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**Causes and Remedies for Japan's Long-Lasting Recession:
Lessons for the People's Republic of China**

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Abstract

Japan has suffered from sluggish economic growth and recession since the early 1990s. In this paper, we analyze the causes of the prolonged slowdown of the Japanese economy (the lost decade). Economics Nobel laureate Paul Krugman has argued that Japan's lost decade is an example of a liquidity trap. However, our empirical analysis shows that stagnation of the Japanese economy comes from its vertical IS curve rather than a horizontal LM curve, so the Japanese economy faces structural problems rather than a temporary downturn. The structural problems mainly come from the aging demographic, which is often neglected in other studies, and also from the allocation of transfers from the central government to local governments, and the unwillingness of Japanese banks to lend money to startup businesses and SMEs, mainly because of Basel capital requirements. Many countries, like the People's Republic of China, are expected to face similar issues, particularly the aging population, and so are very much concerned about the long-term recession that Japan has experienced. This paper will address why the Japanese economy has been trapped in a prolonged slowdown and will provide some remedies for revitalizing the economy.

JEL Classification: E12, E62

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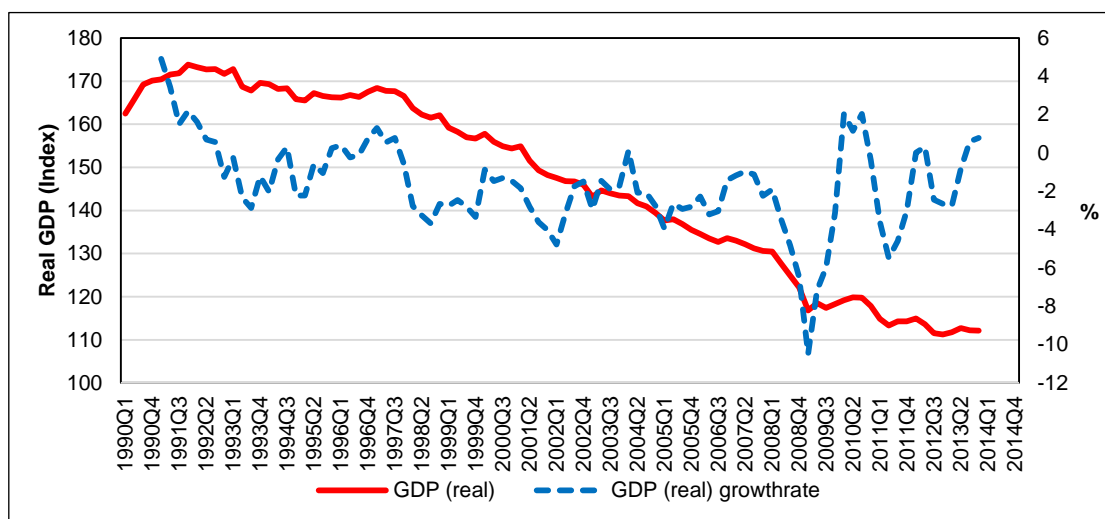
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1. INTRODUCTION

In the early 1990s, Japan’s real estate and stock market bubble burst and the economy went into a tailspin. Since then, Japan has suffered from sluggish economic growth and recession (Japan’s so-called “lost decade”), and the country’s growth rate during this period has been the lowest among the world’s major developed countries. During the 1995–2002 period, for example, Japan’s annual average growth rate of real gross domestic product (GDP) was only 1.2%, lower than all the other G7 countries—Canada (3.4%), the United States (3.2%), the United Kingdom (2.7%), France (2.3%), Italy (1.8%), and Germany (1.4%)—lower than the eurozone average (2.2%), less than half that of all of the other larger Organisation for Economic Co-operation and Development (OECD) countries—the Republic of Korea (5.3%), Australia (3.8%), Spain (3.3%), the Netherlands (2.9%), and Mexico (2.6%)—and lower than the OECD-wide average (2.7%) (Horioka 2006).

Figure 1 shows the trend of Japan’s real GDP and the real GDP growth rate during 1990–2013. As can be seen from this figure, after Japan’s real estate and stock market bubble burst in the early 1990’s (the so-called post-bubble period), Japanese real GDP started to decline sharply. This long recession lasted almost 25 years.

Figure 1: Japanese Gross Domestic Product Trends, 1990–2014



GDP = gross domestic product.

Note: Japan’s GDP deflator was used to calculate Japan’s real GDP. Real GDP is seasonally adjusted using the X-12 quarterly seasonal adjustment method.

Source: Nikkei Economic Electronic Database System (NEEDS) (2014).

Studying the causes and remedies for Japan’s long-lasting recession and low growth is crucial for other countries, including the People’s Republic of China (PRC), for preventing similar situations from happening. Nobel laureate Paul Krugman has argued that the reason for Japan’s recession is that the country is currently in a liquidity trap; a situation in which monetary policy is ineffective in lowering interest rates. However, our empirical analysis in this paper indicates that the problems in the Japanese economy stem from other sources. Theoretical and empirical results in this paper will show that stagnation of the Japanese economy comes from a vertical IS curve rather than a liquidity trap. This means problems are arising from structural problems rather than a temporary downturn.

There are several reasons for this long-term stagnation, which will be discussed in this paper. The main reason, which has been neglected in previous literature, is because of Japan’s aging population. Japan has the highest life expectancy in the world, but the retirement age is still 60 years old, resulting in a diminishing working population as the number of elderly and retired people

is rising while the younger generation is shrinking. Typically, elderly people consume less than younger generations, so this has also added the problem of reduced domestic consumption. Other factors include the allocation of transfers from the central government to local governments, and also the Basel capital requirements, which caused Japanese banks to become reluctant to lend money to startup businesses and SMEs and discouraged Japanese innovation and technological progress (Yoshino and Hirano 2011).

Many of these issues are also predictable for the future of the PRC's economy. Take, for example, the aging population. Today, 67% of the PRC's population is of working age, but this has started to change. Forty years from now, this will have shrunk to only half, with almost one third of the population over the age of 65.¹ Hence, it is crucial for countries like the PRC to look at the causes of Japan's long-lasting economic recession and the possible remedies mentioned in this paper.

In this paper, in the following section we will discuss the causes of Japan's long-term recession. The third section presents the empirical analysis and provides proof of our hypothesis for the vertical IS curve and the ineffectiveness of fiscal policy in stimulating the GDP growth after the burst of the Japanese economy's bubble. It also provides an empirical proof for rejecting the hypothesis of the liquidity trap for the Japanese economy and empirically proves the vertical IS curve hypothesis. The fourth section provides methods for getting out of the recession and boosting economic growth. The fifth and final section is for the concluding remarks.

2. CAUSES OF JAPAN'S LONG-TERM RECESSION

This section provides the factors that can explain Japan's long-term recession after the burst of the economic bubble in 1989 and 1990.

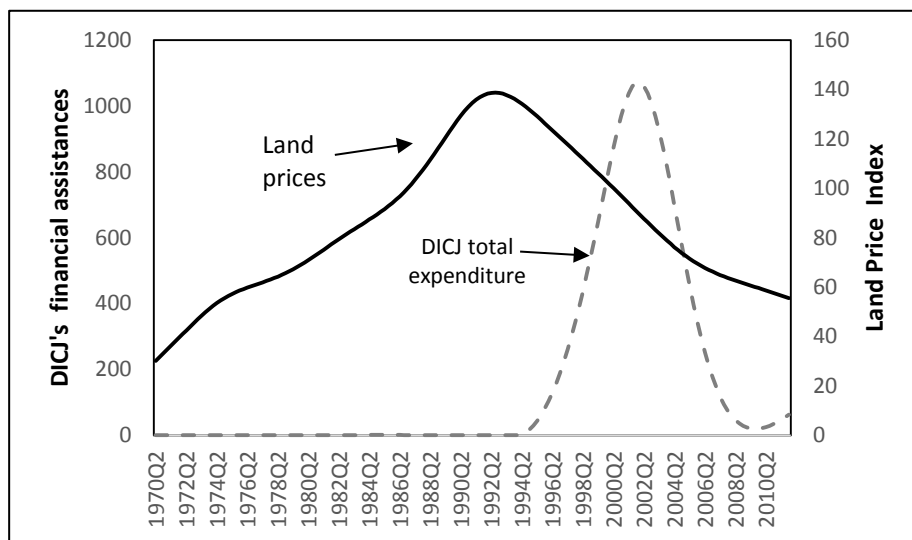
2.1 Banking Behavior

In the 1980s, Japanese banks issued loans based on collateral. Land prices started to decline from 1991 and banks started to accumulate bad loan assets. The number of banking failures started to increase immediately after the burst of the bubble and it took almost a decade for the number of failed banks to reach a peak.

As Figure 2 shows, before the burst of the bubble, there were no banking failures and the Deposit Insurance Corporation of Japan's (DICJ) financial assistance to banks was almost zero. Immediately after the burst of the bubble, the number of failed banks increased, so the DICJ, the insuring organization of the financial system, raised financial assistance to help the failed banks.

¹ <http://www.unescap.org/op-ed/turning-grey-gold> (accessed 8 October 2015).

Figure 2: Land Prices and the Deposit Insurance Corporation of Japan's Financial Assistance for Banking Failures



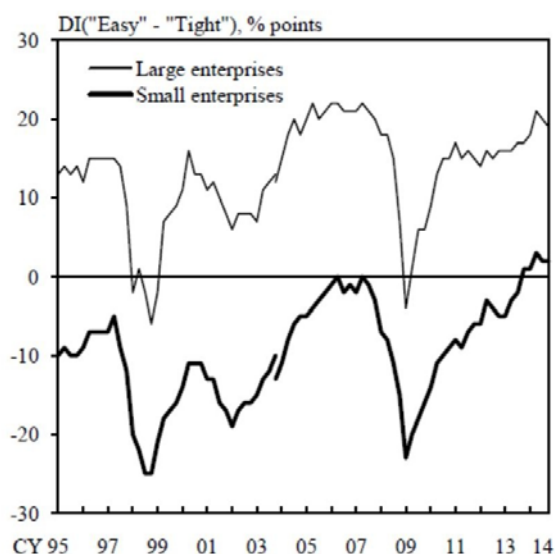
DICJ = Deposit Insurance Corporation of Japan.

Source: Yoshino, Taghizadeh-Hesary, and Nili (2013).

Another obstacle in the banking sector was the Basel capital requirements. Basel I regulations forced banks to hold 8% of capital, regardless of economic conditions. Japanese banks started to reduce their loans to avoid a shortage of capital, which created a credit crunch in Japan. It became difficult for SMEs and startup businesses, the backbone of the Japanese economy, to borrow money from banks.

Figure 3 shows the results of a survey carried out by the Bank of Japan (BOJ). The two lines show how difficult or how easy it is to raise money from the financial markets. The thick line shows the difficulty faced by small enterprises and the thin line shows the same for large enterprises. The data points below zero indicate that companies found it difficult to raise money from banks or the capital markets. Small enterprises appear to have faced more difficulty in raising money compared to the large firms.

Figure 3: Access to Finance by SMEs and Large Firms in Japan



CY= commercial year, DI = diffusion index, SME = small and medium-sized enterprise.
 Source: Yoshino and Taghizadeh-Hesary (2014a).

The PRC faces a similar situation, where SMEs accounted for an average of more than 30% of the total export value in 2012. SMEs experience difficulty in accessing finance, and in 2012, they accounted for 41.5% of the total export value, up 6.8% year-on-year (y-o-y). Hence, Basel capital requirements have also made banks in the PRC reluctant to lend to SMEs (Yoshino and Taghizadeh-Hesary 2015a).

2.2 Diminished Effectiveness of Fiscal Policy

This subsection provides two reasons for Japan's lost decade: the diminished effectiveness of fiscal policy and the banking crisis.

Prime Minister Miyazawa implemented fiscal policy in 1990 when the Japanese economy was slow to recover. He hoped for a high growth period in Japan where public investment (Keynesian policies) would work to help boost the Japanese economy. However, major highways and bridges had already been completed in Japan and new infrastructure investment failed to help the economy due to a decline in the multiplier for public investment.

Public investment has produced low stimulative effects on gross national product because it has been distributed ineffectively. The bulk of public investment has been increasingly concentrated in rural areas, but public investment has a much smaller impact on rural areas than on urban areas, and public investment in the agricultural sector has been much less effective than public investment in the industrial and service sectors (Yoshino and Sakakibara 2002). This increasing rural and agricultural bias in the allocation of public investment has resulted in the multiplier for public investment declining sharply from about 2.5 to only about 1 in recent times (Yoshino, Kaji, and Kameda 1998). This means that such public investment only increases budget deficits; it cannot bring about a recovery of the Japanese economy.

The results of this misallocation can be seen in the decline in the returns to public and private investment over time, as reported in Table 1. The marginal productivity of public capital was high during the high-growth period (1955–1969) but declined from 1970 onward. It is likely that the misallocation of public capital helped lower the rate of return to private capital as well, because public investments were not removing the infrastructure bottlenecks that were lowering the rate of return to private investment.

Table 1: Marginal Productivity of Public Capital in Japan

Period (FY)	1956– 1960	1961– 1965	1966– 1970	1971– 1975	1976– 1980	1981– 1985
Direct Effect	0.696	0.737	0.638	0.508	0.359	0.275
Indirect Effect (private capital)	0.453	0.553	0.488	0.418	0.304	0.226
Indirect Effect (labor input)	1.071	0.907	0.740	0.580	0.407	0.317
Private Capital	0.444	0.485	0.452	0.363	0.294	0.262
Period (FY)	1986– 1990	1991– 1995	1996– 2000	2001– 2005	2006– 2010	
Direct Effect	0.215	0.181	0.135	0.114	0.108	
Indirect Effect (private capital)	0.195	0.162	0.122	0.100	0.100	
Indirect Effect (labor input)	0.192	0.155	0.105	0.090	0.085	
Private Capital	0.272	0.242	0.219	0.202	0.194	

FY = fiscal year.

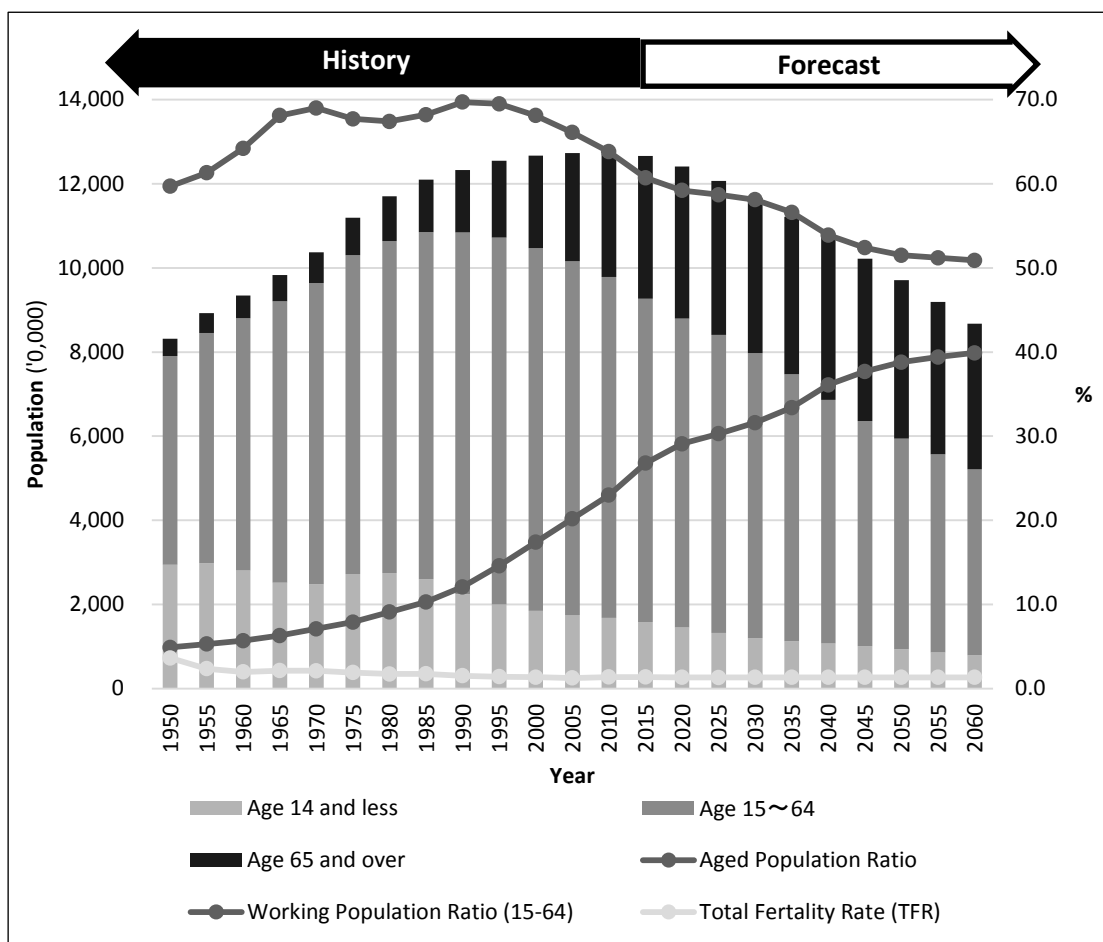
Source: Yoshino and Nakahigashi (2015).

2.3 Aging Population

Japan has achieved the highest life expectancy in the world, but its retirement age is set to around 60 years of age. Figure 4 shows clearly that the working population is diminishing drastically, and

the elderly population, the top portion, is growing very rapidly. The aging population and the diminishing working population is one of the biggest causes of the long-term recession of Japan.

Figure 4: Population Structure of Japan



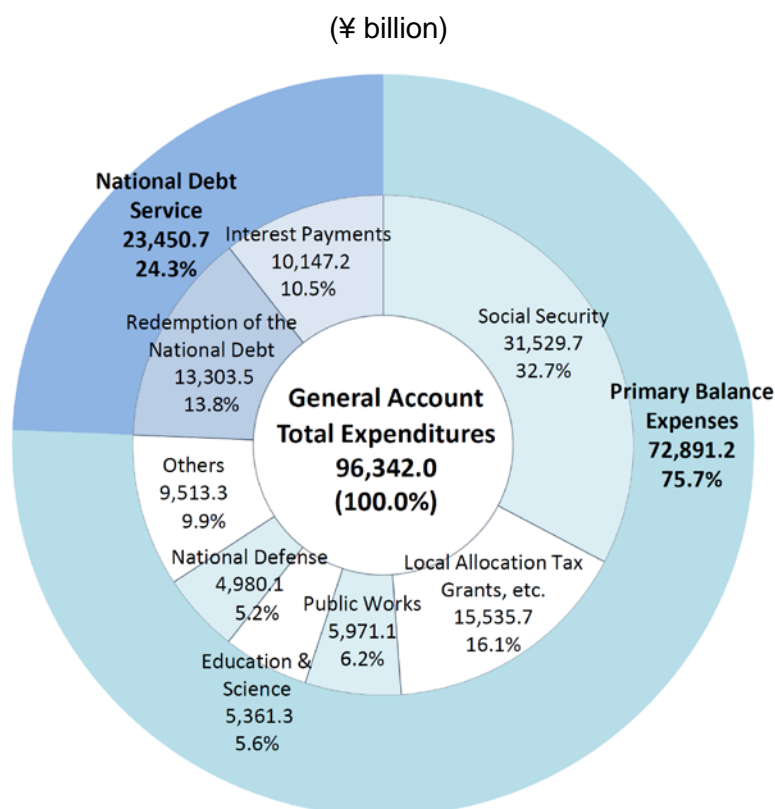
Source: Ministry of Internal Affairs and Communications, Japan.

Additionally, the Japanese wage rate system is based on seniority. Seniority-based wage systems make it difficult for companies to hire elderly people. Elderly people are forced to retire even though many of them would like to continue working. Because of the aging population, social welfare costs have started to increase and currently one-third of government spending is allocated for social welfare, while the government budget deficit is rising every year.

The PRC will experience its aging population more quickly than Japan because of its one child policy. Today, 67% of the country’s population is of working age, but this is starting to change. Forty years from now, this will have shrunk to only half, with almost one-third of the entire population older than 65.

2.4 Transfers from the Central Government to Local Governments

Figure 5 shows the expenditure of the general account budget of the Government of Japan for FY2015. About 16% of total government spending is allocated for transfer from the central government to local governments and it is the second-largest government expense after social security. Local governments have relied on central government transfers without making efforts themselves to revitalize regional economies. A rigid distribution system by agricultural cooperatives has put farmers in a weak position. Farmers are not able to innovate with regard to their agricultural production.

Figure 5: General Account Budget for FY2015

Source: Ministry of Finance, Japan. *Highlights of the Draft Budget for FY2015*.

As is clear, the share of transfers from the central government to local governments is large compared to other important expenditure, like education and science, which is allocated only 5.6% of the general account budget. One of the main reasons for this large share is that rural politicians would like to allocate more funds to rural areas in order to gain votes in their regions. This share should be reduced and allocated to other important sectors, and local governments should rely more on private sector financing than money from the central government.

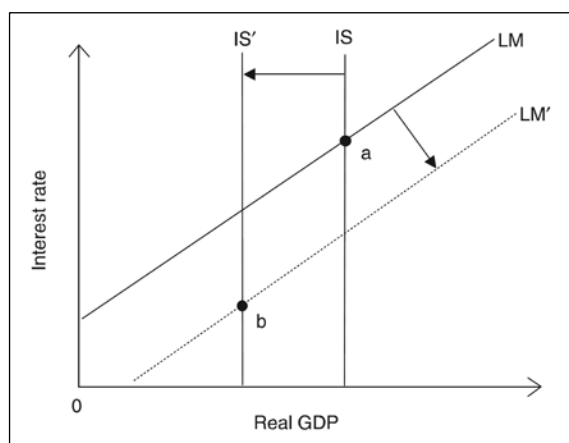
The PRC also suffers from the high dependence of local governments on central government payments. Since 1994, the PRC's central government has rapidly centralized the most lucrative sources of revenue, including value-added tax, resource tax, and personal and enterprise income tax. In 2002, the central government ordered local governments to channel 50% of personal and enterprise income tax to the central government, but nevertheless, local spending responsibilities remained roughly unchanged. As a result, the imbalances between local government revenue and expenditure have widened and vary among provinces. Such mismatch is relatively high compared with other countries (Lu and Sun 2013).

2.5 Problem of the IS Curve

Japan's long-term recession is often explained as a liquidity trap. Much attention has been focused on monetary policy rather than structural issues, but the problem of the Japanese economy was in its vertical IS curve (Figure 6). Private investment did not grow despite very low interest rates. Expected future rates of return were low and so not much new technological progress was made in Japan. Even though the central bank's short-term interest rate was set to zero, depressed investment in Japan meant that the economy was not able to recover.

Corporate restructuring to reduce idle capacity and start new investment was not pursued, with too much criticism aimed at monetary policy instead of accelerating corporate restructuring.

Figure 6: The Ineffectiveness of Monetary Policy in Japan



GDP = gross domestic product.

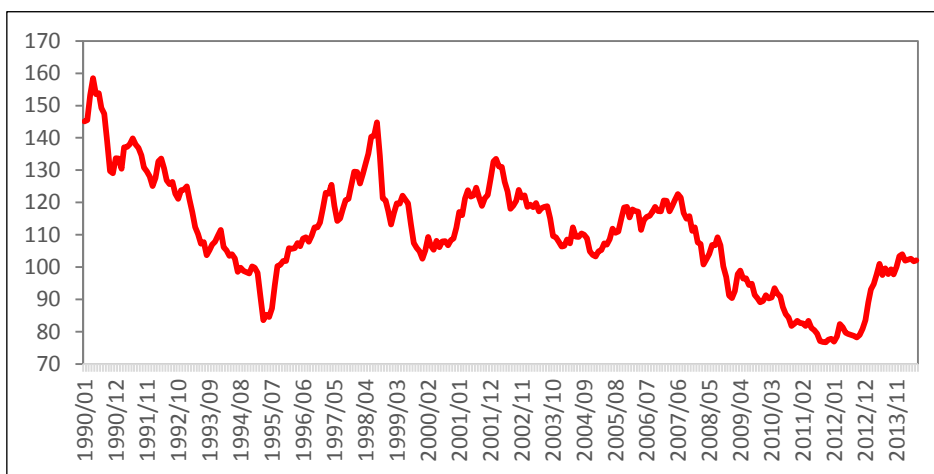
Source: Yoshino and Sakakibara (2002).

There are several reasons behind the vertical IS curve. (i) Excess capacity was created during the bubble period when companies invested significantly in various sectors, but demand suddenly slowed. (ii) High FDI of Japan to other Asian countries—because of the high appreciation of the yen and high wage rates in Japan, and because other Asian countries’ growth was higher—created higher demand in those regions. (iii) Marginal productivity of capital declined because productive and innovative companies started to leave the country and invest abroad, while weaker companies remained in the country. (iv) Startups could not grow because banks were reluctant to lend to them due to the strict Basel capital requirements, causing technological progress to slow down. These reasons will be further discussed in the following subsections.

2.6 High Appreciations of the Yen

The yen appreciated in the mid-1990s. Figure 7 shows the dollar–yen exchange rate fluctuations during 1990–2014. Appreciations of the yen caused Japanese manufacturing companies to move from Japan to other Asian countries. Increases in the wage rate in Japan also pushed Japanese companies to go abroad. As a result, domestic production started to diminish.

Figure 7: The Dollar–Yen Exchange Rate, 1990–2014



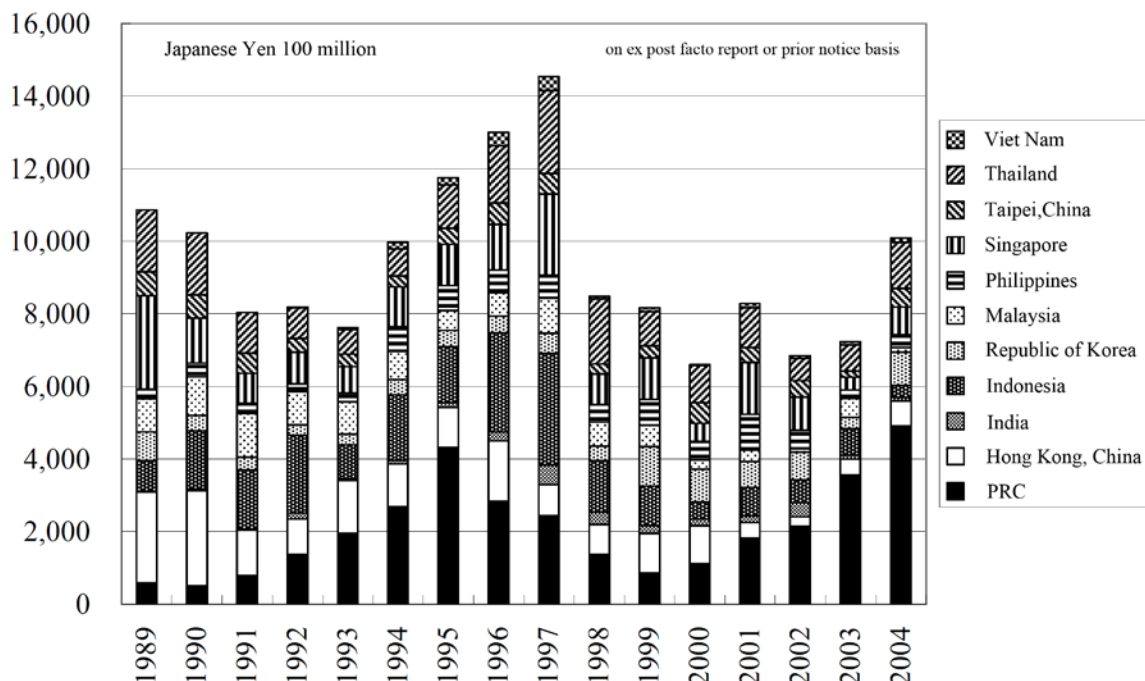
Note: The rate is the dollar–yen spot rate at 5 p.m. (Japanese Standard Time), average in the month, Tokyo market.

Source: Bank of Japan.

Figure 8 shows Japanese outward foreign direct investment to other Asian economies, including the PRC; Hong Kong, China; India; Indonesia; and so on during 1989–2004.

Figure 8: Japanese Outward Foreign Direct Investment to Asia

(¥100 million)



PRC = People's Republic of China.

Source: Alvstam, Strom, Yoshino (2009).

3. EMPIRICAL ANALYSIS

3.1 Empirical Model

In this section, in order to provide evidence for our assertion that the problems in the Japanese economy are coming from a vertical IS curve, we develop an IS-LM model and run our empirical analysis based on it.

The IS-LM model has played a central role in macroeconomic theory and practice developed in the Keynesian model. A basic version of the model remains the core of many introductory textbooks (e.g., Hall and Taylor [1988]), which use it to analyze the effects of changes in exogenous macroeconomic variables and, in particular, the impact of alternative monetary and fiscal policies. The augmented IS-LM model is also the backbone of many of the large-scale, highly disaggregated macroeconometric models used by governments and commercial firms for the purposes of policy evaluation and economic forecasting. More generally, the IS-LM model has a substantial influence on policy makers and market participants' views of the economy's workings, as is clearly reflected in the popular business press (Gali 1992).

Below are two equations that constitute the simplest possible version of our IS-LM model, and subsequently we use these equations simultaneously in order to run our empirical analysis. The first

equation in our simultaneous equation model (SEM), is the IS equation. The IS equation can be said to represent the equilibria where total private investment equals total savings. Each point on the curve represents the equilibrium between savings and investment. The second part of our SEM is the LM equation. The LM equation shows the combinations of interest rates and levels of real income for which the money market is in equilibrium. The LM function is the set of equilibrium points between the liquidity preference (or demand for money) function and the money supply function. The right money demand consists of two main parts: (i) transactional demand, which is a function of real GDP, and (ii) speculative demand, which is a function of the interest rate.

$$y = \alpha - \sigma(i - E\Delta p_{+1}) + u_{is} \quad (\text{IS equation})$$

$$m - p = \beta + \phi y - \lambda i + u_{lm} \quad (\text{LM equation})$$

where y denotes the log of real GDP, i is the nominal long-term interest rate, and p and m are, respectively, the logs of the price level and the money supply. u_{is} and u_{lm} are stochastic process describing money supply and money demand (LM) and spending (IS) driving forces. Δ and E are the usual first difference and expectational operators, respectively. In order to run our empirical analysis for GDP, we used Japanese real GDP deflated by the GDP deflator (2009=100), seasonally adjusted using an X-12 quarterly seasonal adjustment method. For the interest rate, we used the 10-year government bond yield, which is a long-term, safe asset interest rate. For the price level we used the general consumer price index for Japan. For the money supply, we used Japanese M1, seasonally adjusted using an X-12 quarterly seasonal adjustment method. In 1998, Japan was experiencing a financial crisis and fluctuations of deposits were not consistent with economic fluctuations. The money multiplier changed drastically after Japan's banking crisis and M2 shows very unusual movements in the following 10 years. This is the reason we used M1 instead of M2.

In the analysis, we used quarterly data from Q2 1990–Q4 2013. All variables except the interest rate are in logarithmic form. The sources of the data are Nikkei Needs and the Bank of Japan database.

In rational expectations, the expected rate of inflation is determined by the structure of the economy and expectations of monetary policy, etc. However in this paper we adopt perfect foresight with zero expectation error. (For more information please refer to Gourieroux and Jasiak [2001]). For the IS equation we carried out the regressions for two cases: (i) the current inflation rate remaining the same the following year, and (ii) perfect foresight inflation, meaning the inflation rate is accurately predicted without any expectation error.

3.2 Unit Root Test

In order to evaluate the stationarity of all series, we performed the unit root test on all variables at levels and first differences for two cases: (i) with an intercept, (ii) with an intercept and trend. The test used was the Augmented Dickey–Fuller (ADF) test, and the results are summarized in Table 2.

Table 2: Unit Root Test

Variable	Definition	Intercept				Trend and Intercept			
		Levels (t-statistic)	AIC	First differences (t-statistic)	AIC	Levels (t-statistic)	AIC	First differences (t-statistic)	AIC
$(i - E\Delta p_{+1})$	Real interest rate	-2.40	1.77	-9.64**	1.817	-2.19	1.78	-9.80**	1.816
i_t	Nominal interest rate	-2.06	0.33	-9.59**	0.37	-1.73	0.34	-7.65**	0.29
y_t	Real GDP	1.24	17.42	-8.20**	17.32	-4.77**	17.18	-8.36**	17.33
$(m - p)_t$	Real money supply	-0.58	62.21	-2.85*	62.20	-2.13	62.19	-2.82	62.18

AIC = Akaike Information Criterion.

Notes: * indicates rejection of the null hypothesis for the presence of a unit root at the 5% level; ** indicates rejection of the null hypothesis for the presence of a unit root at the 1% level. The optimal lag lengths for the ADF test were found using the Akaike Information Criterion (AIC).

Source: Authors.

The results found imply that almost all variables are non-stationary in levels. These variables include the real interest rate, nominal interest rate, real GDP (in logarithmic form), and the real money supply (in logarithmic form).² However, the first differences for all variables show stationary results. These results suggest that the real interest rate, nominal interest rate, real GDP (in logarithmic form), and the real money supply (in logarithmic form) each contain a unit root. Once the unit root test was performed and it was discovered that the variables were non-stationary in level and stationary in first differences, they were integrated of order one, or $I(1)$ —hence they appear in our empirical model in first differences.

3.3 Empirical Results

This subsection contains our empirical results for the IS-LM simultaneous equation model. Equations (1), the IS equation, and (2), the LM equation, are simultaneously estimated by the iterative seemingly unrelated regression (ISUR). This method uses information about the contemporaneous correlation among error terms across the equations in an attempt to improve the efficiency of the parameter estimates. The results of this regression are summarized in Table 3.

² Real GDP was stationary with “intercept and trend,” but because the value for AIC with intercept was higher compared to “intercept and trend,” we considered the result with intercept. Hence, this variable was also non-stationary in levels and stationary in first differences, $I(1)$.

Table 3: Empirical Results

Sample: Q2 1990–Q4 2013

Equation	Dependent Variable	Explanatory Variable	Coefficient	Standard Error	t-Statistic	Probability
IS	y_t	α	-0.16	0.08	-1.98*	0.049
			(-0.15)	(0.06)	(-2.36*)	(0.02)
		$(i - E\Delta p_{+1})$	-0.0002	0.0004	-0.53	0.60
			(0.0002)	(0.0002)	(1.17)	(0.24)
y_{t-1}	1.01	0.007	147.63**	0.00		
	(1.01)	(0.005)	(188.23**)	(0.00)		

R-squared = 0.99 (0.99); Adjusted R-squared = 0.99 (0.99); Durbin-Watson Stat. = 1.70 (1.62);

Std. Error of regression = 0.01 (0.01).

LM	$(m - p)_t$	β	0.02	0.19	0.11	0.91
		y_t	0.70	0.26	2.67**	0.008
		i_t	-0.025	0.009	-2.72**	0.007
		$(m - p)_{t-1}$	0.99	0.006	171.06**	0.00

R-squared = 0.99; Adjusted R-squared = 0.99; Durbin-Watson Stat. = 1.93;

Std. Error of regression=0.03.

Note: The estimation method is the iterative seemingly unrelated regression. For the IS equation, values that are not in parentheses are the coefficients for the case where the current inflation rate remains unchanged the next year. Values in parentheses show the coefficients for the case of perfect inflation foresight.

Source: Authors.

The first part of Table 3 shows the results for the IS equation, which shows the relationship between real GDP and the real long-term interest rate. According to economics textbooks, when the real interest rate goes down, investment should go up, so the IS curve should be downward sloping. However, as our empirical results show, in both cases, if the current inflation rate remains the following year, or in the case of perfect inflation foresight, there is no significant association between the real interest rate and real GDP of Japan during Q2 1990–Q4 2013. This means that when the interest rate was low, investment did not accelerate, which is evidence of the vertical IS curve that can be seen in Figure 6. This finding is in accordance with the finding of no significant association between the long-term real interest rate and the real GDP of Japan during the period of Q2 2002–Q2 2014 (Yoshino and Taghizadeh-Hesary 2015b). The lagged GDP gap had a significant impact on the current value of GDP.

The second part of the empirical results is for the LM equation, which shows the combinations of interest rates i_t and levels of real income y_t for which the money market is in equilibrium. The LM function is the set of equilibrium points between the liquidity preference (or demand for money) function and the money supply $(m - p)_t$. The y-axis of the LM curve is the interest rate and the x-axis

is real GDP (y_t). Usually the LM curve is upward sloping and our empirical results for Q2 1990–Q4 2013 of Japan are in accordance with an upward sloping LM. Money demand consists of two parts: (i) transactional demand, which is function of real income, and (ii) speculative demand, which is a function of the interest rate. Our results are in accordance with economic theory, as transactional demand is a positive function of real income and speculative demand is a negative function of the interest rate. Moreover, both coefficients show statistically significant values. These findings are against what Krugman asserts about the Japanese economy. He argued that Japan is currently in a liquidity trap, meaning it has a horizontal LM curve. However, our empirical analysis indicates that the Japanese LM curve is upward sloping, so the problems of the Japanese economy stem from other sources.

We believe the problems of the Japanese economy in the lost decade did not come from the monetary policy side, as our results show that the Japanese economy is not in liquidity trap. In the following section we provide some remedies for the Japanese economy. These are also important for other Asian economies to avoid a similar situation as Japan.

4. REMEDIES

In this section we provide seven ways to stimulate Japanese economic growth. We believe these are also crucial lessons for the PRC for preventing long-term recessions.

4.1 Required Reforms and the Aging Population

Theoretically speaking, with an aging population, the declining working population causes a shift down the production function, resulting in a drastic decrease in the marginal production of capital. This results in companies becoming reluctant to invest, despite low interest rates—further evidence for the vertical IS curve in Japan.

An aging population and early retirement are some of the key contributing factors to Japan's slow economic activity. Wage rates should be based on productivity rather than seniority. It is easier for companies to hire elderly people if their wage rates are set according to productivity. Healthy elderly people should be able to find jobs based on their experience and the retirement age should be postponed to counteract the diminishing working population.

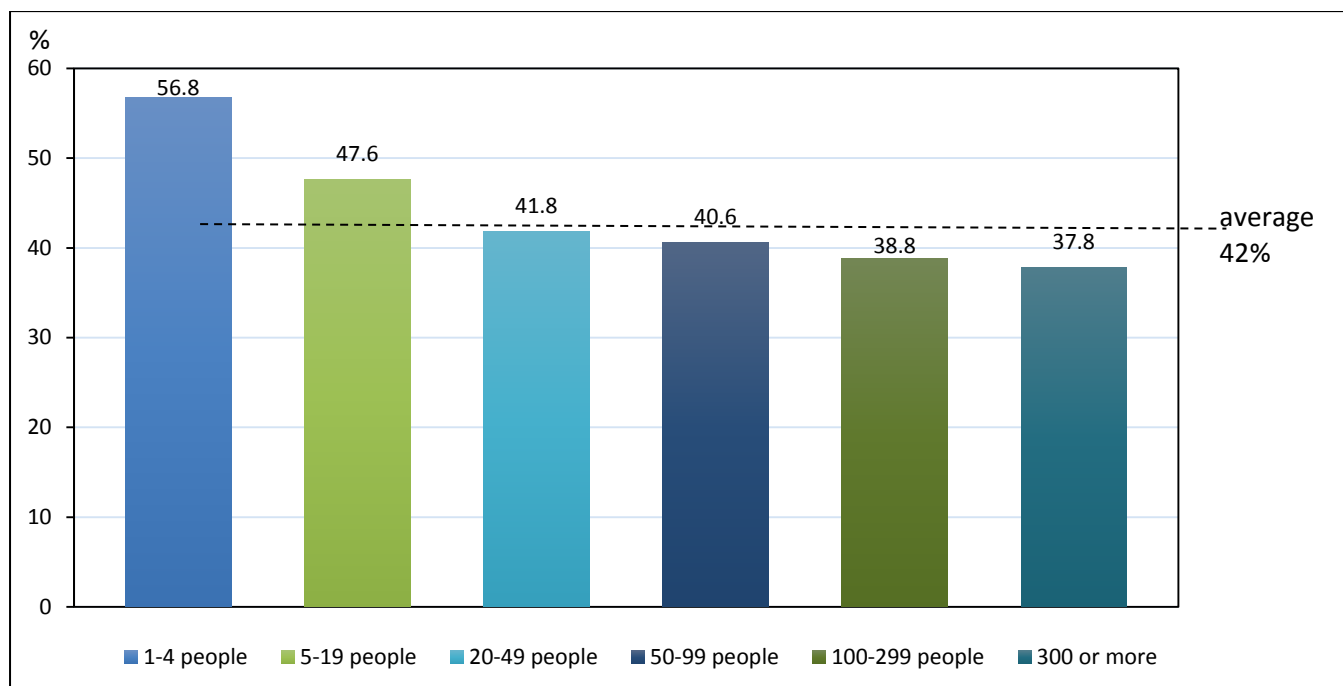
4.2 Increasing Female Participation in the Economy

In Japan, female participation in the economy is far lower than many other advanced and emerging economies. This may be due to several social factors, but there are ways to raise female participation in the economy.

In Japan, like other countries, females usually start to work after graduation. But in many cases, after having children they leave their jobs to dedicate time to childcare. Figure 9 shows the percentage of female employees by size of enterprise. This shows that the smaller the enterprise, the higher the percentage of female employees. This is because many microenterprises are family run and wives work together with their husbands, so even after having children they can look after their children while working in the business on a part-time basis. As is clear from the figure, in large enterprises, female participation is lower. This is because large enterprises generally have less flexibility so it is difficult for working mothers to manage childcare and work at the same time.

Figure 9: Share of Female Employees by Size of Enterprise in Japan

(% of employees)



Notes: "Employees" refers to people who are company members, work in a private shop, or are otherwise employed at a company, by an individual, or in a private shop; the term excludes persons employed at public agencies and other groups and corporations and furthermore excludes executive officers of companies, etc.

The dotted line in the figure represents the average for all enterprises (42.0%).

Source: MIC (2012).

Due to the aging population and shrinking labor force, the government needs to encourage greater female participation in the labor force, in part by improving childcare facilities. Having a good childcare system could be a crucial contribution to help mothers return to work after having children. This will also have a positive effect on the birth rate, as a poor childcare system may act as a deterrent to women for having children.

4.3 Japan's Future Driven by SMEs

The 3.85 million SMEs and microbusinesses spread throughout Japan are the backbone of the Japanese economy (METI 2014) and their existence is crucial in supporting economic growth and employment. More than 99% of all businesses in Japan are SMEs; they also employ almost 70% of the working population and account for a large proportion of economic output (Yoshino and Taghizadeh-Hesary 2015a). From these facts, we can easily understand that SMEs form the framework of the Japanese economy, and that revitalization of the Japanese economy is impossible without the revitalization of SMEs.

Owing to the significance of SMEs for Japan, it is important to find ways to provide them with stable finance. However, SMEs usually have severe difficulties in raising money. The undersupply of credit to SMEs is mainly because of asymmetric information, high default risk, and a lack of collateral. SMEs have more difficulties in accessing finance compared to large enterprises. Lending institutions mainly prefer to increase funds to large enterprises since the aforementioned factors are less prevalent in this group. In order to fulfill this problem, Credit Guarantee Schemes (CGS) have been developed in many countries as well as in Japan. Public CGS, with support of the government, is a tool to reduce the supply-demand gap in SME finance. CGS guarantees loans to SMEs and

makes lending more attractive by absorbing or sharing the risks associated with lending to the targeted sectors. In Japan, the government is providing partial credit guarantees on SME loans. However, the ratio is the same for all SMEs and all lending institutions, regardless of their health and soundness.

These credit guarantee ratios should be adjusted based on each party's soundness, through credit analysis on SMEs and lending institutions. Healthy SMEs and lending institutions should receive higher guarantee ratios (Yoshino and Taghizadeh-Hesary 2014a, 2015a).

Facilitating finance is not the only solution for revitalizing SMEs. There are other actions that need to be taken, for instance: developing demand and sales channels for SMEs in domestic markets and in foreign markets, increasing financial inclusion and literacy of SMEs for insurance, taxation, domestic and foreign marketing, and education on entrepreneurship, and finally raising the government R&D budget for SMEs in order to the creation of innovative technologies, etc.

4.4 Reduce Transfers from the Central to Local Governments

Local government officials may not be concerned about the rate of return of the transfers, because money comes from the central bank without any interest payment. So if private sector finance is required for local government projects, it has to be invested in high-yield sectors, otherwise the private sector will not be interested in investing in rural regions in Japan.

An incentives mechanism should be created for local governments to reduce transfers from the central government. Local governments are eager to receive transfers from the central government rather than raising private funds, but the central government should provide only limited transfers encourage the raising of funds from the private sector. Public-private partnerships and hometown investment trust funds (Yoshino 2013) must also be promoted.

Government spending between the central and local governments has to be clearly defined. The allocation of taxes between the central government and local governments must be determined together with expenditure.

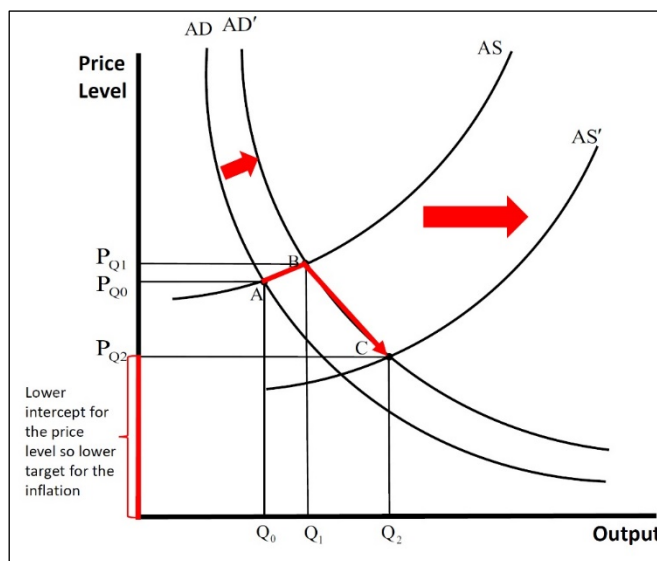
4.5 Reviewing Monetary Policy Goals

Monetary policy has goals for inflation and economic growth. The BOJ in 2013 set a price stability target of 2% (year-on-year rate of change in the consumer price index). The BOJ is implementing aggressive monetary easing to achieve this target (Yoshino and Taghizadeh-Hesary 2015b). However, we believe this target needs to be reviewed and reduced because of the recent oil price drop.

The price of oil more than halved in a period of less than 5 months from September 2014. After nearly 5 years of stability, the price of a barrel of Brent crude oil in Europe fell from more than \$100 per barrel in September 2014 to less than \$46 per barrel in January 2015 (Yoshino and Taghizadeh-Hesary 2015c).

Oil is considered as one of the most important production inputs. As shown in Figure 10, for cheaper oil prices, the aggregate demand curve (AD) shifts to the right because of higher consumption. On the supply side of the economy, the aggregate supply curve (AS) also shifts to the right because of cheaper production costs, which raise output (Q_2). The intercept of the price level becomes lower (PQ_2), hence the target for inflation needs to be reviewed as oil prices are exogenous for the Japanese monetary policy. This means that for the current cheap oil price, the target rate of inflation should be lower than 2%.

Figure 10: Effect of Lower Oil Prices on the Price Level



AD = aggregate demand, AS = aggregate supply.

Source: Authors.

4.6 Using Home Town Investment Trust Funds to Finance Riskier Businesses

After the housing bubble in Japan burst in the early 1990s, the blame was put on Japan’s unique system of financial intermediation. This was called the “collateral principle,” as lending criteria were based on the amount of collateral, rather than the viability of the project. Adopting Anglo-American ways of finance subsequently became a national objective in Japan. Two decades later, the Lehman crisis devastated the world economy, and Anglo-American financial methods were discredited. In March 2011, the Great East Japan Earthquake and tsunami struck Japan. During the long and painful recovery process, there was a strong desire among the Japanese people to contribute to the recovery process, as well as a simultaneous realization of the need to finance local SMEs and start-up companies. Many of these potential providers of capital were looking for opportunities to contribute in some way, rather than to benefit from high returns. There was also a clear need for a meeting place for these borrowers and lenders. Furthermore, the country’s budget deficit-to-GDP ratio breached 200% in 2010, casting doubt on the efficiency and effectiveness of public investment—private financing with transparent performance monitoring was called for.

In order to overcome these issues, a new form of financing, the hometown investment trust fund (HIT), was proposed. The name reflects the goal of the fund: to connect fund providers and their hometowns. A committee at the Cabinet Office was created to study the proposal. There are three main advantages to HITs (Yoshino 2013, Yoshino and Taghizadeh-Hesary 2014b).

Firstly, HITs are able to reinforce financial stability by reducing information asymmetry and sharing risk. The downfall of the pre-Lehman “originate and distribute” model was that borrower IOUs were hidden deep within complicated financial instruments. This made risk difficult to calculate and track, and once markets had lost faith in the ability of borrowers to pay back, nobody knew where the risks were and credit markets froze. Far from “distributing” risk to achieve financial stability, information ended up being as asymmetric as it could possibly have been. In contrast to this model, the HIT method encourages stability by reducing information asymmetry as much as possible. This is because households—and firms, if they want to invest in other companies—are keen to obtain information on the borrowing firms, mainly SMEs. The lenders are from the same “hometown” as the

borrowers, or they may share a similar interest. There is also a low degree of scale and concentration, with both the lenders and borrowers being relatively small and dispersed. Accordingly, this form of financial intermediation allows risk to be distributed, but does not make it invisible in the process.

A second advantage of HITs is that they become a new source of much needed risk capital. Financial regulations, notably the Bank of International Settlements (BIS) capital adequacy ratio requirements, are becoming more stringent as banks and other financial institutions are now seen as possible sources of instability. In a macro-prudential sense, this may help to reduce risk, but is detrimental to the supply of risk capital. Firms with little or no collateral are particularly affected by this change, so the provision of new and stable sources of risk capital can be especially beneficial.

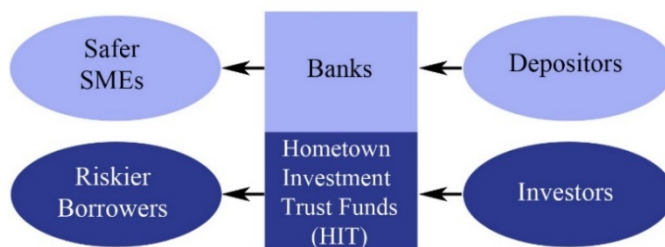
The third advantage of HIT is that it is project driven. Unlike other arrangements, such as the Grameen Bank, where investment destinations are determined later, HIT investors are able to choose the investment they would like to make from a pool of projects. Investors are not necessarily seeking high returns. Instead, they are motivated to invest and help in a project that they feel strongly about. This may be because the project is based in their hometown, or they may see significance in the investment’s potential to reduce poverty, address environmental concerns, or assist in disaster recovery. In this way, investors may feel a level of personal satisfaction in their choice, and have the added benefit of actually being able to “see” the results. This is not possible with ordinary mutual funds, where investors are not able to track the destinations of their investments.

The drawbacks of these regional trust funds, however, are that they are not guaranteed by the Deposit Insurance Corporation and risks are borne by the investors. Steps must be taken to increase investor confidence to enable the HIT market to grow, such as ensuring that the terms of the fund are explained in detail to the investors, including the associated risks and where the funds will be invested.

Banks are often not able to finance projects that carry high risks, even if the expected rates of return are high. However, if these projects are instead funded by regional funds, rather than by deposits transformed into bank loans, banks are able to receive money through the sales of regional funds by their branch offices, without having to worry about the creation of non-performing loans. Investors must be made fully aware of the risks when making their investments, but they may also receive a high rate of return, and this could increase investments into riskier projects that would otherwise not have been funded.

The success of its regional funds may help a bank to attract more investors. Conversely, if funds do not perform well, investors may decrease in future. In this way, through competition on the basis of the performance of the regional funds, the quality of projects and the risk-adjusted returns for investors can be improved. Figure 11 shows bank-based SME financing and regional financing to riskier borrowers. Bank loans go to relatively safe borrowers, while HITs finance riskier projects.

Figure 11: Bank-Based SME Financing and Regional Financing to Riskier Borrowers



SME = small and medium-sized enterprise.

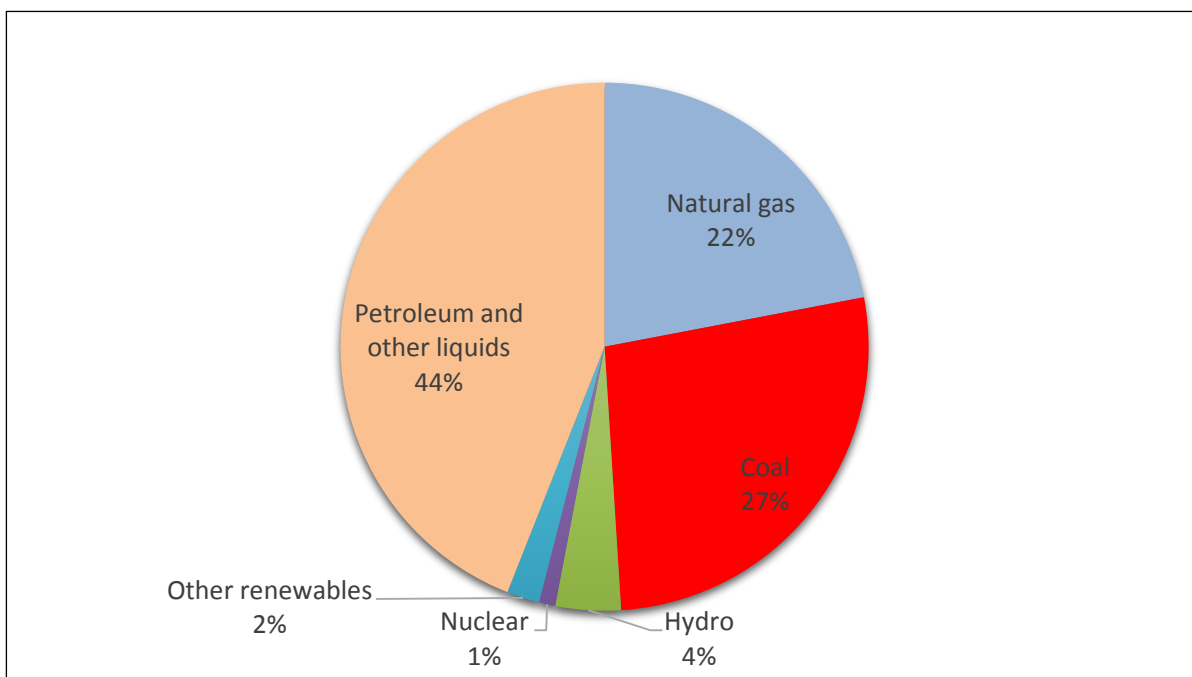
Source: Yoshino and Taghizadeh-Hesary (2014c).

Encouraging hometown investment trust funds, a form of private sector financing, will increase the rate of return and will expand private investment. Hence HITs can contribute to making a downward sloping IS curve.

4.7 Diversifying the Energy Basket

Japan is the world’s largest liquefied natural gas (LNG) importer, the second-largest coal importer, and third-largest net oil importer, behind the United States and the PRC. Japan has limited domestic energy resources, meeting less than 15% of its own total primary energy use from domestic sources (Taghizadeh-Hesary et al. 2015a). Figure 12 shows the share of each energy carrier in Japan’s total energy consumption.

Figure 12: Japan’s Total Energy Consumption, 2013



Source: US Energy Information Administration’s International Energy Statistics. *BP Statistical Review of World Energy 2014*.

Oil demand in Japan has declined overall since 2000 by nearly 15%. This decline stems from structural factors, such as fuel substitution, the declining population, and government-mandated energy efficiency targets. In addition to the shift to natural gas in the industrial sector, fuel substitution is occurring in the residential sector as high prices have decreased demand for kerosene in home heating. Japan consumes most of its oil in the transportation and industrial sectors, and it is also highly dependent on naphtha and low-sulfur fuel oil imports. Demand for naphtha has fallen as ethylene production is gradually being displaced by petrochemical production in other Asian countries (Taghizadeh-Hesary et al. 2015b).

In March 2011, a 9.0 magnitude earthquake struck off the coast of Sendai, Japan, triggering a large tsunami. The damage to Japan resulted in an immediate shutdown of about 10 gigawatts of nuclear electric generating capacity. Between the time of the 2011 Fukushima disaster and May 2012, Japan lost all of its nuclear capacity as a result of scheduled maintenance and the lack of government approvals to return to operation. Japan replaced this significant loss of nuclear power with generation from imported natural gas, low-sulfur crude oil, fuel oil, and coal. This caused the price of electricity to rise for the government, utilities, and consumers and led to inflation. Increases to the cost of fuel imports have resulted in Japan’s top 10 utilities losing over \$30 billion in the past 2 years. Japan spent \$250 billion on total fuel imports in 2012, a third of the country’s total import

value. Japan consumed over 4.7 million barrels per day of oil in 2012 (Yoshino and Taghizadeh-Hesary 2015d). The increased cost of imported energy had a significant negative impact on the Japanese economy. For more information on the impact of higher energy prices on the economy, see, *inter alia*, Taghizadeh-Hesary et al. (2013), Taghizadeh-Hesary and Yoshino (2014), and Yoshino and Taghizadeh-Hesary (2014d).

Because of the increase in imports of fossil fuels after the Fukushima disaster, the trade balance reversed from a 30-year trade surplus of \$65 billion in 2010, to a deficit that reached \$112 billion in 2013. The recent drop in oil prices in the latter part of 2014 is likely to ease the trade deficit and provide some relief to Japanese utilities.

Japan needs to diversify its energy basket away from fossil fuels to non-fossil fuels (renewables and nuclear). This is needed in order to reduce energy costs, which will in turn reduce production costs for Japanese manufacturers and stimulate the economy. It is also needed for raising the self-dependency of energy, in order to help shelter the economy from further energy shocks. We, like the Japanese government, believe that using nuclear energy as a base load power source with necessary safety measures is needed. We believe that the use of nuclear energy is necessary to help reduce the current energy supply strains and high energy prices faced by Japan's industries and end users. The best mixture of the energy basket will reduce the production costs of all Japanese companies, which means the rate of return of the companies will increase and their eagerness for investment will rise. This will also make the IS curve downward slopping.

The government's new energy policy, issued in 2014, emphasizes energy security, economic efficiency, and emissions reduction. Key goals and plans to balance the country's fuel portfolio include strengthening the share of renewable and alternative energy sources. These efforts occur in the context of the government's goal to reverse 2 decades of economic stagnation in Japan and to provide economic revitalization through public infrastructure spending, monetary easing, labor market reform, and business investment (EIA 2015).

Energy diversification is also seriously needed in the PRC. The country's energy basket is too heavily dependent on fossil fuels. In 2011, almost 91% of the PRC's energy came from fossil fuels—69% from coal, 18% from oil, and 4% from natural gas (Taghizadeh-Hesary and Yoshino 2015). Hence, in order to reduce production costs and the risks from further energy price shocks, and moreover for reducing the CO² emissions, the PRC also needs to review its energy policies and move away from its dependence on fossil fuels.

5. CONCLUDING REMARKS

In this paper, the reasons for Japan's long-term recession after the burst of the bubble in the 1990s have been examined with a view on providing lessons for countries that are expected to face similar issues in future, such as the PRC. The empirical analysis of this paper showed that stagnation of the Japanese economy comes from its vertical IS curve. This caused the impact of fiscal policy to decline drastically, so the Japanese economy was faced with structural problems rather than a temporary downturn. Our empirical findings reject the idea that the Japanese economy is in a liquidity trap. Because of the aging population in Japan, the production function became flatter and flatter. This caused the marginal productivity of capital to decline, contributing to the IS curve becoming vertical. Also because of the aging population, social security costs in Japan have increased significantly. Almost one third of the government budget goes toward the aging population, causing the budget deficit to increase considerably.

Hence, the structural problems have stemmed from the aging population, the diminished effectiveness of fiscal policy, and the allocation of transfers from the central government to local governments that constitute about 18% of total government spending. This high spending rate has weakened sectors such as the agriculture sector. In addition to these reasons, structural problems have also come from the Basel capital requirements, which have made Japanese banks more

reluctant to lend money to startup businesses and SMEs, discouraging innovation and technological progress. The large appreciation of the Japanese yen was another reason that slowed economic growth. High appreciation of the Japanese yen in the mid-1990s caused Japanese manufacturing companies to move from Japan to other Asian countries. Increases in the country's wage rate also pushed Japanese companies to go abroad and as a result, domestic production started to diminish.

These experiences after the lost decade and the proposed remedies could be lessons for other countries, including the PRC, to prevent long-term recessions and maintain growth.

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