffered from the zombie problem. For this calculation non-manufacturing are those operating in construction, retail & wholesale trade, real estate, agriculture, finance & insurance, and hotels & restaurants. The shaded areas of the graph show recessions according to the business cycle dating by the Cabinet Office of the Japanese government.

The figure shows that both manufacturing and non-manufacturing industries increased their total factor productivity during the 1980s. During this period manufacturing out-performed non-manufacturing, but their patterns were relatively similar. In the 1990s, divergence occurs. The manufacturing industry's productivity suffered during the recessions but grew during the recoveries. In contrast, the productivity for non-manufacturing has been flat since the early 1990s.

6. Growth Impediment #2: Government Regulatory Restrictions

Another growth impediment is the heavy government regulation in some sectors. Protection of industries often stifles competition and has a similar effect to permitting zombies. For example, entry restrictions raise profits of incumbent firms but reduce overall productivity growth by discouraging the entry of new firms. There are also cases where government interference can interact with the zombie problem. For example, Tett (2003) recounts discussions held between the government and the new owners of the Shinsei bank (the successor

to Long-Term Credit Bank, LTCB, which had failed and was auctioned by the government) over lending policies. When LTCB was up for sale one of the conditions imposed on bidders was a commitment to continue to support small borrowers. Tett reports that the new bank owners believed that many of these borrowers were not credit-worthy but nonetheless were pressured by the government to continue lending.

While systematically documenting any effects of informal pressure such as that described by Tett is difficult, there are a variety of testable implications of the conjecture that regulation stifled growth. Most directly, if government regulation is an important impediment, we should find that more heavily regulated industries tend to have lower productivity growth. We should also expect to find that industries with more restrictions allow inefficient incumbents to operate longer than otherwise. Moreover deregulation should correct some of these problems, so deregulated industries should show productivity growth.

The existing literature has some suggestive evidence for these predictions about the distorting effects of regulation. Nakanishi and Inui (2008) use the data from the JIP (Japan Industrial Productivity) database to examine the relation between regulation and total factor productivity at the industry level. The index for regulation in the JIP database is constructed from *Kyoninka-tō Genkō Hyō (Present State of Administrative Clearance)* (published by the Ministry of Internal Affairs and Communication, Administrative Evaluation Bureau), which provides 0-1 indicators if a very narrowly defined industry is subject to some administrative clearance. This assessment is given for 519 sub-industries, and then the data are aggregated to 108 industries by calculating the weighted average (based on the value added) of the underlying sub-industries. (Fukao et al. 2008, pp.109-110). For the sample period from 1970 to 2002, Nakanishi and Inui (2008) find more heavily regulated industries have lower total factor

productivity growth. Their statistical estimates imply that TFP growth increases by 1.1% per year when an industry switches from having each sub-industry regulated industry to having none regulated.

Cabinet Office (2006) uses another index for regulation that is based on not only the existence of regulation but also how "strong" the regulation is (both in content and in the legal basis of the restrictions). Their index builds on basic information in *Kyoninka-tō Genkō Hyō (Present State of Administrative Clearance)*, but groups regulations into 4 categories according to the content of the regulation. Category A regulations require explicit approval or licenses to engage in certain business areas or offer new products. Category B regulations compel the firms to prove periodically that they satisfy certain standards for products and business. Category C regulations ask firms to report certain business information to the regulatory agencies. Category D regulations are other minor regulations (e.g., periodically required training programs). In addition to these four categories, Cabinet Office (2006) also counts the number of regulatory reforms that opened up new business areas or new products each year. When such deregulation occurred, the new business area or product was considered to have been banned before the deregulation although the ban is not listed in *Kyoninka-tō Genkō Hyō*. Such implicit ban is coded as a regulation in Category S.

The regulations are also categorized according to the legal bases. If a deregulation is derived from a formal Act, it is classified as Level 4. If it is defined by a government ordinance, it is Level 3. If it is by a ministerial ordinance, it gets Level 2. If it is just a notice, it is coded as Level 1.

The weighted sum of the regulations is calculated, using highest weight for Category S regulation and then Category A regulation, and so on. The index is normalized to 1.0 for 1995 in

each industry, so one cannot compare the extent of regulation across industries. Once again they correlate productivity from the JIP database with the regulation proxy. The Cabinet Office finds that industrial TFP growth from 1995 to 2002 is negatively related with the regulation index in 2002. Thus, the result suggests that deregulated industries (lower value for the regulation index in 2002) tend to have high productivity growth. The result is statistically significant for non-manufacturing industries. For manufacturing industries, the result is not statistically significant, but the sign of the coefficient suggests the direction of the effect is the same.

We extend the Cabinet Office analysis by using more recent estimates of the industrial TFP growth rates contained in *JIP Database 2009* (http://www.rieti.go.jp/en/database/JIP2009/index.html). This allows us to correlate the TFP growth from 1995 to 2005 to the regulation index in 2005. We also consider an alternative regulation index that only considers Category A regulations to be relevant.[5]

Figure 10 shows the time series of the average regulation index for manufacturing and non-manufacturing. The coverage of "non-manufacturing" here is the same as that for Figure 9 (construction, retail & wholesale trade, real estate, agriculture, finance & insurance, and hotels & restaurants). The regulation index for each industry is weighted by the value added of the industry and averaged. Note that the index is normalized to be 1 in 1995, so unfortunately we cannot compare the levels of the index across the sectors – although we strongly suspect that manufacturing was already much more deregulated than non-manufacturing in 1995. We can compare the speed and the extent of the deregulation from 1995 to 2005.

The regulation index for the manufacturing sector fell to about 0.4 by 2005, while the one for non-manufacturing stood at around 0.6 in 2005. Thus, over the decade, there was more

[5] We thank Tomohiko Inui, Hidehiro Iwaki, and Fumihira Nishizaki at the Cabinet Office for sharing their data on regulations.

deregulation (relative to the initial level in 1995) in the manufacturing sector. The more striking difference is found in the time series pattern of deregulation. While the deregulation for the manufacturing sector proceeded steadily, the deregulation for the non-manufacturing sector moved quickly during the 1990s (more quickly than in the manufacturing sector) but then stalled. In the 2000s, the average regulation index for the non-manufacturing sector actually increased noticeably. Overall, the graph suggests that the deregulation efforts (to the extent they are captured by this index) slowed down in the 2000s for the non-manufacturing sector.

Figure 11 plots the TFP growth rate from 1995 to 2005 against the value of the regulation index in 2005 for each sector. The TFP growth does not seem to be correlated with the regulation index for either sector. The slopes of the simple regression lines are not significantly different from zero.

Figure 12 and 13 repeats the same analysis for an alternative regulation index that counts only the Category A regulations. Figure 12 again shows that the deregulation for non-manufacturing industries has been much slower than for manufacturing industries. In fact, the regulation index for non-manufacturing trended upward from 1995 to 2005. Compared with the original regulation index in Cabinet Office (2006), the alternative index excludes (1) new business areas or products opened up during 1995-2005 and (2) deregulation of less important restrictions in categories B through D. Since allowing new business areas or new products were often associated with new regulations concerning those areas or the products, it is possible for the number of Category A regulations to increase even when the firms in the industry gain more discretion. The gap between manufacturing and non-manufacturing, however, is striking. Even with the potential upward bias, the index shows steady deregulation in the manufacturing sector.

In the non-manufacturing sector as aggregate, this index does not show any evidence of deregulation.

The Figure 13a for manufacturing is very similar to Figure 11a. We do not find a correlation between deregulation and productivity growth. For non-manufacturing, however, relatively more deregulated industries experienced higher productivity growth – although this correlation is not statistically significant.

Overall the results here are broadly consistent with the results of Cabinet Office (2006). But, the updated figures imply that deregulation in non-manufacturing seems to have stalled during the 2000s. When we focus on Category A regulations, we do not see any trend of deregulation for non-manufacturing. The lack of deregulation in the non-manufacturing seems like another potential cause of stagnation.

7. Growth Impediment #3: Macroeconomic Policy Mistakes

There are three broad areas of economy-wide economic policy where Japan made major mistakes. The first was with respect to financial supervisions and regulation. The zombie problem was at its core caused by lax (and/or) misguided oversight of the banking system. The zombies only continued to exist because impaired banks were allowed to continue extending credit to them. Normally, healthy banks have no incentive to roll over loans to deadbeat borrowers. But the Japanese government was not interested in being forthcoming about the size of its banking problems. Hoshi and Kashyap (1999) pointed out that the major Japanese banks were substantially under-capitalized, yet the government neither chose to force the banks to raise capital nor did they allow stronger foreign banks to buy the bad banks. Instead there were many

examples such as the ones documented by Tett (2003) where the government insisted that the banks keep lending to zombies.

Eventually, as we discuss below, the program designed by Minister of Financial Affairs Heizo Takenaka succeeded in forcing major banks to get rid of their non-performing loans. Around that same time, the activities of the Industrial Revitalization Corporation of Japan and other turnaround funds contributed to the restructuring of many firms. There is no good reason that these steps could not have been taken sooner, which would have promoted an earlier recovery.

Had the bank support to the zombies been withdrawn sooner, some of the zombies could have been restructured and regained profitability (provided that there was financial support to facilitate the reorganization.) For these firms it would have been wise to encourage restructuring rather than liquidation – but even in these cases, it would have been likely that many workers would have been released. For other zombies, closure would have been the best outcome.

Given that the fallout from tackling the zombie problem would have involved massive labor turnover, it would have been advisable to have a strong social safety net in place. This is especially important for Japan where the lifetime employment was the norm and the market for mid-career workers has been underdeveloped. But Japan has historically had a weak social safety net. For example, Figure 14 shows data from the Organization for Economic Cooperation and Development on public expenditure on active labor market policies in 2001. Japan had the fourth lowest spending of the 23 OECD countries for which data were available. The social safety net was not significantly improved even after Takenaka's reform. This lack of a strong safety net may have contributed to the political backlash against several major economic reforms that started under the Koizumi government.

Fiscal policy more broadly was poorly used during the stagnation period. Between 1992 and 2007 (before the global financial crisis had taken hold), net government debt as a share of GDP rose from under 20% to about 80%; since 2007 the debt skyrocketed to over 120 percent of GDP. So over the whole period of slow growth, the country was consistently running substantial budget deficits. As Figure 15 shows, Japan's budget position over the last 20 years has moved from amongst the best of the developed countries to the worst.

Doi, Hoshi and Okimoto (2010) (DHO) examine the time series pattern of deficits and government debt (including both central government and local governments as well as the social security funds) to assess the long-term implications of Japan's fiscal trajectory. They start by asking how much tax revenue will be needed to avoid defaulting given the likely path of expenditures and transfers and the existing level of debt. Broda and Weinstein (2005), looking at data through 2003, had asked a similar question and reached a relatively benign answer: taxes would need to be increased but depending on the assumed path of expenditures and transfers, only to levels that already were observed in the U.S. or Europe.

DHO find that the level of required taxes now appears to be much higher. In the last several years there have been three important changes. First, there are updated data on demographics that allow for more accurate projected aging costs. Second, there are revised, and more realistic, projections about other future spending obligations of the government. Finally, and most importantly, the initial level of debt used for the calculation is higher reflecting the sharp increase in recent years. Once these revisions are taken into account, the necessary level of taxes rises sharply, so that in the baseline scenario government revenue would need to jump by almost 10 percent of GDP immediately to stabilize the debt to GDP ratio at the (already high) current level by 2100.

DHO then examines how the primary budget balance or the tax rate responded to changes in the debt to GDP ratio in the past 30 years. If the government tends to tighten fiscal policy when the debt to GDP ratio increases, this kind of policy can limit the debt problem. Put differently, the government does not have to be in the deficit reducing mode all the time, if the efforts made to reduce debt are sufficiently aggressive at certain times. If the deficit reducing mode is entered frequently enough, the fiscal policy can be sustainable. DHO conduct several different tests, but they yield the conclusion that the tax and spending policies observed in the last 30 years are unsustainable. Japan would need to substantially and rapidly raise revenues to avoid defaulting, but such a policy change is highly unlikely given the observed policies from the last 30 years. It would take an unprecedented commitment by the government to stabilize the debt.

Coincident with the increased spending by the government has been a reduction in investment by the private sector. Figure 16 shows the shares of GDP for the private sector gross fixed capital formation (the broadest measure of private investment in the economy) and public spending. The investment share has trended down steadily since the early 1990s. Importantly, this is not just due to the bulge in investment share that accompanied the boom during the so-called "bubble years". By 1993, the share of the private sector investment was back to the level from the early 1980s, at 20 percent. Since that time the share has dropped further to its current level of about 16 percent. As our growth accounting calculations indicate this does not bode well for growth.

In addition, there is a striking negative correlation between the government's share of GDP and the share of private investment. During the "lost decade", 1993 to 2002, the correlation is -0.8, and over the whole sample it is -0.7. Obviously, we cannot conclude that the

government spending increases *caused* investment declines based on this simple picture alone. There is no doubt that some of the spending increases were initiated because of weak state of private spending, including investment. But over the period of 20 years the pure reverse causality explanation for the correlation becomes less plausible.

Probably the clearest way to see the problems with spending is to look closely at its timing and composition. For example, in 1996, the Hashimoto government believed that the economy had recovered from the post bubble recession and it was time for fiscal consolidation to contain the growth of government debt. The fiscal policy was tightened, and the economy returned to a recession. Contemporaneous commentary on this decision was generally favorable, with many observers lauding the move. For instance, the International Monetary Fund Executive Board in July 1997 wrote the "Directors endorsed the fiscal correction measures enacted in the 1997 budget as a step in the right direction, given the large budget deficit and to prevent a further increase in the already high level of public indebtedness. Looking ahead, Directors welcomed the government's announcement of plans for medium-term fiscal consolidation and proposals for spending restraint in next year's budget."[6] While in hindsight many criticize this decision, we think it was defensible.

On the other hand, the resources marshaled to clean up the banking problems were woefully inadequate. As Hoshi and Kashyap (2009) describe, by the early 1990s Japan's specialized housing lenders, the *jusen*, were widely recognized to be bankrupt. But Ministry of Finance and many politicians insisted that they could be rationalized without taxpayer support. When the legislation to clean them up finally passed in 1996, the public was outraged and the government was nearly toppled – even though the total amount of public funds was tiny (¥0.68 trillion). Having witnessed the public reaction to the *jusen* rescue, neither the elected officials

[6] See IMF press information notice 97/19, http://www.imf.org/external/np/sec/pn/1997/pn9719.htm .

nor the government bureaucrats were anxious to admit the scope of the banking problems for the major banks and to allocate the necessary funds to reorganize them. The dithering and dissembling about the true size banking problems were a critical factor in exacerbating the zombie problems.

In addition, the delay meant that government spending overall was high from 1999 to 2002, which likely made it harder to get a handle on the deficits. The Koizumi fiscal consolidation stands out as the only period of sustained reductions in spending over the last twenty years. With the onset of the global recession, budget deficit has reappeared and spending is on the rise again.

Perhaps more importantly, the deficit spending that did occur was poorly chosen. Most of the spending went into public works that ceased to be very productive by the 1990s. Doi and Ihori (2009, Chapter 3) estimate the marginal productivity of public capital in five categories (roads, harbors, and airports; railways; postal services, telephone and telegraph; agriculture-related pubic capital and fishing ports; and flood control and forest conservation). They find the marginal productivities in all these categories of public investment declined after the end of the rapid economic growth period. The marginal productivity had become especially low for the three out of five groups (roads, harbors, and airports; agriculture-related pubic capital and fishing ports; and flood control and forest conservation) by the early 1990s.

Figure 17 shows the percentage of public spending devoted to each category from 1992 to 2003, along with the Doi-Ihori estimate of investment efficiency in 1991. More resources were poured into the areas where productivity was already low. Total spending on the three categories of infrastructure totaled 213 trillion yen between 1992 and 2003 and amounted to 89% of the

total public investment during this period. [7] Given the unsustainable fiscal position that Japan finds itself in now, this kind of nearly useless spending will have to stop.

Monetary policy is the third major leg of government policy that has been mismanaged for much of the 1990s and 2000s. The path of the interest rate target is shown in Figure 18. The figure shows that starting in July 1991 the Bank of Japan began cutting its interest rate target, lowering it by nearly 3 percent between July 1991 and July 1992 (recall that the peak for real GDP growth came in the 2nd quarter of 1990). By mid 1995 Japan had reduced its target to 50 basis points.

Starting with an influential paper prepared by the Federal Reserve Staff in 2002, Ahearne et al., it has become fashionable to argue at the Bank of Japan was slow to respond to economic developments. Indeed, speeches by senior Federal Reserve officials routinely assert that the critical lesson from Japan's experience with prolonged deflation is that the BOJ was too slow in trying to stop deflation; see for example Kohn (2006).

As we explain just below, Japanese monetary policymakers committed several errors, but we believe that the criticism of the early 1990s reflects serious hindsight bias. There are two ways to see why monetary policy in the early 1990s in Japan does not look irresponsibly tight. First, as Ahearne et al. (2002) document quite convincingly, neither the Federal Reserve staff forecasts, the IMF staff forecasts, nor the consensus private sector forecasts anticipated the deflation that ultimately appeared in Japan. Indeed, we are unaware of any credible analysts that in real time were criticizing the Bank of Japan for being too slow to cut interest rates.

Second, financial market prices also reflected the belief that deflation was unlikely. While short-term interest rates were below 0.5 percent by the second half of 1995, longer term safe interest rates such as the 10 year rate remained above two percent. So given that deflation

[7] We thank Takero Doi for providing us with the data.

was not forecasted, the implied real interest rates by mid 1995 were already negative. By the latter part of the decade, it may be the case that real interest rates in Japan were substantially higher than would be desired, but does not appear to be the case through 1995.

Taken over the subsequent 15 years, however, the policy does seem inappropriate. One indication is that despite the BOJ having an unambiguous mandate of delivering price stability and having announced a preferred target level of around one percent inflation, the bank has failed to hit that target. As of 2010 nominal GDP was lower than nominal GDP in 1994. Over a time period this long, there is no good reason why a central bank should consistently miss its target in one direction. We agree with the criticisms by Ito and Mishkin (2006) who describe the weak efforts by the BOJ to end deflation and the premature tightening of monetary policy on several occasions. These mistakes were more important than the interest rate decisions made between 1992 and 1995.

The persistently tight monetary policy has had two modestly bad effects on the economy. First, by having interest rates near zero for so long, the job of detecting zombies was made more difficult. If inflation had been consistently positive and interest rates consistently higher the firms which could not repay their loans would have been easier to spot. But virtually any firm can make payments of a few basis points.

Second, at least for the last half of the 1990s when deflation was expected, the policy led to higher real interest rates than circumstances warranted. By 1998 there was plenty of evidence that the economy was in dire condition and yet the Bank of Japan did not try to drive real interest rates negative. One of Ben Bernanke's most memorable speeches was the scolding he delivered to the Bank of Japan in 2003 listing the many ways in which the Bank of Japan could have pursued a looser policy.

We share the conventional view that over long periods monetary policy does not have real effects. So we are not asserting that a purely monetary fix could have made a big difference in preventing the stagnation of the economy. Rather, it seems that there was no good reason to pursue the policy that was chosen and perhaps a looser policy would have helped marginally.

8. Evaluating Koizumi Reform

In considering the impacts of government regulation on the (lack of) growth in Japan, we pay particular attention to the experience in the early 2000s. From April 2001 to September 2006, under the leadership of Prime Minister Junichiro Koizumi, Japan embarked on several economic reforms, which included deregulation attempts in several industries. As we saw in Figure 4, this coincides with the period when the decline in the Japan's long-term growth rate seems to have halted.

In this section, we evaluate the role of several economic reforms attempted by the Koizumi government. As the key components of the Koizumi reform, we consider the following six high profile reforms:

(1). Financial system reform

(2). Postal Privatization

(3). Labor reform

(4). Promotion of FTAs and agricultural reform

(5). Deregulation through special zones

(6). Local public finance reform ("Trinity" reform)

For each of these six reform areas, we ask several questions. First, how would the reform restore the growth of Japan? Second, what was the goal of the reform? Was it stated clearly

with some clear targets? Third, did the reform achieve the stated goal? Fourth, was the reform completed? If not, why was the reform aborted? Fifth, did the reform have any unintended consequences?

Table 4 summarizes our answers to these questions. Here we go through our evaluation of each reform briefly. More detailed discussion of each of the six reforms is found in the Appendix.

The financial system reform carried out by the Minister Heizo Takenaka started in September of 2002. The Takenaka plan targeted the reduction of non-performing loans at major banks by half in two years. The Takenaka plan consisted of six parts, which forced the banks to disclose the amount of non-performing loans and deal with those. The plan included the option of using business improvement orders for non-compliance. The plan successfully achieved the target. The major banks reduced the amount of non-performing loans by more than a half in two years. Although the reform did not solve the problem of Japanese banks to find viable business models for the future, it at least restored health of the financial system. By forcing the banks to get rid of non-performing loans and encouraging restructuring of troubled firms through the Industrial Revitalization Corporation of Japan (IRCJ), the reform also helped the recovery of the real economy.

The Koizumi government also initiated the privatization of various special public corporations and agencies, including postal services. Although these were called privatization, the reform just restructured the organizations into government-owned joint stock companies and specified a schedule for divesture of government shares in the future. For example, the postal privatization planned the divesture of the government shares in the postal savings and the postal life insurance to start after the listing of the new entities on the stock market in 2010 and to be

complete within five years. This meant that true privatization had not started when Mr. Koizumi left the office. When the Democratic Party of Japan (DPJ) won the power in late 2009, the divesture plan was suspended and the privatization process stopped.

The Koizumi government embarked on the reform of the labor market to make it more flexible. The most often discussed component is the revision of the Dispatched Workers Act in 2003. Dispatched workers are those hired by one firm (a work agency) and temporarily placed at another firm. The reform allowed more variety in the arrangements for worker dispatching than allowed in the previous version of the law and most notably allowed worker dispatch to production jobs in manufacturing. This revision is often criticized as the one that substantially expanded the group of workers with unstable and low paid employment. The data reveals that there was a surge in the use of dispatching after the 2003 reform. But, even for workers dispatched in manufacturing, there was a practice of using subcontracting to shell companies to hire *de facto* temporary workers before the 2003 reform. The reform was rather an attempt to formally regulate the employment contracts under this "fake subcontracting" arrangement. After the Koizumi government, there have been attempts to re-regulate worker dispatching.

The Koizumi government tried to change the prevailing agricultural policy as well. The low productivity of agriculture often hindered government efforts to expand the network of the free trade areas. The Koizumi government tried to improve the productivity of Japanese agriculture to cope with globalization of the economy. The traditional support of agriculture used subsidies to all farmers including small and old farms. This policy was replaced by support for larger scale farming. It is not clear if the productivity of the agricultural sector improved nor if the policy enhanced large scale farming at all, but it did certainly weaken the farmers' political

support for the LDP. After Mr. Koizumi stepped down, the agricultural policy switched back to trying to protect small farmers.

One method that the Koizumi government used to promote deregulation was creation of special zones. The government allowed local governments to set up special local economic zones where some aspects of regulation are relaxed. They are designed to set up example cases to show the benefits of deregulation. Another objective was to promote local economies through local initiatives. Many special zones were established but only few of them had sizable impact. Worse, many local promotion zones ended up diverting business from other areas. After the Koizumi government, creation of special zones slowed down.

Local governments in Japan traditionally relied on the central government for financial support through the local allocation tax grants and the state subsidies. Typically less than half of the expenditures by local governments are financed by the local taxes. To reduce the local governments' dependence on the central government, which faced the mounting problem of government debt, the government implemented the so called "Trinity Reform". The reform called for achieving the financial autonomy of local governments through reduction of local allocation tax grants, reduction of state subsidies, and transfer of tax resources to local governments. The reform succeeded in reducing the grants and subsidies substantially, and shifted some income tax revenues from the central government to local governments. In net, the reform did not reduce the deficit at the central government very much. For many local governments, however, the reductions in the grants and subsidies far exceeded the increase in tax revenues, because the increase in local tax revenues was concentrated in a few rich localities. Many local governments also saw cuts in the amount of Emergency Fiscal Measure Bonds that that they were allowed to issue. These bonds were supposed to be repaid using future local

allocation tax grants, so these cuts added fiscal stress at many local governments. After Mr. Koizumi stepped down, local governments lobbied for transferring more central government revenues to the local governments, essentially restoring the flow of subsidies and transfers.

Reviewing the reform experience under the Koizumi government, we make several observations. First, only the financial system reform was fully implemented and successful. Second, many reform attempts were not specifically targeted to raise growth. Third, some reforms, such as privatization, specified deadlines too far in the future and, hence, were susceptible to reversal. Fourth, measuring progress was often difficult since there were often no numeric targets for the reforms. Finally, in many cases, the reforms are still incomplete today not because the reforms are infeasible but because the policy was reversed by the governments that followed Koizumi.

The review gives us a set of clear lessons for further deregulation to be successful. It is important to focus on sectors (or distortions) that are important for growth and target those. This strategy improves the chances that the gains will be meaningful. It also makes it easier to explain the importance of the reform to the public and measure the progress towards the goal. It is also important to have clear targets (preferably numerical) that can be achieved in a few years, not in a few decades.

9. Conclusions

Our report shows that it is now very clear why Japan stopped growing. Some of the slowdown was natural. Japan moved from being a relatively poor economy after World War II to one of the richest in the world. The easy catch up phase of growth could not go on indefinitely and invariably brought a reduction in growth.

The transition to growing as a mature economy requires all countries to change and Japan encountered two specific challenges in making this transition. First, the structure of its population was shifting. Instead of having a young, growing work force, it had to confront on older, declining work force. The aging lowered the growth potential.

Second, Japan's economy had been organized to produce goods for export, with production for the domestic market being an after-thought. Productivity growth in non-manufacturing lagged that in the manufacturing sector. A more balanced and richer economy requires a well functioning non-manufacturing sector.

Once asset prices collapsed in the early 1990s, the weaknesses in the non-manufacturing sector became more apparent. Japan compounded the losses from the asset price drop with three significant policy errors. First, the government delayed dealing with the losses in the banking system that accompanied the asset price drop. Weak banks operated for too long by misallocating credit to obscure their problems. By rolling over loans to zombie firms, the banks distorted competition, keeping the zombies in business and reducing the rewards to strong firms from expanding their presence. Over time this reduced productivity growth. These problems were most pronounced in the non-manufacturing sector where the trouble could be more easily disguised. Only during the Koizumi administration was real progress made in confronting the banking problems.

Regulation, or more precisely the lack of deregulation, exacerbated the zombie problems. In the non-manufacturing sector, the industries that had the most deregulation grew fastest. On average starting in the late 1990s regulatory barriers to new entrants were actually increased.

Finally, monetary and fiscal policy performed poorly. The Bank of Japan consistently undershot its inflation objective. The government pursued massive fiscal stimulus during the

1990s and 2000s, so much so that Japan went from having the best debt position amongst advanced economies to the worst. Japan's current mix of spending and taxing cannot be sustained without reneging on the future promised transfers (through the national pension system or the national healthcare system), producing very high inflation (that would reduce the real value of debt), or defaulting outright on its debt.

Worse still, much of the spending that took place was misguided. Most of the public work projects undertaken were directed in areas that had long ago ceased to be productive. Hence, the payoff from the spending binge will not be high.

Japan now finds itself growing at about the rate found in Germany and France and substantially below the trends in Canada, the U.S. and the U.K. If Japan wants to raise its growth rate, much will have to change. It is encouraging to note that all of these countries experienced growth slowdowns in the past, from which they have recovered. And likewise, the past failures in Japan point to what needs to be done to reverse course.

First, and foremost, the priority should be on policies that plausibly raise productivity growth. Policies that remove regulation to protect inefficient incumbents in many areas of the economy are an appropriate place to start. To the extent this will involve more labor reallocation, it would be wise to set aside money for protecting displaced workers' incomes and training them to be redeployed. That kind of spending will be far more productive than continued public works projects of the type undertaken throughout most of the 1990s and 2000s. Reducing the size of the government's claim on the economy will leave more room for private investment and lessen the need to raise taxes; although tax increases are inevitable, and they should be designed to minimize distortions.

Table 5 presents a summary of the "New Growth Strategy" of current government.[8] Given the vast number of proposed projects, a full assessment is beyond the scope of this report. But, using the framework we have developed, it is possible to make four broad points about the current plan.

First, many of the strategies represent old fashioned industrial policies, whereby some industries or activities are given subsidies. This policy had mixed success during Japan's catch up period, but there is no evidence that it works well for mature economies (see Beason and Weinstein (1996) and Pinkovskiy (2009)). These policies are susceptible to lobbying so that funds are allocated for political rather than economic reasons and so these findings are not surprising. Moreover, the goal of an industrial policy is often to provide temporary protection to an industry so that it will become competitive without government help. If the industry fails to become competitive, however, it is hard for the government to pull the support and the protection can turn permanent, further dulling the incentives of the private sector to be competitive.

The New Growth Strategy identifies some seemingly promising areas such as "green" industries and health care/long-term care industries. Even for these areas, however, one still needs to ask why those areas are not developing already without government help. What are the externalities that the government tries to solve? There may be government regulation and other structural reason why the private sector is not eager to invest in these areas. In that case, removing the regulatory barriers will be more effective than giving subsidies or tax breaks.

A second observation is that many of the strategies are export-oriented (e.g., promoting medical tourism into Japan, exporting infrastructure projects to the rest of Asia, strengthening

[8] This is based on two announcements by the Cabinet: "New Growth Strategy – Strong Economy, Robust Public Finances, & Strong Social Security System" (June 18, 2010) (http://www.npu.go.jp/policy/policy04/pdf/20100618_shinseityou_gaiyou_eigo.pdf) and "On the New Growth Strategy" (June 18, 2010) (http://www.kantei.go.jp/foreign/kan/topics/sinseichou01_e.pdf).

intellectual property right (of Japanese firms), etc.). Continuing to rely on external demand rather than developing domestic markets has been a perpetual problem for Japan for at least twenty years. Given the limits on what Japan can afford to spend on, this seems like a counterproductive way to use public money.

Third, the strategy embraces the idea of special zones similar to the ones started by Koizumi, but with an emphasis is on tourism where the effectiveness of the zones were questionable. The upside on these policies is low.

Finally, there are few examples of policies that aim to remove regulations that impede growth. For example, increasing acceptance of high-skilled foreign workers would increase the amount of quality adjusted labor and help growth. Promoting free trade areas with more countries will improve competitive pressure on the domestic industries and force them to grow. Increasing imports will also make consumers better off by giving them more choices. Creating a national ID system would make it possible to improve the efficiency of the tax collection and the social security system. Focusing on more reforms like this would be great improvement relative to past policies.

Japan needs to change direction if it wants to grow. The path that will work is well understood. The main question is whether the political courage to shift to the policies that could work exists and will be utilized.

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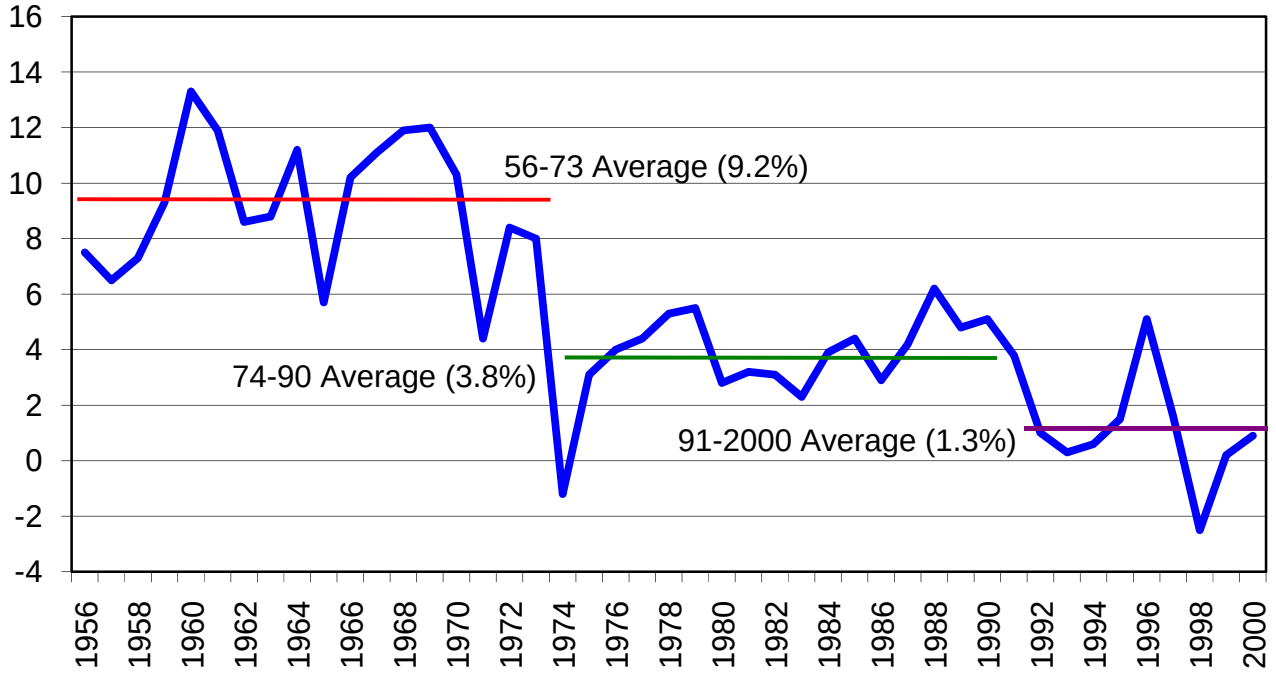
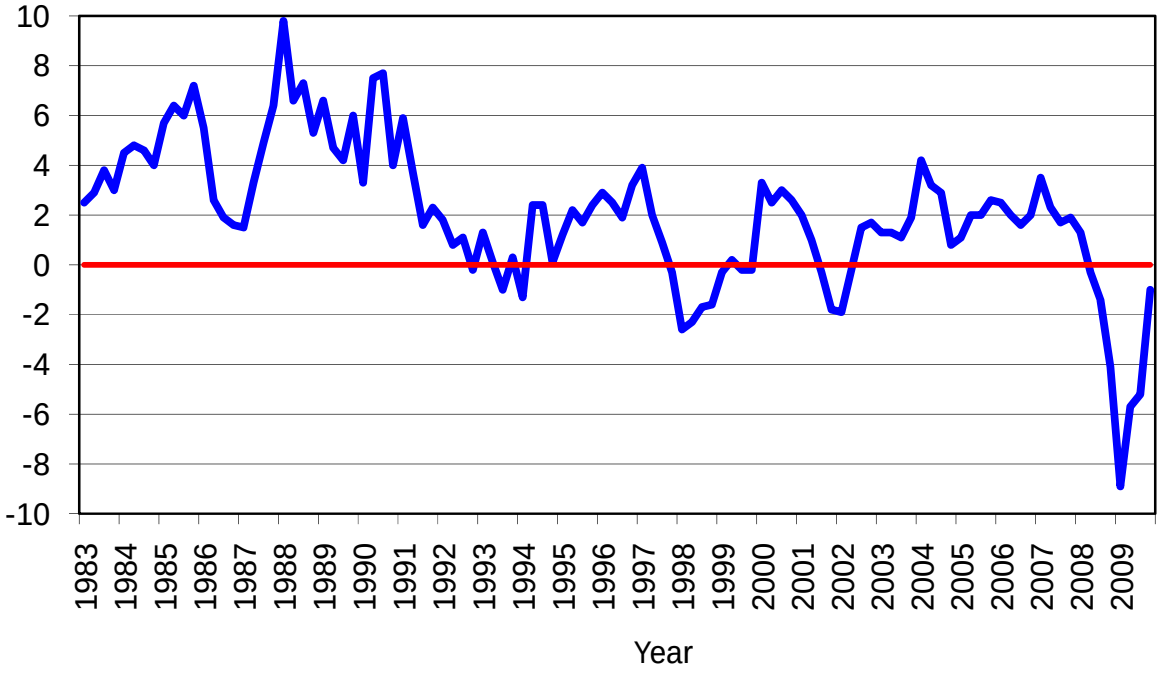
Figures

Figure 1: Japan's GDP Growth Rate: 1956-2000



Source: Japanese Cabinet Office, 1968 System of National Accounts

Figure 2: Japan's Recent GDP Growth (% from a year ago)



Source: http://www.esri.cao.go.jp/en/sna

Figure 3: GDP per capita in the G7 Countries
(per capita PPP expressed in year 2000 USD)

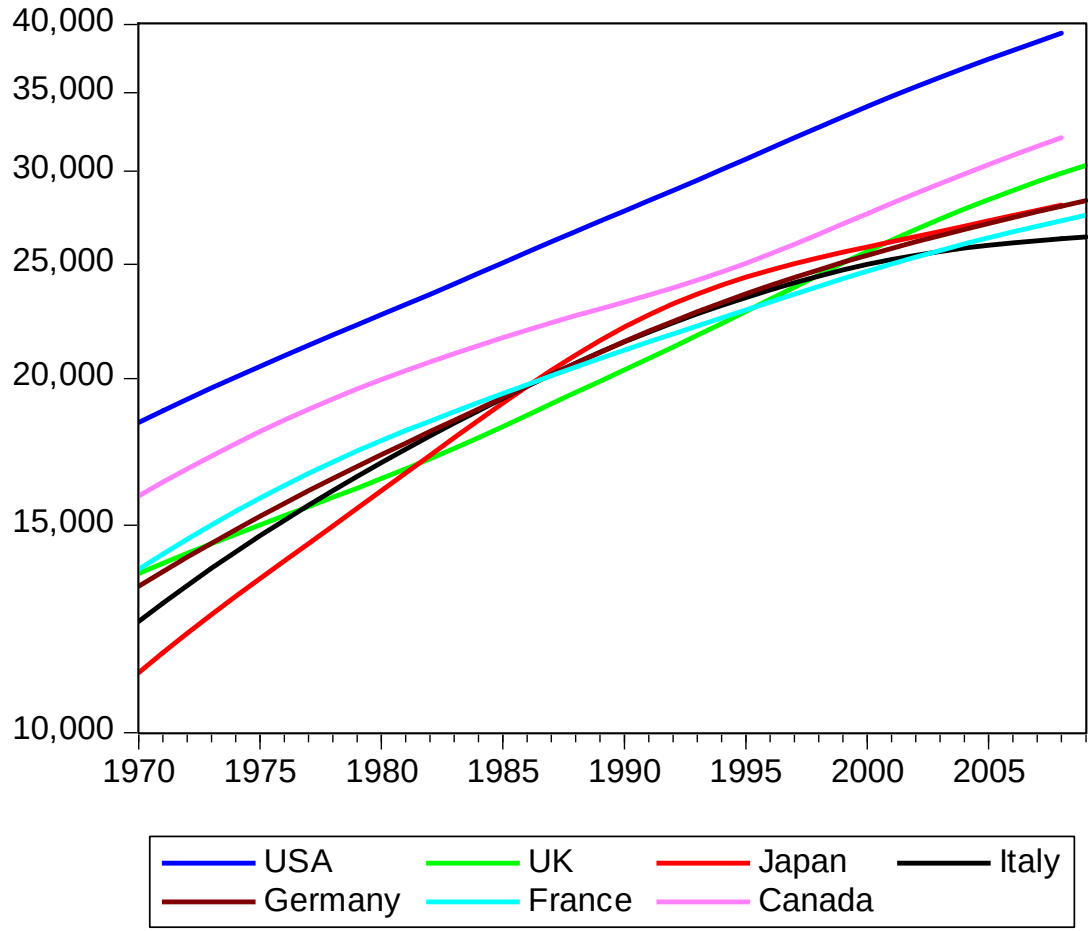


Figure 4: Trend Growth In the G7 Countries: 1971-2009
(Measured for per capita PPP GDP expressed in year 2000 USD)

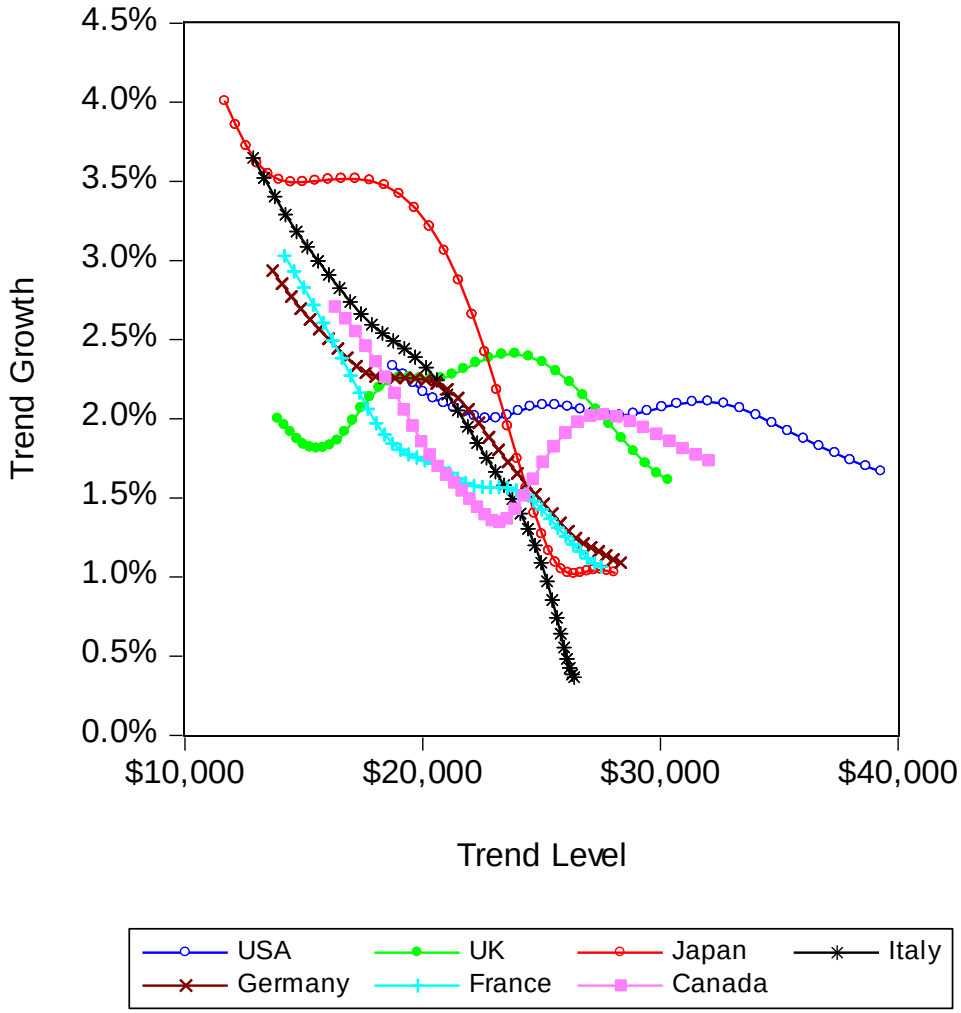


Figure 5: The Proportion of the Elderly in Various Countries (65 years old and above) (%)

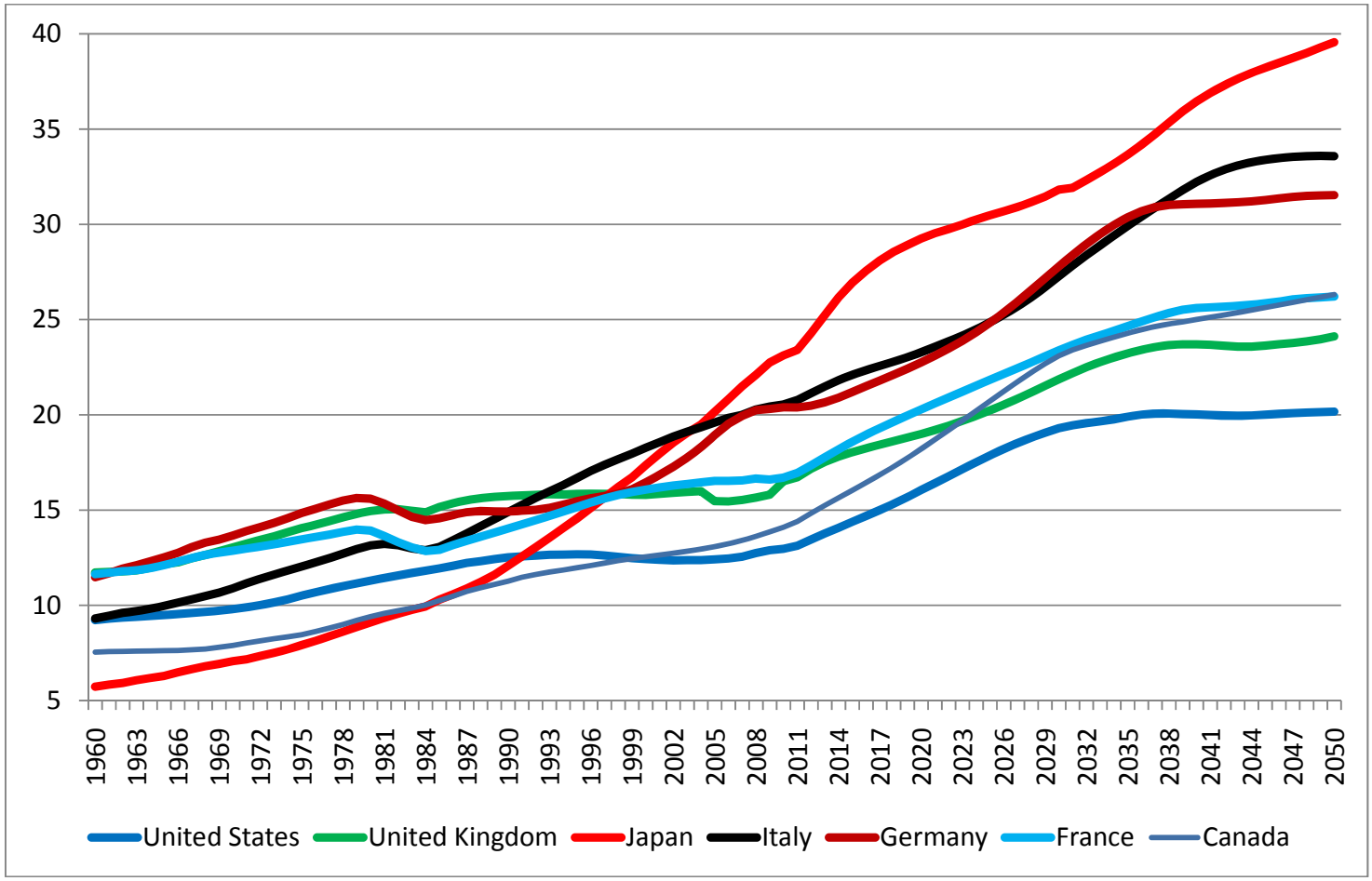
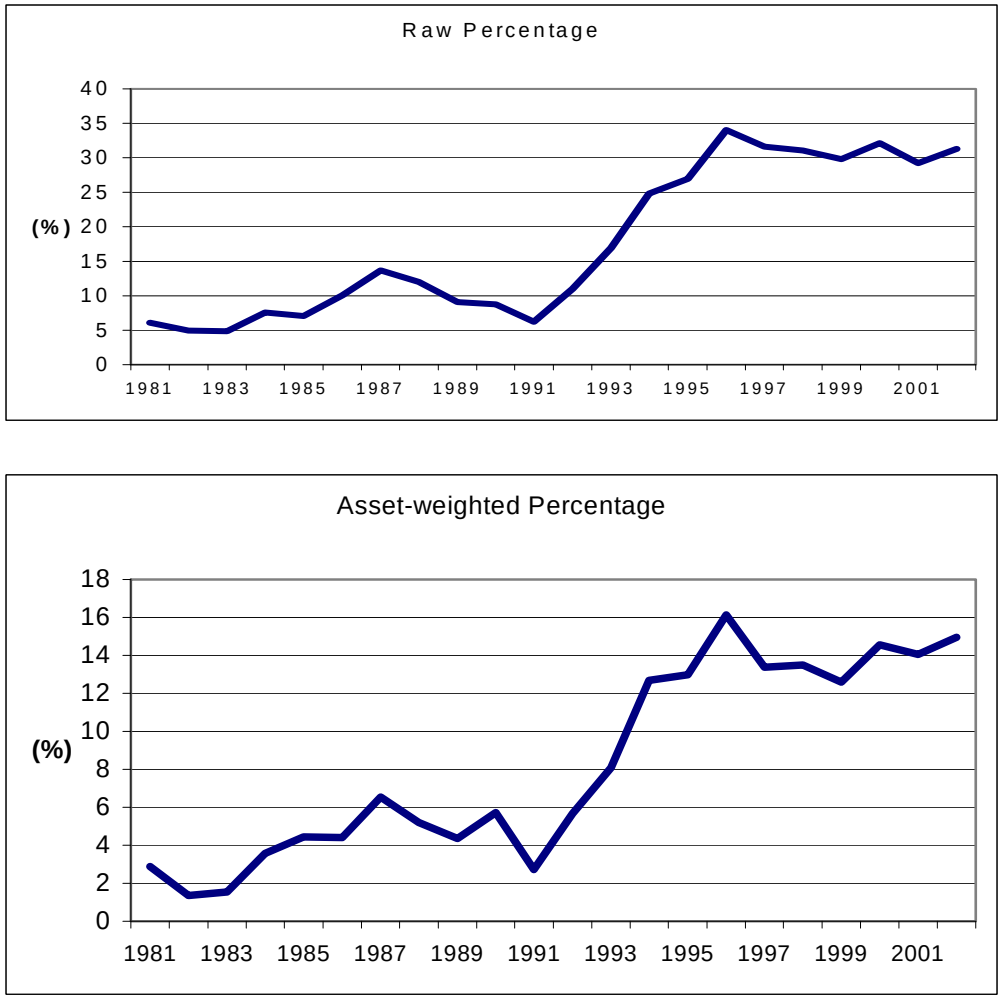


Figure 6: Aggregate prevalence of zombies



Note: The sample is listed firms in manufacturing, construction, real estate, retail and wholesale (other than the nine largest general trading companies), and services

Figure 7: Cross-industry incidence of zombies

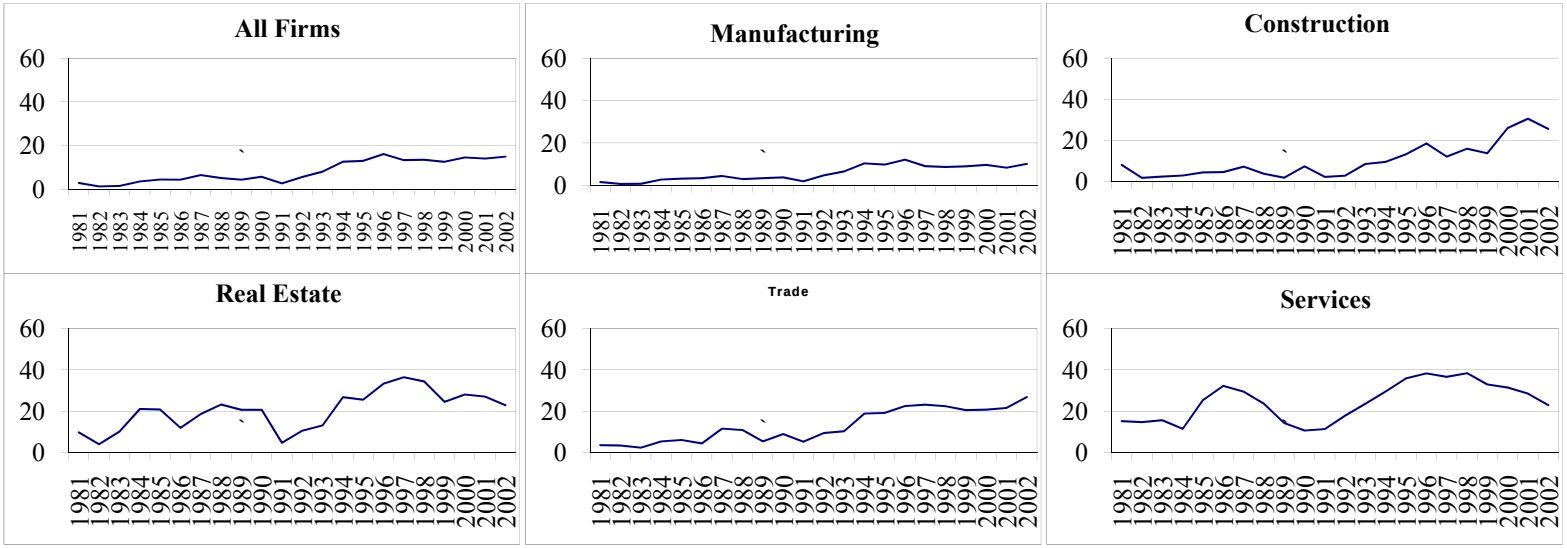
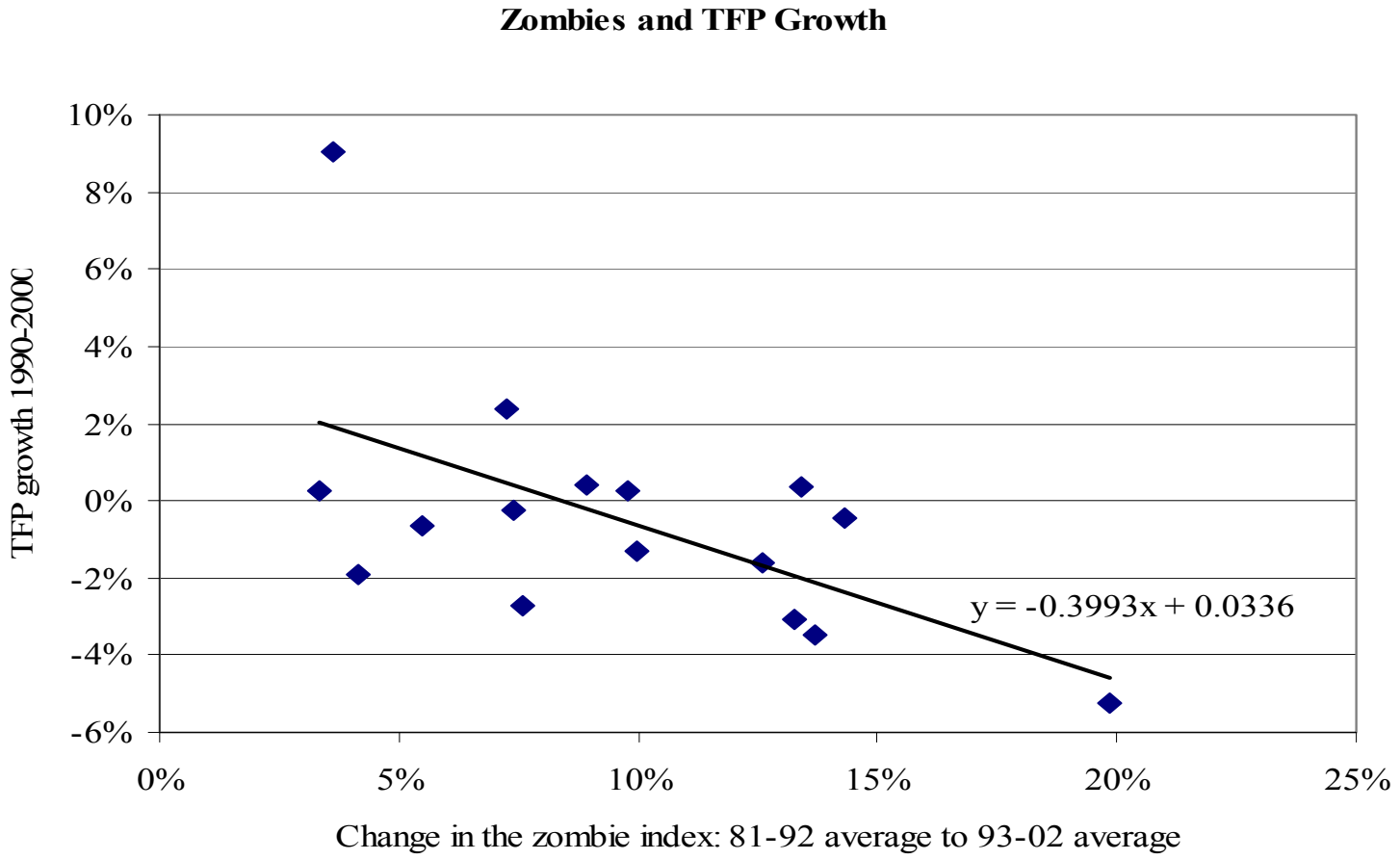


Figure 8: Zombie Incidence and Productivity Growth



Note: Estimates for TFP Growth are from Tsutomu Miyagawa, Yukiko Ito, and Nobuyuki Harada (2004) "The IT Revolution and Productivity Growth in Japan," *Journal of the Japanese and International Economies*, 18(3), 362-389.

Figure 9: Total Factor Productivity by Industry, 1980 – 2006
(1995≡100)

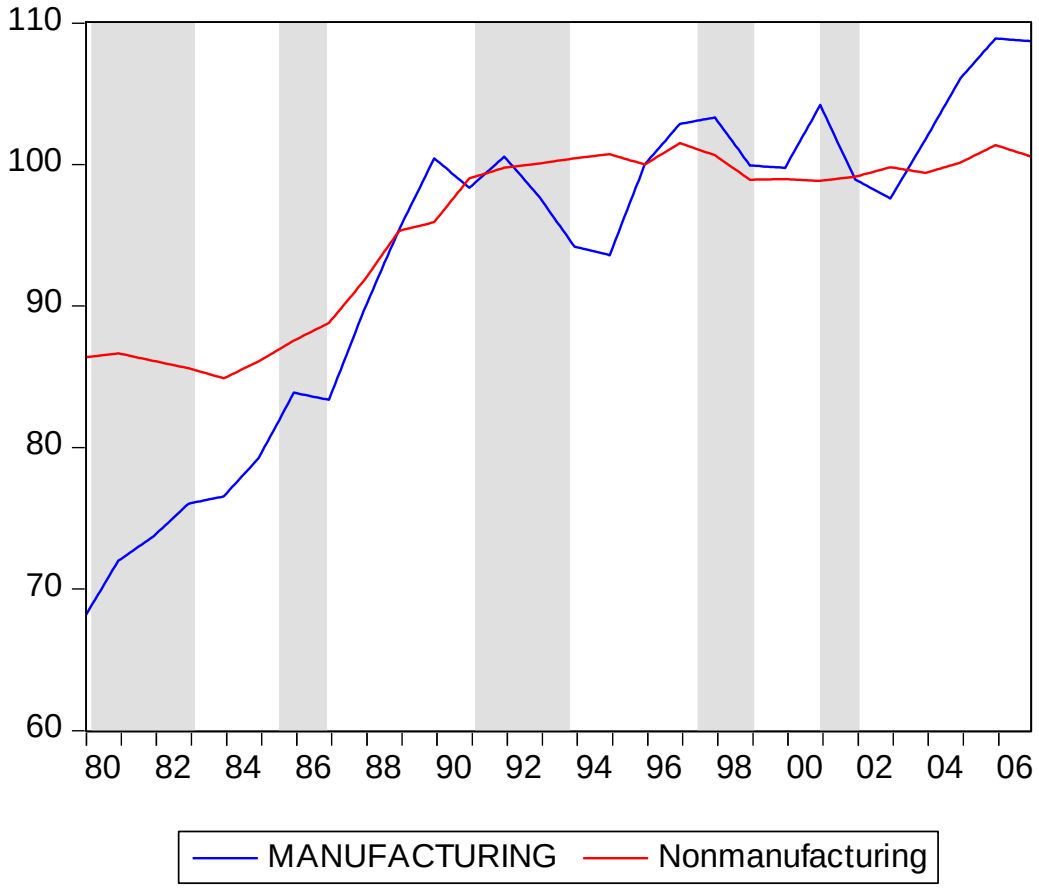


Figure 10: Weighted Average of the Regulation Index from Cabinet Office (2006)

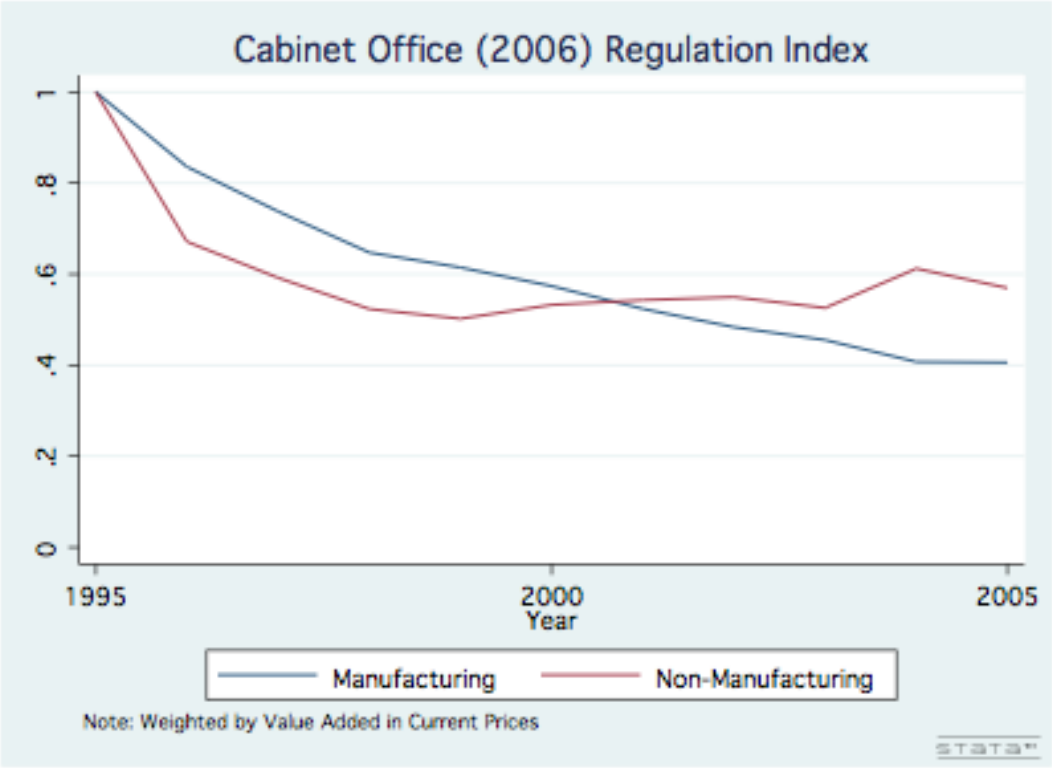
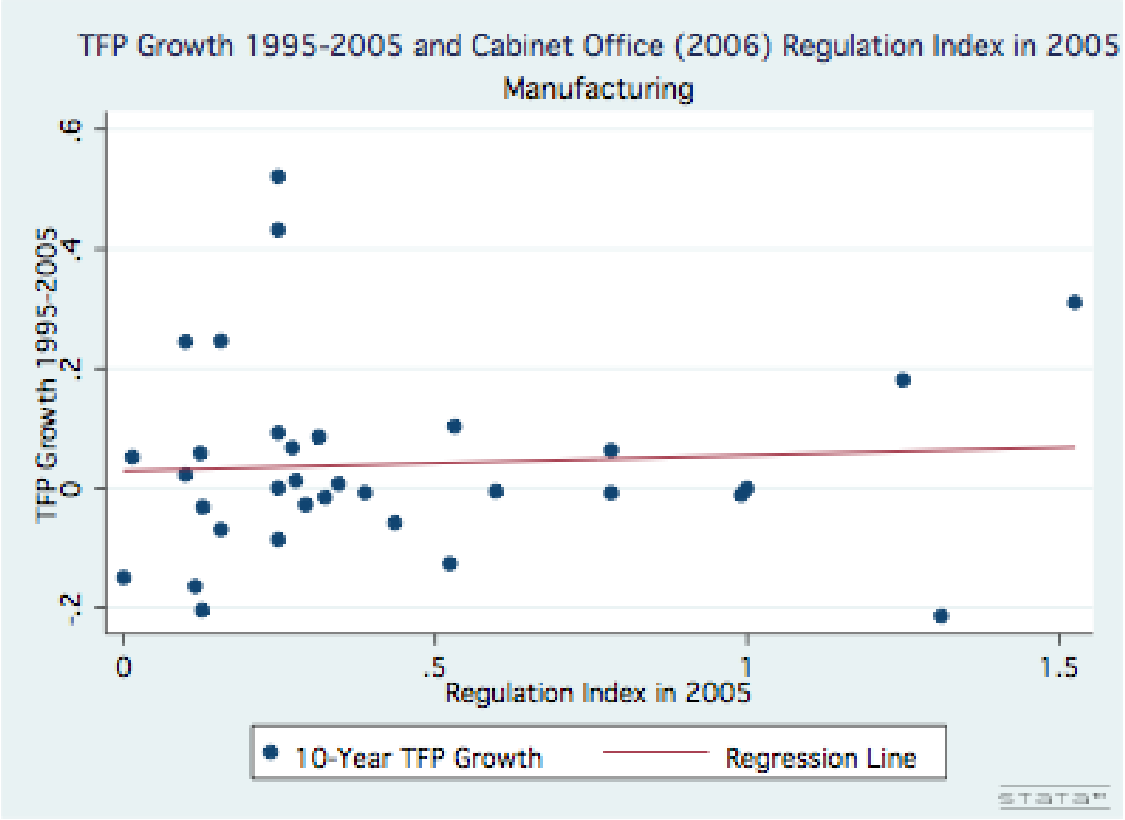


Figure 11: Cabinet Office (2006) Regulation Index and TFP growth

A. Manufacturing Sector



B. Non-manufacturing

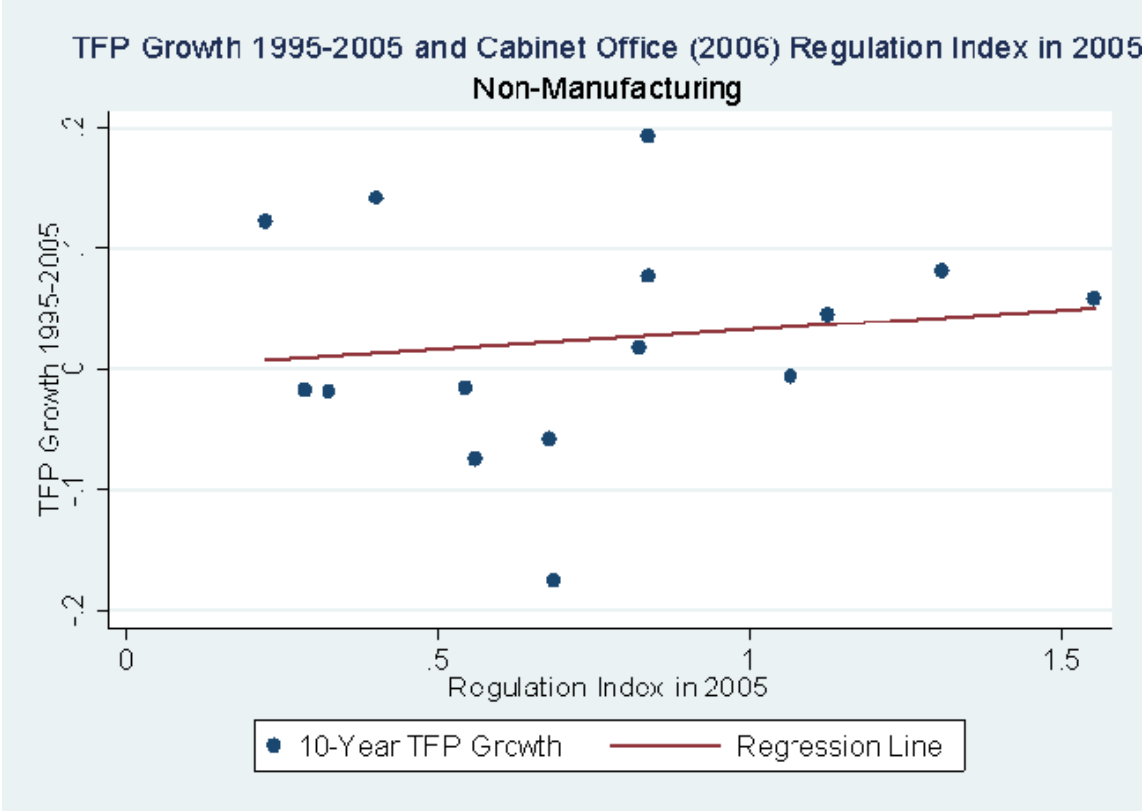


Figure 12: Weighted Average of Regulation Index: Alternative Index Using Regulations in Category A only

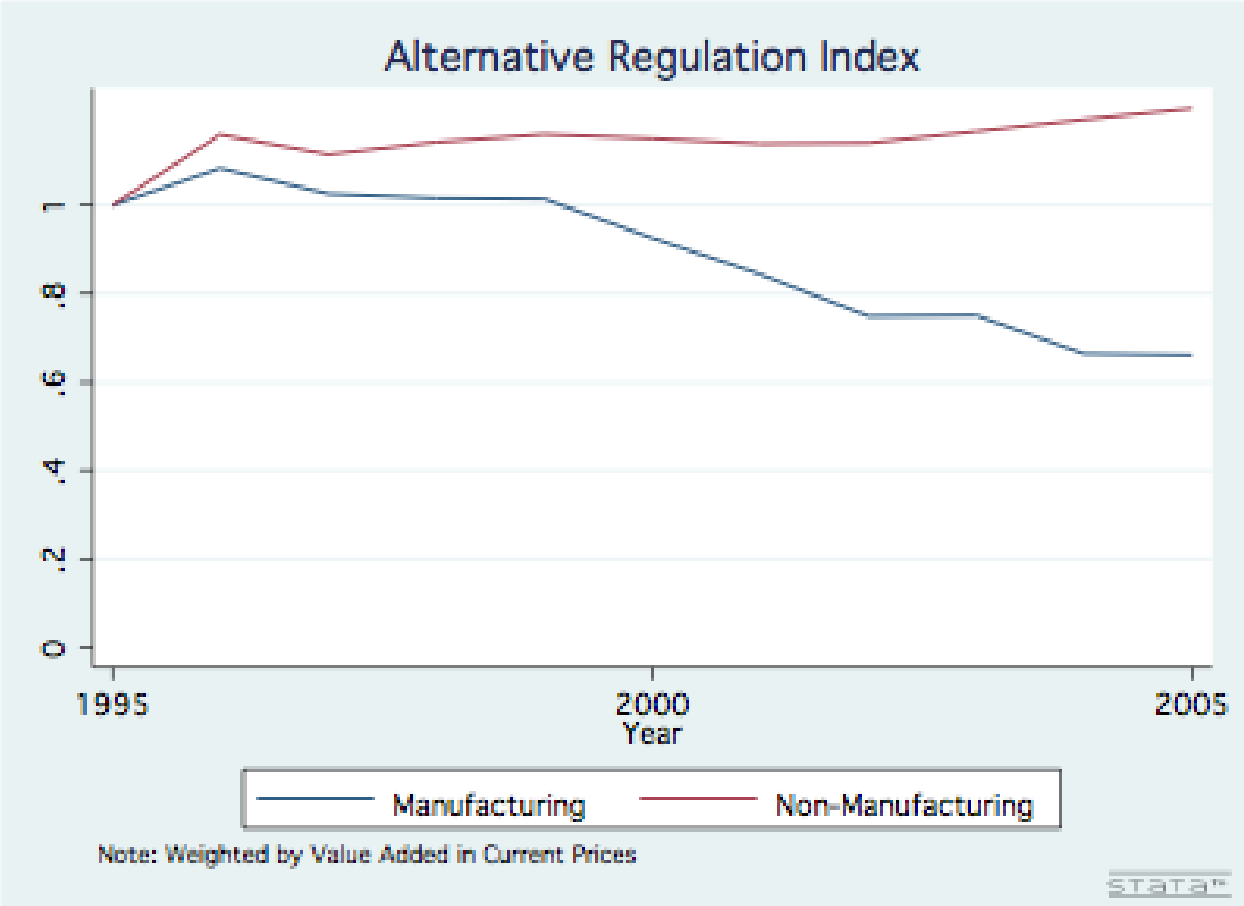
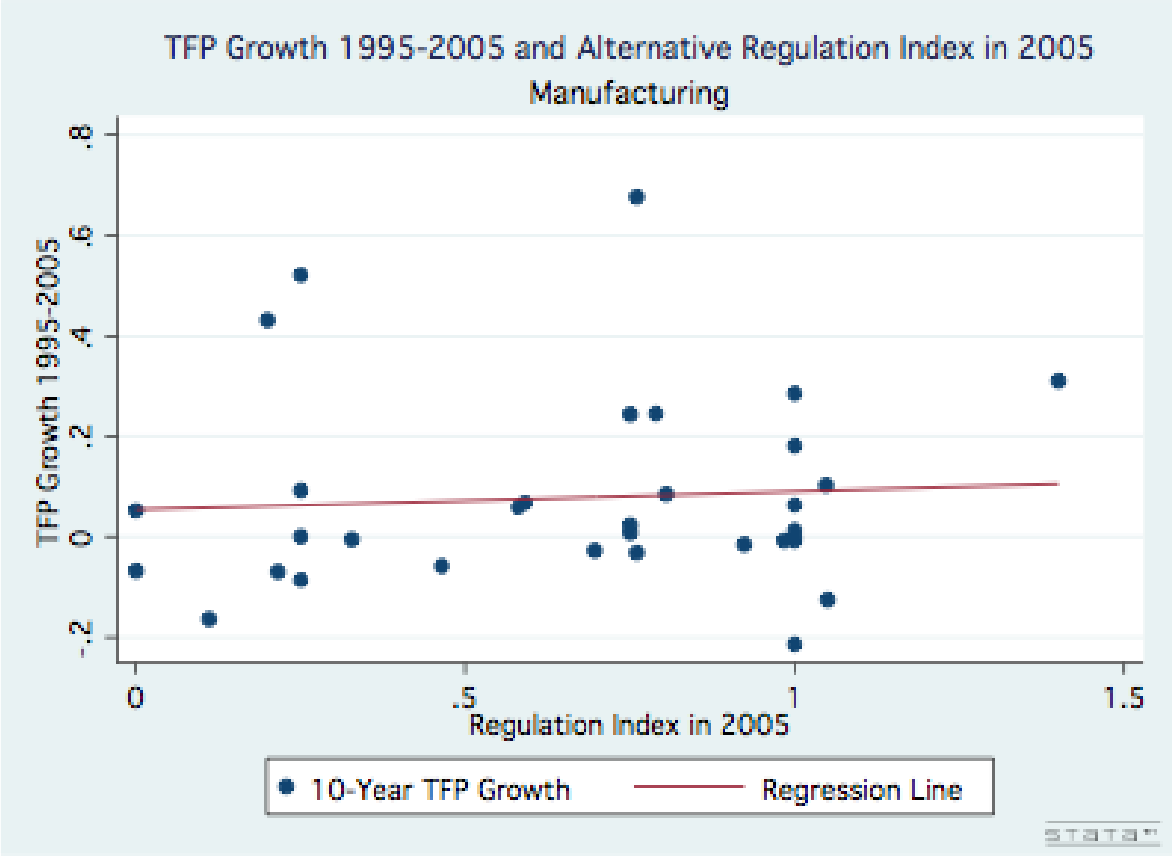


Figure 13: Alternative Regulation Index and TFP Growth

A. Manufacturing Sector



B. Non-manufacturing sector

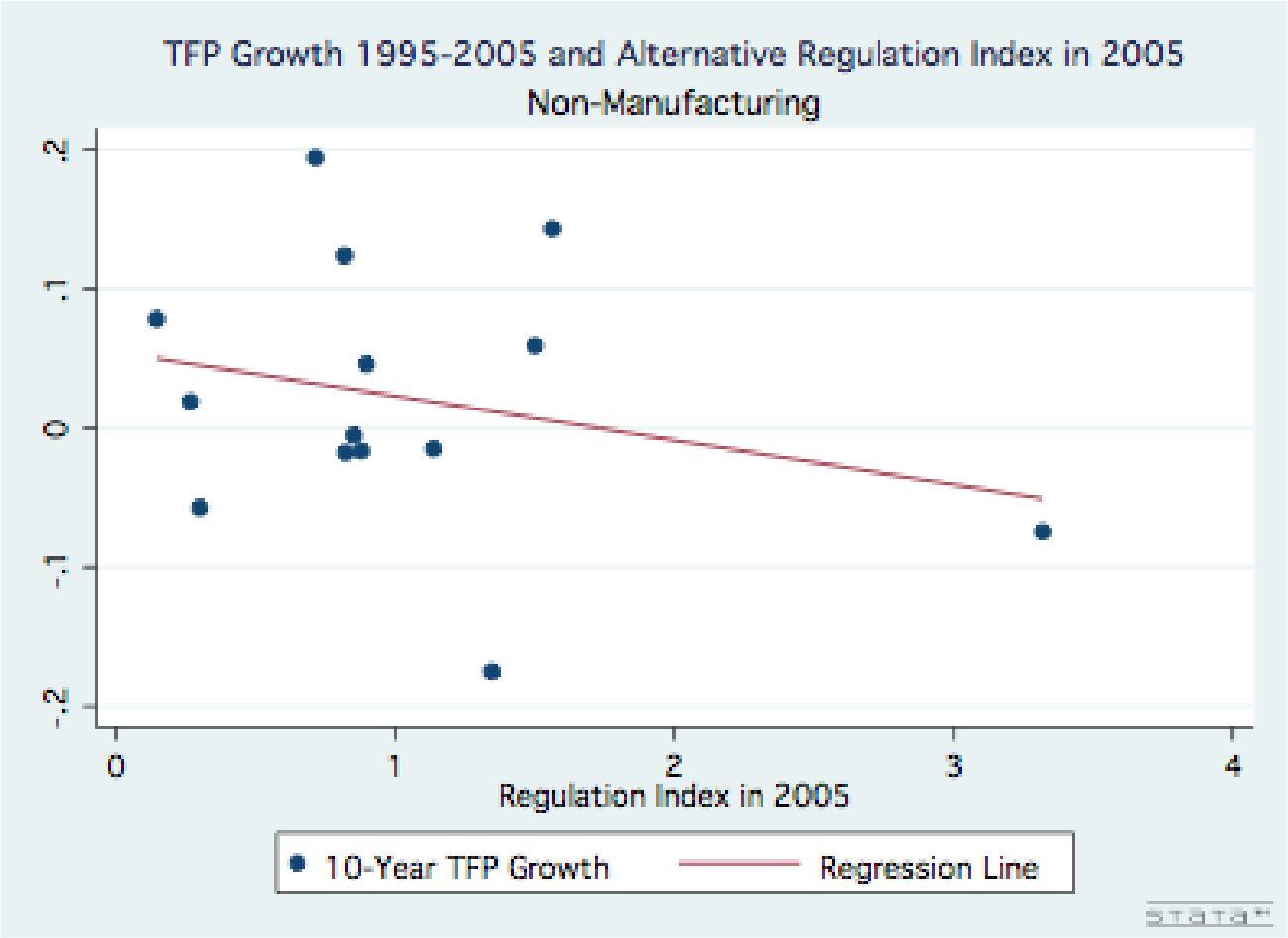


Figure 14: Public Expenditure on Active Labor Market Policies in 2001 (% of GDP)

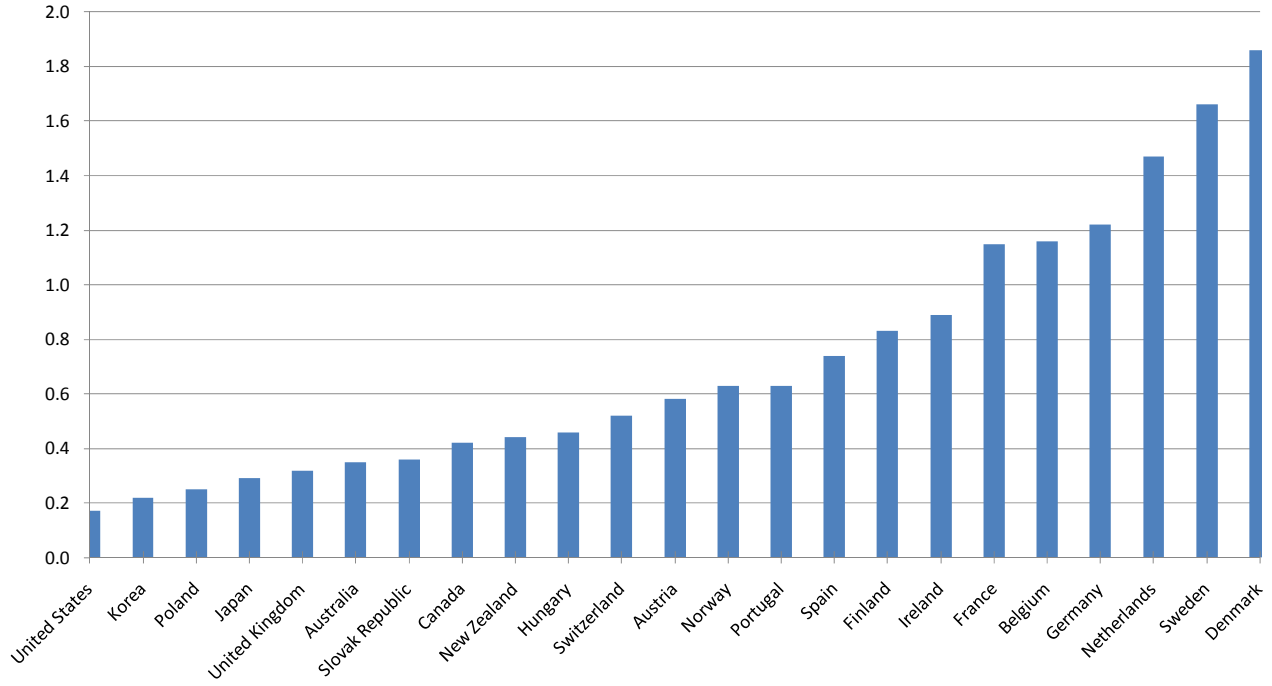
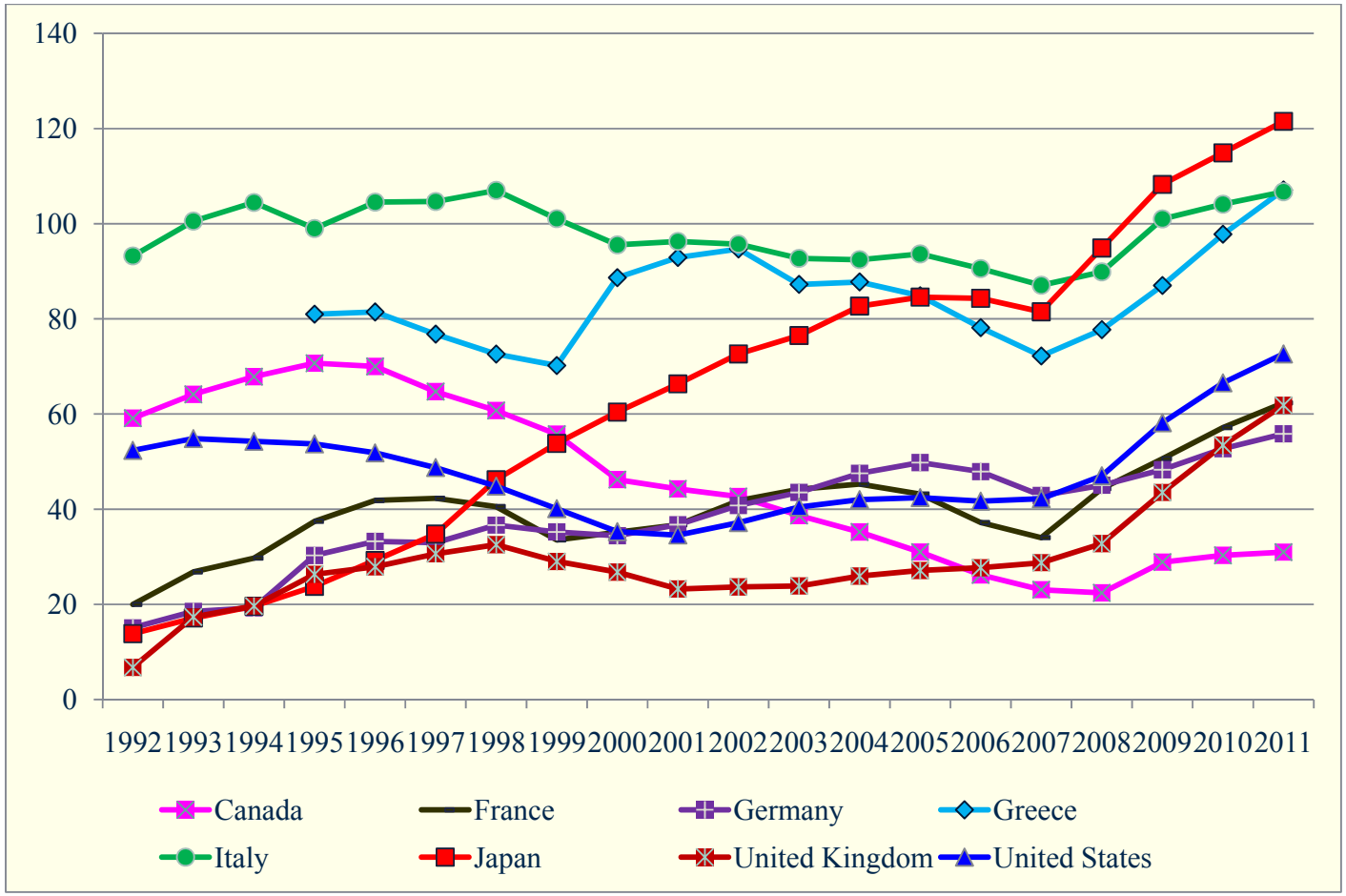
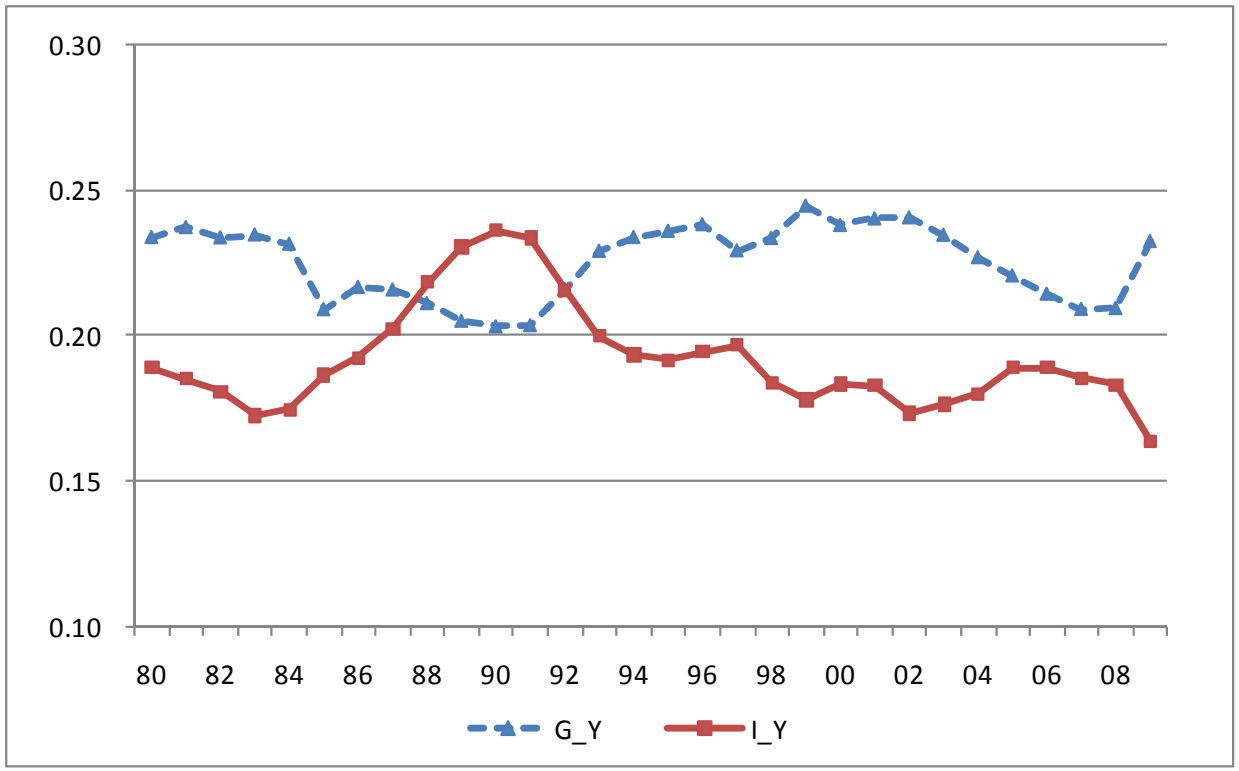


Figure 15: Net Government Debt of selected OECD Countries (% of GDP)



Source: OECD Economic Outlook 87 database. Annex Table 33.

Figure 16: Private Sector Gross Fixed Capital Formation and Total Government Spending Relative to GDP



Source: http://www.esri.cao.go.jp/en/sna/qe103-2/gdemenu_ea.html

Figure 17: Distribution of Public Spending

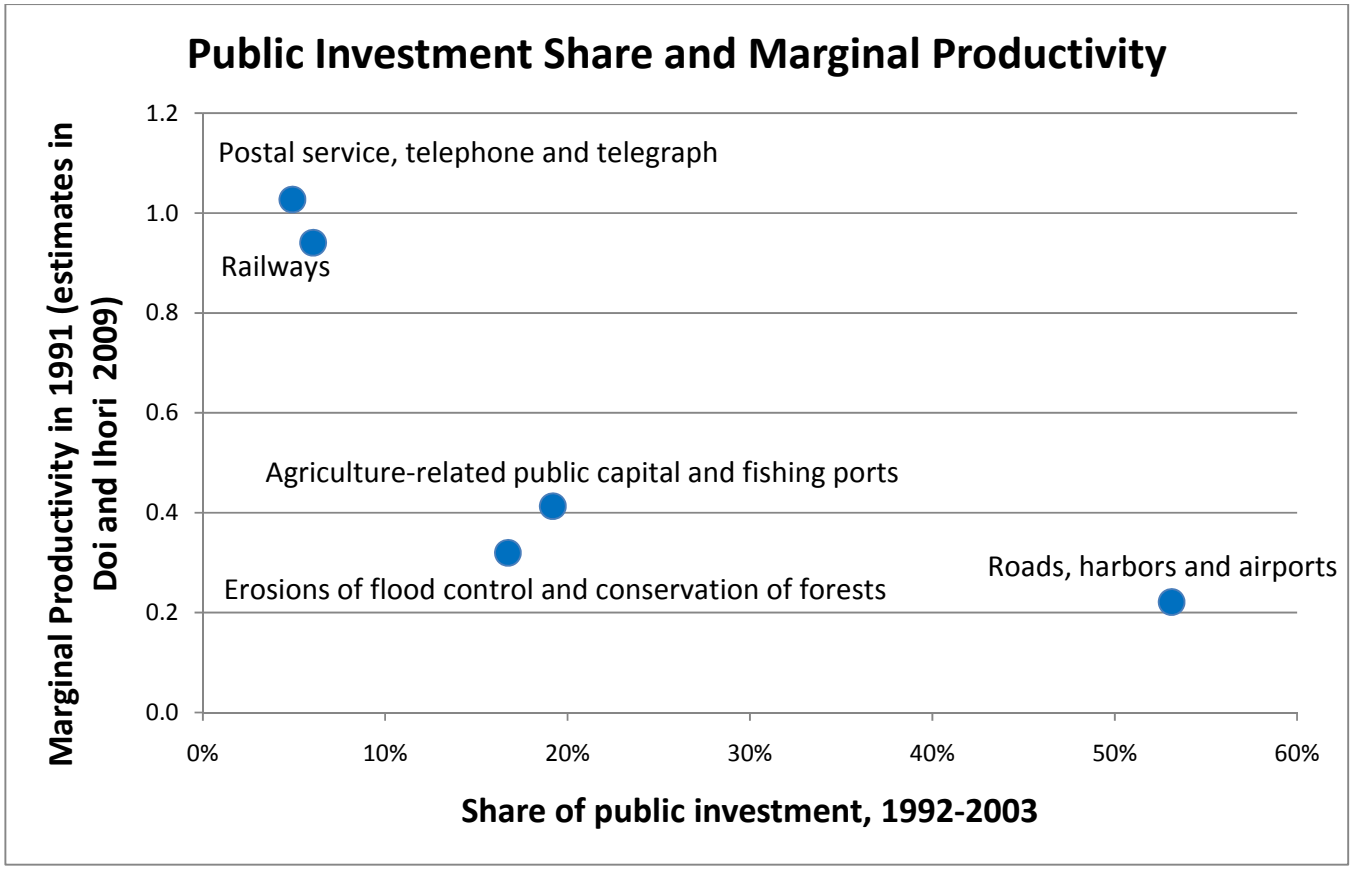
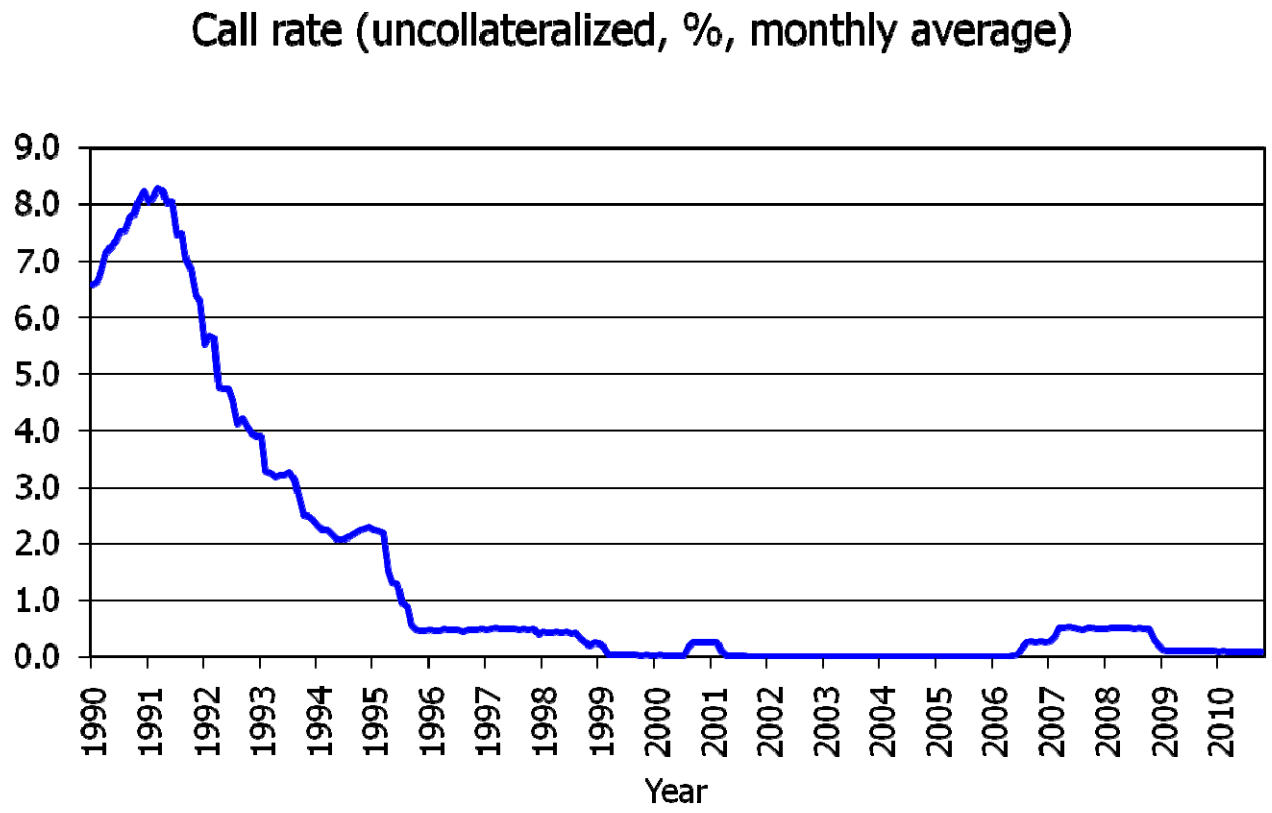


Figure 18: Japanese Policy Interest Rate, 1990 to 2010



Tables

Table 1: Importance of External Demand Across Countries, 1995 to 2009

Country	Contribution of External Demand to GDP Growth: 1995 to 2009	Average Share of Exports in GDP: 1995 to 2009
USA	-4.4%	10.8%
UK	-4.9%	27.3%
Japan	26.6%	12.5%
Italy	-7.4%	26.1%
Germany	19.9%	35.6%
France	-7.2%	25.9%
Canada	-7.3%	38.7%

Table 2: China and Japan

	Growth in Output per Worker	Contribution from Capital per Worker	Contribution from TFP
Japan 1955-1971	8.05%	3.04%	5.02%
Japan 1970s	3.74%	1.74%	2.00%
Japan 1980s	3.23%	2.98%	0.26%
Japan 1992-2002	0.59%	0.06%	0.53%
Japan 2003-2007	2.14%	0.73%	1.41%
China 1998-2007	9.79%	5.21%	4.58%

Source: Accounting for China's Growth by Loren Brandt and Xiaodong Zhu, IZA DP No. 4764, Feburary 2010 and authors' calculations

Table 3: Impact of Zombie Firms on the Investment, Employment and Productivity of Non-Zombies

Dependent Variable	I/K	ΔLog E	Log Sales – ⅔ Log E – ⅓ Log K	I/K	ΔLog E	Log Sales – ⅔ Log E – ⅓ Log K	I/K	ΔLog E	Log Sales – ⅔ Log E – ⅓ Log K
Non-Zombie Dummy	0.0256 (0.0056)	0.00109 (0.001751)	0.0139 (0.0135)	0.0248 (0.0057)	0.0002 (0.0018)	0.0119 (0.0137)	0.0238 (0.0056)	0.0001 (0.0017)	0.0150 (0.0136)
Industry Zombie %	-0.1370 (0.0376)	-0.0454 (0.0116)	-0.3418 (0.0922)						
Non-Zombie * Industry Zombie%	-0.0885 (0.0330)	-0.0232 (0.0102)	0.2183 (0.0756)	-0.0852 (0.0333)	-0.0188 (0.0102)	0.2315 (0.0767)	-0.0716 (0.0321)	-0.0128 (0.0098)	0.1980 (0.0770)
Sales growth							0.3490 (0.0176)	0.1404 (0.0073)	0.3123 (0.0256)
Industry dummies included?	Yes	Yes	Yes	No	No	No	No	No	No
Year dummies included?	Yes	Yes	Yes	No	No	No	No	No	No
Industry*year dummies included?	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	22,396	22,429	23,090	22,396	22,429	23,090	22,394	22,428	22,847
$\bar{R}^2$	0.0537	0.0895	0.3599	0.0617	0.1007	0.3590	0.1125	0.1794	0.3705

Table 4: Major Koizumi Administration Reforms

Reform area	Would the reform help restoring growth?	What was the stated goal?	Did the reform achieve the stated goal?	Has the reform completed?	Unintended consequences
1. Financial system reform	Yes. By forcing banks to restructure zombie firms. Healthy financial system supports investment.	Reduce the NPLs at major banks to a half of March 2002 level by March 2005	Yes.	Almost. Resona Bank, which received public capital injection, is still government owned.	Credit crunch
2. Postal Privatization	Yes. By releasing the postal savings to be used more efficiently in the private sector.	Privatize the postal services	Technically yes, but effectively no.	No. Divesture of government owned shares did not start and now stopped indefinitely.	Deterioration of quality of services
3. Labor reform (Revision of the Dispatched Workers Act)	Maybe. More flexible labor market reduces the cost of economic restructuring, thereby productivity growth.	Increase the flexibility of labor market and the diversity of jobs	Not clear.	No. Trend of reregulation after Koizumi.	Increase of poorly paid workers with insecure employment
4. Promotion of FTAs and agricultural reform	Yes. By increasing productivity of agriculture. FTAs help maintaining markets for Japanese industrial products.	Promote large scale farming that is internationally competitive	No.	No. Agricultural policy has been reversed since Koizumi left.	Trade diversion rather than trade expansion
5. Deregulation through special zones	Maybe. If growth enhancing deregulation can spread beyond the zones	Promotion of local economy; experiment with deregulation	Varies.	Still continuing. In some cases, nationwide implementation of deregulation.	Special zones simply divert demand away from the neighboring regions
6. Local public finance reform ("Trinity" reform)	Maybe. If increased financial autonomy of local governments leads to reduction of wasteful spending.	Reduce the annual transfers to local governments by ¥4 trillion by FY2006. Local governments find their revenues to replace this.	Partially. The reduction was successful, but many local governments failed to find new revenue sources. Backlash after Koizumi.	Reform period (2003 to 2006) ended. Gradual roll back after Koizumi government.	Severe expenditure cuts in some localities.

Table 5: Japan's Latest Growth Strategy (June 18, 2010)

Targets

1. Achieve nominal and real growth in excess of 3% and 2% respectively
2. Positive inflation in consumer prices in fiscal 2011
3. Lower the unemployment rate to 3%-4% range as early as possible

There are 7 strategic areas and 21 national strategic projects

1. Green innovation
    a. Expand the renewable energy market by introducing "feed-in tariff" system for electricity
    b. Designate future cities
    c. Promote domestic timber utilization
2. Life innovation
    a. Create consortiums to promote new medical care
    b. Set up medical care visa and accept foreign patience
3. Asia
    a. Market infrastructure projects to Asian countries
    b. Reduction of corporate tax rates; introduction of tax incentives for foreign investment into Japan
    c. Globalization of university education; increasing acceptance of high-skilled foreign workers
    d. Roadmap for winning the global standard setting race; strengthening intellectual property protection
    e. Economic partnership through free trade areas
4. Tourism and local revitalization
    a. Designate special zones; open skies policy
    b. Ease tourist visa requirements
    c. Expand the existing housing and remodeling markets
    d. Open public facilities to private sector promote projects using private sector funds
5. Science, technology and information technology
    a. Develop intensive industry-academia-government cooperation in technology
    b. Promote utilization of information technologies; introduce a national ID system

    c. Enhance government related R&D investment
6. Employment and human resources
    a. Integrate kindergartens and nursery schools
    b. Introduce “career grading” system and “personal support” system
    c. Implement efforts to build public service supported by the people; reform taxation on donation and NPOs
7. Financial services
    a. Create an integrated exchange for securities and commodities