

Japan: Selected Issues



JAPAN

SELECTED ISSUES

July 2017

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JAPAN

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Approved By
**Asia and Pacific
Department**

Prepared by Mariana Colacelli, Kazuaki Miyachi, Todd Schneider, and Niklas Westelius (all APD), Xin Li (RMU), Zoltan Jakab (RES), and Naoko Miake (OAP)

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WHY ISN'T PRIVATE INVESTMENT HIGHER IN JAPAN?¹

What is holding back private investment in Japan? Are market competition and regulation playing a role in depressing investment? A novel firm-level dataset with almost half a million Japanese firms is used to address these questions. Findings support the hypothesis that sectoral concentration (i.e. reduced competition) has had a significant negative impact on firm- and sector-level investment. Results point to potential benefits from decreasing barriers to entry, protection of incumbents, and market concentration in some sectors. OECD measures of product market regulation indicate that there is room for further reform in the gas and telecom sectors, and deregulation of professional services.

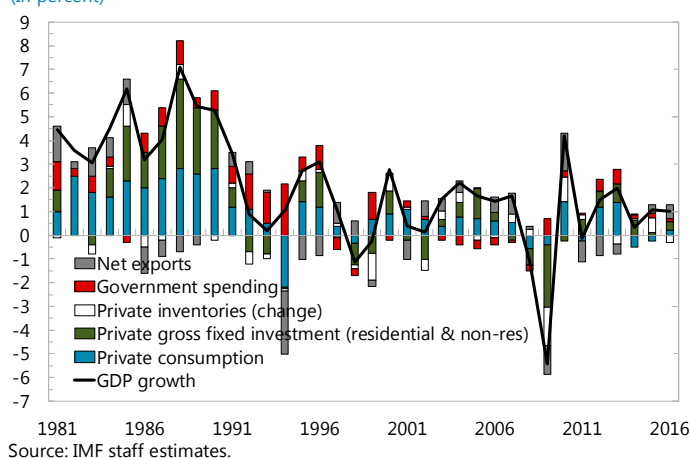
A. Introduction

1. Private business fixed investment is key for long-run growth. Even though private business fixed investment accounts for only about 15 percent of GDP, this investment is key for long-run growth as it drives capital accumulation and innovation. Moreover, investment is important to explain business cycles as it tends to be the most volatile component of GDP.

2. Japan's private business fixed investment has yet to recover to the levels observed in the 1980s. While private business fixed investment contributed 0.5 percentage points to 2011-16 real GDP growth, this is low relative to the 1.4 contribution over 1981-90. The 1991-2000 and 2001-10 periods show negative average contributions from private business fixed investment, at -0.3 and -0.1 percentage points respectively.²

3. Private investment not only appears low in a Japan context, but also seems to have underperformed relative to other advanced economies. In the period before the great recession, the average contribution to real GDP growth from private gross fixed investment in Japan was below that of other major advanced economies (Table 1). For the 2010-16 period, US, UK and Canada had stronger growth contributions from private gross fixed investment than Japan, while France and Italy had less.

Components of Real GDP Growth
(In percent)



¹ Prepared by Mariana Colacelli. Yihan Liu provided valuable research assistance.

² The chart presents the contribution from private gross fixed investment (that combines residential and non-residential private investment). The contribution to real GDP growth from residential investment was 0.1 percentage points in 2011-16, and averaged close to 0 in the 1980s, 1990s and 2000s.

Table 1. Japan: Real Growth and Contribution from Private Gross Fixed Investment
(period average, in percent)

	2010-16		2000-07		1995-99	
	Private Investment	Real Growth	Private Investment	Real Growth	Private Investment	Real Growth
Canada	1.3	-0.3	1.9	1.5	1.5	2.7
France	0.3	1.1	0.6	2.1	0.7	2.6
Italy	-0.3	-0.1	0.5	1.5	0.5	1.7
Japan	0.4	1.4	0.3	1.5	0.2	1.1
UK	1.4	0.5	2.2	0.4	0.6	1.6
US	0.7	2.1	0.4	2.7	1.4	4.0

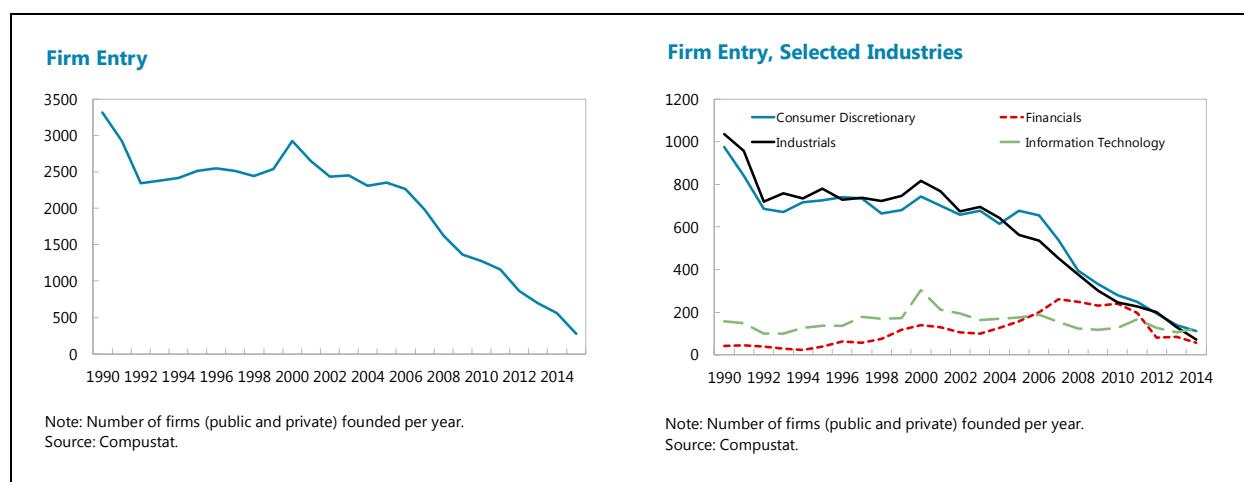
Source: WEO Database.

B. What is Holding Back Investment? Hypotheses

4. A combination of factors is likely behind depressed investment in Japan, including production offshoring, population ageing, weak corporate governance, and policy uncertainty. Weak private investment contributes to Japan's positive savings-investment balance and current account surplus. While firm profitability has increased since 2011, investment has remained weak against the predictions from a simple Tobin's Q model.³ There is evidence that increases in offshore production by Japanese firms (which is associated with higher cash holdings) can contribute to explaining the sluggish investment (Kang and Piao 2015). Population ageing, with associated worker shortages and implied depressed growth outlook, is likely another contributor to the investment drag. Weak corporate governance has been found to increase corporate savings (Aoyagi and Ganelli 2014) contributing to relatively weak investment. Moreover, high policy uncertainty has been found to negatively impact investment (Arbatli et al 2017).

5. Relatively low competition, the focus of this study, could be another factor depressing investment. The measure of firm entry in Japan (number of new firms started in a given year) shows a significant decrease in the early 1990s, and a steady decline since the mid-2000s, pointing to weakened market competition. Japan's decrease in firm entry since the great recession is mostly explained by Industrials and Consumer Discretionary sectors. Other advanced economies also show a decline in firm entry in this period, but Japan's decrease is faster than in others: Japan's firm entry in 2014 was only 24 percent of its level in 2005, similar to France, but below Italy, Canada, and the UK (where it ranged from 31 to 54 percent of 2005 firm entry).

³ Tobin's Q proposes that investment should increase when the market value of installed capital (which reflects profitability) is above the replacement cost of installed capital.



6. Market competition and investment have an ambiguous relationship from a theoretical perspective, but empirical evidence points to a positive connection. While the presumption is that a less concentrated market structure would be optimal, it may be that increasing returns to scale are important or that incentives are needed over the longer term to invest (incentives provided by expected market power/profits). Aghion et al (2005) propose that there is an inverted U-shape relationship between market competition and investment/innovation: for lower levels of market competition, the “escape competition” effect dominates and investment increases with competition; while for higher levels of market competition, investment decreases with additional competition (as lower profits decrease the incentives to invest/innovate). An empirical investigation by Alesina et al (2005) finds that, for non-manufacturing industries, more market competition (less regulation, lower barriers to entry, etc.) increases investment (i.e., dominance of the “escape competition” effect). Therefore, increasing market concentration or decreasing market competition in Japan could be a contributing factor to the observed weak investment.

7. The following analysis provides novel evidence of a positive relationship between market competition and investment in Japan. While the potential contributing factors to low investment in Japan are manifold, this analytical work aims to integrate them into the empirical analysis, conditional on data availability, and estimate the contributing role of market competition.

C. Empirical Analysis: Data Description and Summary Statistics

8. Data and sample: Firm-level data from ORBIS are used to study the drivers of firm-level and sectoral-level investment. ORBIS is a commercial database provided by Bureau Van Dijk, including information from business registries on over 130 million firms worldwide. The database goes back in time for some countries but for Japan a sizable sample is available starting in 2001. In terms of coverage, 99 percent of ORBIS data cover private companies. The ORBIS sample used for the estimation includes over three million firm-specific observations, covering the period 2001-14 for about half a million unique Japanese firms.⁴ The unbalanced panel includes around six years per firm

⁴ Due to the lag in reporting, most recent comprehensive data available correspond to 2014.

on average. Close to 2,000 of the included firms are labeled as listed. Data cleaning done to deliver this sample included removal of public administration and financial firms, use of only unconsolidated accounts, and removal of firms labeled by ORBIS as having limited financial data. Due to the very significant heterogeneity in firm-level variables, outliers are excluded (by trimming top and bottom two percent of observations for the measure of investment).

9. Firm-Level Variables: Firm *investment* is defined as the annual change in the stock of physical capital (measured by tangible fixed assets), and the investment rate is measured relative to the stock of capital from the previous year. To include both listed and private firms, instead of a measure of Tobin's Q (that relies on market valuation available only for listed firms), a measure of productivity is used. *Productivity* is proxied by profitability (profit before taxation over total assets), as frequently done in the literature.⁵ A measure of *total firm assets* (i.e. fixed plus current assets) is included to capture scale or firm size effects. *Cash holdings* by the firm measures cash at the bank and in hand. An indicator variable is used to identify the *listed* firms in the sample.

10. Sectoral-Level Variables: A time-variant Herfindahl Index (HHI) by sector is computed with data on operating revenue (turnover) to measure industry concentration and competition. HHI index is defined as follows:

$$HHI_{jt} = \sum_{i=1}^N s_{ijt}^2$$

where i represents a firm, j represents a sector, t represents the year, and s_{ijt} represents the market share of firm i in sector j in year t (between 0 and 100).⁶ By definition, HHI_{jt} varies between 0 and 10,000, with 10,000 representing full concentration of the sector j in one firm. In addition, the abovementioned firm-level variables (investment, productivity, total assets, cash, and listed) are aggregated up to compute average sectoral measures (of investment, productivity, total assets, cash, and listed) using firms' share of sectoral turnover as weights. Table 2 provides descriptive statistics for the defined variables, while Figure 1 shows HHI for selected sectors with increasing concentration over the period.⁷

⁵ An alternative measure of productivity was used (operating revenue per employee) without altering main results.

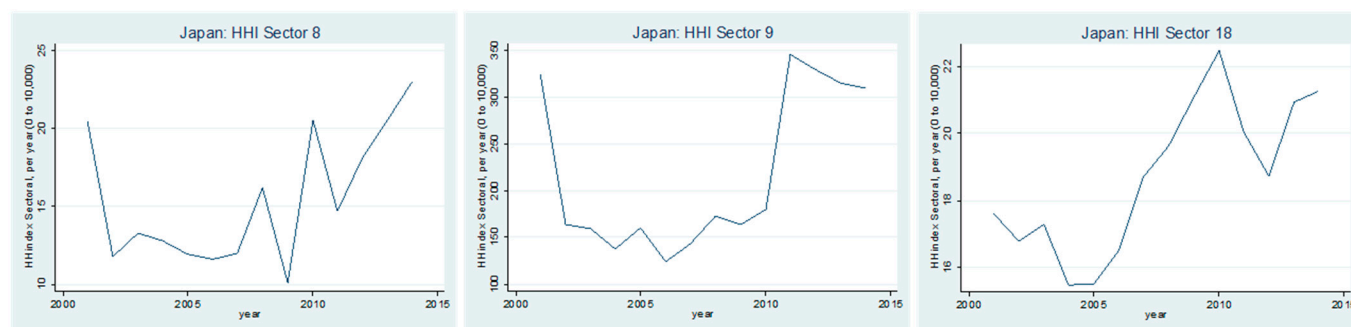
⁶ Twenty-six sectors were defined as follows: 1-digit SIC codes were used to define seven of the sectors, and the other nineteen were defined with 2-digit SIC codes for manufacturing.

⁷ Out of the twenty-six studied sectors, highest average HHI over the period is recorded for leather, petroleum refining, mining, furniture, and apparel sectors.

Table 2. Japan: Descriptive Statistics

	Obs.	Mean	Std.Dev.
Firm-level:			
Investment (percent)	3,024,936	3.7	50.0
Lag Productivity (percent)	3,024,936	1.6	28.4
Total Assets (2015 yen, 100s)	3,024,936	10,100,000	46,000,000
Lag Cash (2015 yen, 100s)	3,024,936	1,683,407	10,100,000
Listed dummy (0,1)	3,024,936	0.01	0.1
HHI (0-10,000)	3,024,936	12.4	63.4
Sectoral-level:			
Investment (percent)	364	3.6	7.4
Lag Productivity (percent)	364	3.8	1.3
Total Assets (2015 yen, 100s)	364	167,000,000	177,000,000
Lag Cash (2015 yen, 100s)	364	17,000,000	14,300,000
Listed dummy (0,1)	364	0.1	0.1
HHI (0-10,000)	364	184.9	581.7

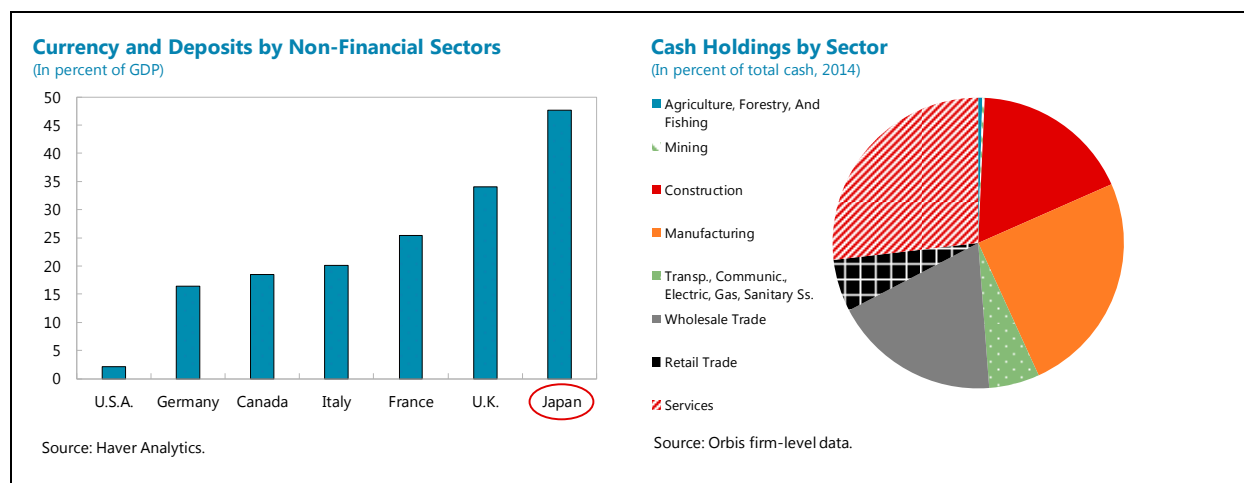
Source: Orbis.

Figure 1. Herfindahl Index for Selected Sectors
(from 0 to 10,000)

Note: Sector 8 is "Lumber and Wood Products, Except Furniture", 9 is "Furniture and Fixtures", and 18 is "Fabricated Metal Products, Except Machinery and Transportation Equipment."

11. Additional Statistics on Cash Holdings: For the economy as a whole, cash holdings by firms presently stand at about 50 percent of GDP. However, the studied firms in the ORBIS sample held about 10 percent of GDP in cash in 2014, with total holdings standing at US\$ 443 billion. Cash holdings for firms in the sample have doubled between 2001 and 2014. Each firm, on average, held US\$ 1.6 million in cash in 2014. However, there are large discrepancies across firms and sectors, with three sectors amounting to over 60 percent of the cash: 27 percent of the cash held by firms in the services sector, 19 percent held by firms in wholesale trade, and 18 percent by firms in the

construction sector.⁸ Regarding the highest cash holdings per firm, each listed firm holds US\$ 23 million on average, while the average chemical firm holds US\$ 8 million, and the average transportation equipment firm holds US\$ 5 million. In relation to the average yearly turnover by sector, firms in mining, services, and leather rank highest, holding over 30 percent of their net sales in cash, as of 2014 (Table 3).



⁸ The nineteen manufacturing sectors taken together amount to almost 25 percent of cash holdings in 2014.

Table 3. Japan: Firms Cash Holdings, 2014

	Cash by Sector (share of all cash)	Average Cash per firm (million USD)	Cash over Turnover (in percent)	Number of Firms
Whole Sample	100.0	1.6	16.2	278,590
Listed Firms	9.3	22.9	19.1	1,803
By Sector:				
Agriculture, Forestry, And Fishing	0.5	0.4	16.5	5,512
Mining	0.3	2.9	30.7	399
Construction	17.7	0.7	18.2	109,159
Manufacturing	24.8			49,512
Food And Kindred Products	1.9	2.6	11.2	3,164
Textile Mill Products	0.3	2.3	17.9	668
Apparel And Other Finished Products Made From Fabrics And Similar Materials	0.3	2.2	19.2	522
Lumber And Wood Products, Except Furniture	2.4	0.5	15.8	19,944
Furniture And Fixtures	0.3	2.6	23.2	517
Paper And Allied Products	0.7	3.2	14.3	958
Printing, Publishing, And Allied Industries	1.4	4.0	26.7	1,547
Chemicals And Allied Products	2.3	8.0	23.4	1,256
Petroleum Refining And Related Industries	0.1	2.7	17.1	163
Rubber And Miscellaneous Plastics Products	1.2	2.4	13.9	2,200
Leather And Leather Products	0.0	2.7	30.9	77
Stone, Clay, Glass, And Concrete Products	0.9	2.3	15.2	1,768
Primary Metal Industries	1.1	3.4	10.8	1,432
Fabricated Metal Products, Except Machinery And Transportation Equipment	2.5	2.4	18.4	4,699
Industrial And Commercial Machinery And Computer Equipment	4.2	3.9	21.6	4,727
Electronic And Other Electrical Equipment And Components, Except Computer Equipment	2.3	3.9	16.8	2,623
Transportation Equipment	1.3	5.3	13.0	1,097
Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches And Clocks	0.9	4.4	20.8	895
Miscellaneous Manufacturing Industries	0.6	2.1	21.9	1,255
Transportation, Communications, Electric, Gas, And Sanitary Services	5.6	2.2	19.8	11,264
Wholesale Trade	18.6	2.4	9.6	34,427
Retail Trade	5.8	2.2	9.6	11,956
Services	26.8	2.1	30.5	56,361

Source: Orbis

D. Empirical Analysis: Estimation and Regression Results

12. A firm-level investment model is augmented with a sectoral concentration measure to study the impact of market competition on firm-level investment. The linear regression model used is an augmented version of the Q-theory of investment, with a role for profitability/productivity together with other variables as specified in (1). HHI, a key variable for the analysis, measures the yearly degree of concentration in the sector (where higher HHI represents higher concentration or less competition). Firms' cash holdings is another key measure given its relevance for Japan and its potential impact on investment. A measure of firm's assets is included to control for the effect of firm size on investment, possibly via financing costs and governance differences. The indicator variable for listed firms captures investment idiosyncrasies of public firms. α_t denotes time fixed effects that capture yearly economy-wide shocks, such as exchange rate fluctuations, economic uncertainty shocks, and population ageing. δ_i denotes firm fixed effects that capture time-invariant

firm-specific factors that may affect their investment. ε_{ijt} represents the residual and captures all unobserved yearly variation in firm investment. As usual, the identifying assumption needed for unbiased coefficient estimates is that the residual is uncorrelated with the included right-hand-side variables.

$$I_{ijt} = \beta_1(Productivity_{ijt-1}) + \beta_2(Cash_{ijt-1}) + \beta_3(Assets_{ijt}) + \beta_4(Listed_{ijt}) + \beta_5(HHI_{jt}) + \alpha_t + \delta_i + \varepsilon_{ijt} \quad (1)$$

13. A sectoral-level investment model complements the firm-level model. Using weighted firm averages by sector, sectoral yearly investment variation is studied with specification (2). In addition to the five right-hand side variables parallel to those in (1), time and sector fixed effects are included (α_t and π_j). Sector fixed effects capture time-invariant factors by sector. When estimating the impact of concentration on investment, an advantage of model (2) over model (1) is that it focuses on sectoral investment (instead of firm-level investment) while concentration is also measured at the sectoral level. In other words, firm-specific drivers of investment behavior are removed from the estimation in (2).

$$I_{avg_{jt}} = \beta_1(Productivity_{avg_{jt-1}}) + \beta_2(Cash_{avg_{jt-1}}) + \beta_3(Assets_{avg_{jt}}) + \beta_4(Listed_{avg_{jt}}) + \beta_5(HHI_{jt}) + \alpha_t + \pi_j + \varepsilon_{jt} \quad (2)$$

14. Results point to a negative impact of sectoral concentration on investment (Table 4). As expected, productivity shows a positive and significant impact on investment, both in the sectoral- and firm-level regressions. Firms' size (measured by assets) also shows, for the most part, positive and significant effects on investment. The coefficient on cash holdings suggests a negative relationship with investment, in line with production offshoring behavior that has been found to boost cash holdings at the expense of domestic investment (2015 IMF WP/15/183). Importantly, sectoral concentration is estimated to have a negative and significant impact on sectoral- and firm-level investment, evidencing that a lack of a competitive environment within a sector adversely affects investment. Notably, the estimated coefficients on HHI indicate that a reduction in sectoral concentration by one standard deviation would increase a firm's investment rate by about 0.1 percentage points (columns 3 and 4), and it would increase the sectoral investment rate by 1.0-1.8 percentage points (columns 1 and 2) which amounts to 30-50 percent of the average sectoral investment rate. An alternative way to quantify the results is to compute the hypothetical impact on sectoral investment from a decrease in sectoral concentration via a reduction in HHI by 800 (which takes place when a firm with 40 percent market share becomes two firms with 20 percent market share each) – in this case, results indicate that the sectoral investment rate would increase by 1.4-2.5 percentage points.

Table 4. Japan: Regression Results on the Impact of Market Concentration on Investment

Dependent Variable:	Sectoral Investment		Firm Investment	
	(1)	(2)	(3)	(4)
Lag Productivity	0.798** [0.157]	0.835** [0.195]	0.0589** [0.00101]	0.0568** [0.0138]
Lag Cash	-2.57e-08~ [1.76e-08]	-4.84e-08* [1.96e-08]	-2.01e-08** [3.56e-09]	-6.04e-08** [2.00e-08]
Total Assets	4.70e-09* [2.26e-09]	9.53e-09** [2.57e-09]	4.24e-10 [7.90e-10]	5.99e-08** [1.01e-08]
Listed Dummy	-10.75** [2.485]	-9.571~~ [5.385]	3.517** [0.358]	-
HHI	-0.00181** [0.000565]	-0.00305** [0.000773]	-0.00181** [0.000460]	-0.000818~ [0.000566]
Constant	3.585** [0.787]	4.295** [1.024]	7.317** [0.166]	8.616** [0.161]
Observations	364	364	3,024,936	3,024,936
R-squared	0.836	0.876	0.014	0.229
Year FE	yes	yes	yes	yes
Sector FE	no	yes	no	n.a.
Firm FE	n.a.	n.a.	no	yes
Number of Individual Firms	n.a.	n.a.	493,394	493,395

Standard errors in brackets

** p<0.01, * p<0.05, ~~ p<0.10, ~ p<0.15

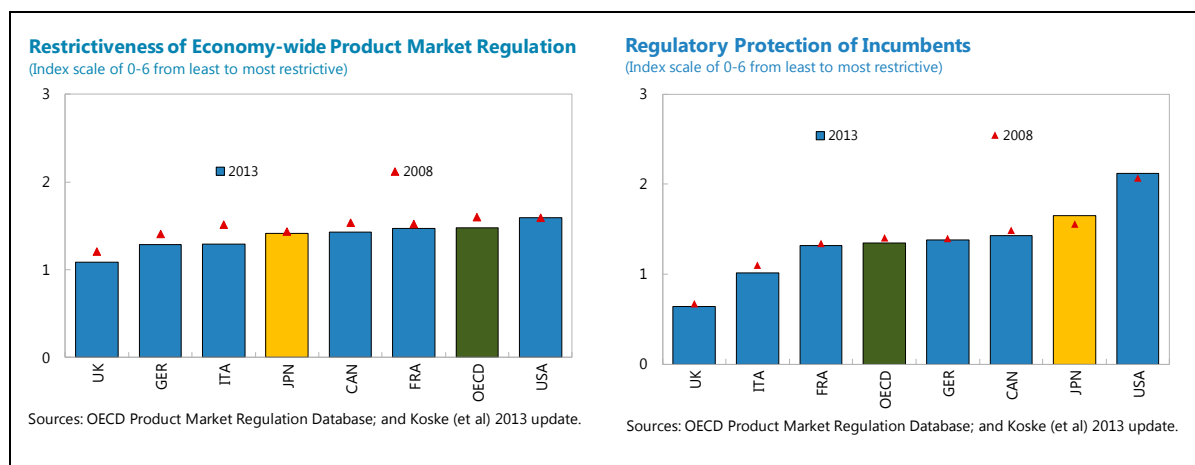
E. Priorities for Reform: Product Market Regulation

15. OECD data can help identify specific areas that may benefit from enhanced competition and product market reform to boost investment. OECD-compiled product market regulation (PMR) measures for non-manufacturing sectors cover 35 OECD countries and other non-OECD countries, with data up to 2013, and focus on network sectors, retail distribution, and professional services.⁹ The available OECD PMR measures apply to broadly three of the eight 1-digit SIC sector codes covered in the regression analysis above, accounting for almost 30 percent of the studied firms and 40 percent of the 2014 cash holdings.

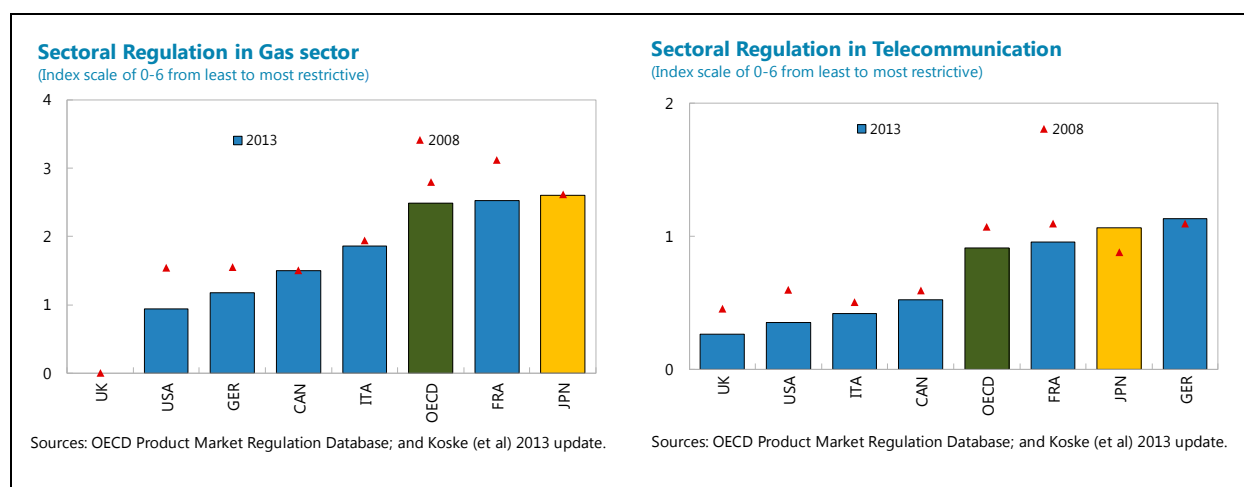
16. The restrictiveness of Japan's regulation stands out among OECD countries for protection of incumbent firms, energy, telecommunication, and professional services. While Japan places below OECD averages regarding overall restrictiveness of product market regulations,

⁹ Data cover seven network sectors (telecoms, electricity, gas, post, rail, air passenger transport, and road freight) and five services sectors (retail distribution, accounting services, legal services, engineering services, and architectural services). The four indicators of regulation in accounting, legal, engineering and architectural services are aggregated into one indicator of regulation in professional services. Koske et al (2015) provide further details on the dataset.

there are noticeable exceptions. Regulatory protection of incumbents stands out as an area with room to improve and potential to decrease barriers to entrepreneurship. Regarding specific sectoral regulation, gas (within the energy sector) and telecommunications show restrictiveness of regulation above OECD averages. Sectoral regulation for professional services also stands out as relatively restrictive.



17. Highlights of the main contributors to restrictiveness in product market regulation, when compared with G7 peers: OECD-compiled measures identify restrictiveness in Japan's gas sector, mainly regarding firm-entry regulation and high market concentration. Regarding telecom, OECD-compiled measures identify relatively high public ownership and market concentration in Japan. Lastly, regarding the four professional services sectors analyzed by OECD, engineering and accounting stand out as the most restrictive in Japan relative to G7. Within engineering, relative restrictiveness in a G7 context is highest regarding conduct regulation (with relatively high regulations on prices and fees and regulations on advertising) and entry regulation (educational requirements). Within accounting, conduct regulation also shows restrictiveness among G7, with relatively high regulation on the form of business.

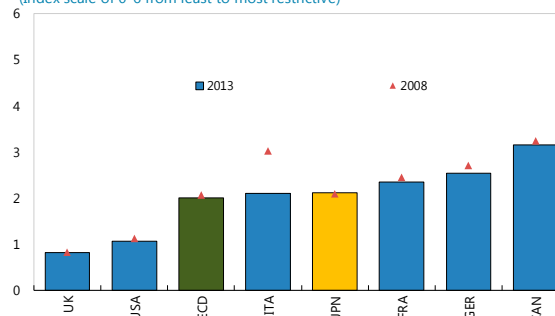


18. Complementing the above regression results, previous research has found positive effects from product market reforms in areas where Japan has room for further reform, including network industries and professional services.

Gal and Hijzen (IMF 2016) study product market reforms in 18 advanced economies for 1998–2013, finding that reforms have positive effects on capital, output and employment, and that their effects increase over time. They also find that product market reforms promote firm entry, particularly those that reduce entry barriers, and that credit constraints can weaken the positive impact on investment. Canton et al (EC 2014) finds that, for the EU for the period 2008–11, less strict regulation in the professional services sector

(regarding entry barriers and the exercise of these professions) improved allocative efficiency and intensified business dynamics. Monteagudo et al (EC 2012) finds significant effects from the 2006–09 EU deregulation of the services sector, conservatively estimating that it lifted EU GDP by 0.8 percent.

Sectoral Regulation in Professional Services
(Index scale of 0–6 from least to most restrictive)



Sources: OECD Product Market Regulation Database; and Koske (et al) 2013 update.

F. Conclusions and Policy Discussion

19. Market concentration is found to have a significant negative effect on investment.

Weak private investment contributes to Japan's positive savings-investment balance and current account surplus. A combination of factors is likely at play in explaining the relatively depressed investment in Japan, including demographic changes, production offshoring, corporate governance, and policy uncertainty. While the role of most of those factors has been previously studied, this note focuses on the impact of sectoral concentration on investment using novel firm-level data for Japan. The estimated effect of market concentration on investment points to benefits from lower barriers to entry and lower regulation to boost investment and innovation.

20. Relative to OECD and G7 peers, there is room to improve product and services market regulation. OECD-compiled measures for non-manufacturing sectors indicate that there is room to reduce barriers to entry and protections to incumbents in some industries with high concentration (i.e. gas, telecom), and there is room for deregulation in professional services.

21. Other sectors (not covered by the OECD measures) may also benefit from deregulation and further reforms in Japan. These include agriculture, healthcare, childcare, and senior care. Deregulation efforts need to cover national and local regulation to foster competition and investment while avoiding regulatory arbitrage.

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IS AN UNBACKED FISCAL EXPANSION THE ANSWER FOR JAPAN?¹

Japan's economy has been in a low inflation environment since the mid-1990s, which has perpetuated a deflationary mindset. A recent proposal to reflate the Japanese economy advocates a government commitment to an unbacked fiscal expansion tied to achieving the inflation target. Using model simulations, this note illustrates how an unbacked fiscal expansion can generate inflation and help an economy exit the zero-lower bound (ZLB) relatively quickly. However, the simulations also show that Japan's highly backward-looking inflation expectations are likely to generate unfavorable dynamics by front-loading real debt accumulation while significantly delaying the reflation process. Such dynamics may lead the government to renege on its commitment and could pose serious risks to public debt sustainability—strongly suggesting that the risks associated with an unbacked fiscal expansion well outweigh potential benefits.

A. Introduction

1. Japan's two-decades long experience with low inflation has generated a persistent deflationary mindset. Since the mid-1990s, both annual CPI inflation and the GDP deflator have averaged around zero percent. Several factors have contributed to this low inflation environment, including two major financial crises in the 1990s, demographic headwinds, a policy rate constrained by the ZLB, and a series of insufficient policy attempts to reflate the economy.² As a result, inflation expectations have become backward-looking and unresponsive to new policy initiatives, leading to the emergence of a deflationary mindset.³ While the introduction of Abenomics showed some early success and contributed to a temporary lift in headline inflation, inflation expectations have remained near zero and the sizeable expansion of the BoJ's balance sheet has yet to re-anchor inflation expectations at the 2 percent inflation target.

2. Several unorthodox proposals have been made to reflate the Japanese economy. These proposals have ranged from a monetized fiscal expansion to a price level path supported by a complementary exchange rate policy.⁴ Common characteristics across these proposals are assumptions that the announced policy shift would be credible and that the public will adjust its inflation expectations accordingly. However, if expectations are slow to adjust, a self-fulfilling cycle may occur where persistently low inflation expectations impede the reflation process to such a degree that the government eventually reneges on its commitment, and thus reconfirming the initial low inflation expectations.

¹ Prepared by Xin Li, Kazuaki Miyachi and Niklas Westelius. A forthcoming IMF Working Paper will elaborate further on the details of staff's assessment of the Fiscal Theory of Price Level (FTPL) and the simulations.

² For a description of Japan's experience with deflation see Box 3.2 in Chapter 3, World Economic Outlook, October 2016. Liu and Westelius (2016) and Anderson et al (2014) provide some evidence on the link between demographics and inflation.

³ See IMF (2015).

⁴ See IMF (2016).

3. This note evaluates a recent proposal to explicitly tie an unbacked fiscal expansion to achieve the inflation target. The proposal was put forth by Professor Christopher Sims at the Jackson Hole Economic Policy Symposium in 2016, and has its foundation in the literature on the fiscal theory of the price level (FTPL).⁵ The proposal advocates that the government should commit to a fiscal expansion until the inflation target is reached. However, central to the proposal is that the government must make clear to the public that the expansion will not be backed by higher future primary surpluses. Instead, higher inflation will “pay” for part of the resulting debt obligations.⁶ The following analysis takes a closer look at the ability of such a “non-Ricardian” expansion to reflate the Japanese economy and, importantly, assesses how Japan’s highly backward-looking and unresponsive inflation expectations would affect the potential for success.

B. Implications of FTPL for Monetary and Fiscal Coordination

4. The FTPL argues that the government can influence the price level by adjusting current and future primary surpluses.⁷ The theory postulates that government bonds can be used for both transactions of goods and services and as interest bearing financial assets. This opens the possibility for the government to influence prices by adjusting the attractiveness of holding bonds. For instance, a credible commitment by the government to lower future primary surpluses results in less real resources to back existing real debt. Consequently, the public finds it less attractive to hold government debt and tries to reduce its bonds holdings. The proceeds from selling the bonds are then spent on goods and services, leading to a rise in the price level and a fall in real debt. Hence inflation would de-facto pay for the lower future primary surpluses. However, the impact on the price level would not occur in a situation where the government is committed to finance current deficits by future surpluses (so-called Ricardian fiscal policy).⁸

5. The FTPL also introduces a non-traditional channel for monetary policy to affect the price level. By adjusting the nominal interest rate, the central bank can influence the government’s debt service payments. Under a non-Ricardian fiscal policy (also commonly labeled “active” fiscal policy) – where the future stream of primary surpluses is unresponsive to inflation or debt – a rise in the interest rate would lead to an increase in bond issuance to cover the higher interest payments. This would increase the amount of outstanding government debt and hence lead to a rise in the price level as the public tries to sell excess bonds. In contrast, under a Ricardian fiscal policy (also commonly labeled “passive” fiscal policy) this would not happen as the rise in the debt service burden would be paid by higher future primary surpluses and not through additional debt.

⁵ Sims (2016, 2017)

⁶ Sims argues that, in Japan, this could be done by committing to a schedule of consumption tax increases conditional on meeting the inflation target (Sims, 2017).

⁷ It is also helpful to clarify some common misunderstandings about the FTPL. First, the FTPL is not a revival of traditional Keynesian theory, as it abstracts away from the fiscal multiplier effect. Second, the FTPL *per se* has nothing to do with debt monetization.

⁸ Leeper and Leith (2016)

6. Two stable regimes of fiscal and monetary coordination emerge from the FTPL.⁹ If the central bank aggressively fights weak inflation by lowering the nominal interest rate by *more* than the decline in inflation (labeled as “active” monetary policy), then fiscal policy must be passive (i.e., Ricardian). Otherwise, the lower interest rate would simply trigger even lower inflation (through reduced issuances of bonds)¹⁰, leading to even greater deflationary pressure. Conversely, if fiscal policy is “active” (i.e., non-Ricardian), then monetary policy must be “passive.” That is, the central bank can only reduce the interest rate by *less* than the fall in inflation. This implies that when the nominal interest rate is at its zero lower bound, conventional monetary policy is de-facto passive, and that active fiscal policy could have a powerful impact on reflating the economy.

7. The transmission channel to generate a strong inflation response under FTPL hinges on some key assumptions.

- *The government cannot default on its debt.* Hence, in order for the intertemporal budget constraint of the government holds, any unbacked fiscal impulse must generate a strong and positive inflation response.¹¹
- *The government can effectively communicate its intentions.* For inflation to react quickly, the government must be able to credibly convince the public that the fiscal expansion will be financed through higher future inflation and not through higher future primary surpluses. In that sense, a public that is relatively forward-looking is needed.

C. Methodology and Assumptions

8. The analysis presented in this note is based on a model consisting of four equilibrium conditions.¹² Real GDP is determined by a consumption Euler equation with habit formation. Inflation is modeled by a Phillips curve with both forward-looking and backward-looking price setting behaviors. Monetary policy is represented by a Taylor rule with the nominal interest rate constrained by the zero lower bound (ZLB). Finally, to capture the price determination channel in the FTPL, the government’s intertemporal budget constraint—which sets the current real debt equal to the discounted future stream of real primary surpluses—is incorporated into the model as a new equilibrium condition. Note that the existence of both the Euler equation and the governments intertemporal budget constraint means that monetary policy affects inflation both through the traditional substitution effect (i.e., by encouraging or discouraging current consumption by adjusting the interest rate) as well as through its influence on debt service payments as highlighted by the FTPL.

⁹ Davig and Leeper (2011)

¹⁰ Sims (2008)

¹¹ While a positive probability of default does not necessarily eliminate the transmission channel, it is not clear how inflation would respond in such a case due to the endogenous nature of the interest rate risk premium.

¹² The OccBin toolkit for occasionally binding constraints is used to solve our model with the ZLB on nominal interest rate. See Luca Guerrieri and Matteo Iacoviello (2015).

9. Two alternative policy regimes are specified. The first regime corresponds to an active monetary policy and a passive fiscal policy (henceforth referred to *the Ricardian regime*). In this regime, the central bank implements a standard Taylor rule until the nominal interest rate hits the ZLB, while the fiscal authority adjusts the primary surplus proportional to the deviation of real value of government bonds from its steady state. The second regime corresponds to a passive monetary policy and an active fiscal policy (henceforth referred to as *the non-Ricardian regime*). In this regime, the central bank implements a Taylor rule that is less responsive to inflation deviations, while the fiscal authority sets the primary surplus process exogenously regardless of the level of outstanding government bonds.

10. The merit of an unbacked fiscal expansion is evaluated by comparing impulse responses to a negative and persistent output shock under the two regimes. The assumed parameter values closely follow the IMF's Global Projection Model (GPM).¹³ The initial negative output shock is set to a 1 percent deviation from its steady state and decays at an annual rate of 0.6. In the non-Ricardian regime, the size of the fiscal impulse is assumed to be a 5 percent of GDP deviation from its steady state in the first period and subsequently decays at an annual rate of 0.6. Unless otherwise specified, the impulse response functions (IRFs) are expressed as the percent deviations of each variable from the steady-state.

D. An Illustrative Example of an Unbacked Fiscal Expansion

11. To better understand the implications of an unbacked fiscal expansion the model is first simulated with and without the ZLB as a constraint. The model is parametrized as an "advanced economy" by averaging the GPM's parameter values of the US, Euro Area, and Japan. Figure 1 compares the impulse response functions under the Ricardian and the non-Ricardian policy regimes when the ZLB is non-binding. Figure 2, shows the case when the ZLB is binding.¹⁴

12. When the ZLB on the nominal interest rate is not binding, a Ricardian policy regime implies less volatile inflation dynamics and a more benign accumulation of real government debts (see Figure 1).

- In the Ricardian policy regime, accommodative monetary policy can more effectively counter the negative output shock and deflation pressure by aggressively lowering the nominal interest rate without hitting the ZLB. The resulting low interest rate environment helps reduce the funding cost of the government in initial periods when inflation is negative, leading to only a moderate and temporary increase in the real level of government debt.
- In the non-Ricardian policy regime, the government convinces the public that the fiscal stimulus today will be financed by future inflation (rather than taxes or spending cuts). Hence, the supply of nominal bonds increases while the expected stream of primary surpluses decreases – creating excessive real supply of government bonds –and inflation adjusts to make the intertemporal

¹³ IMF Working Paper, WP/13/87, GPM6 - The Global Projection Model with 6 Regions.

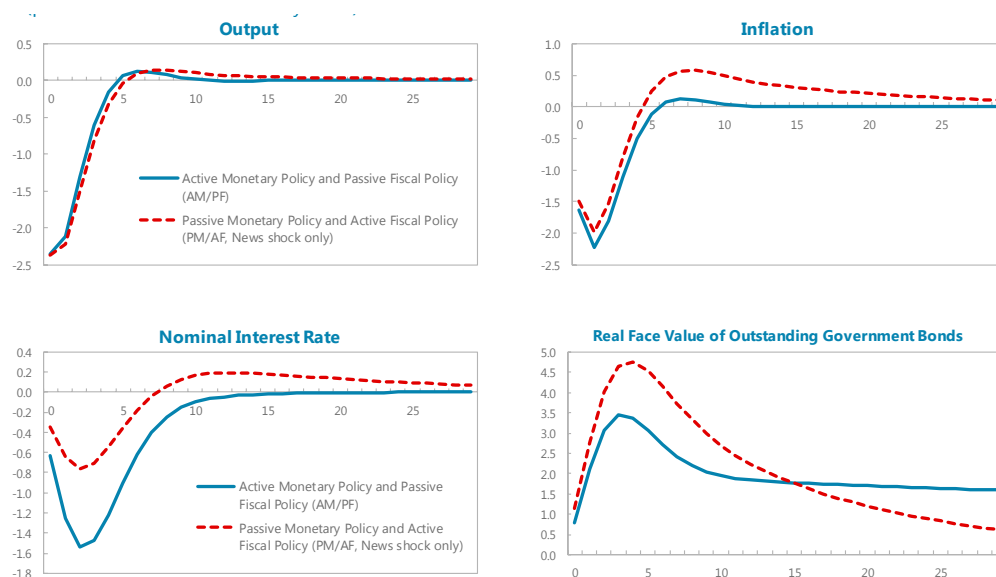
¹⁴ Negative realizations of a larger shock or higher autocorrelation imply a longer duration at the zero bound.

constraint of the government hold. Simulations show that the non-Ricardian regime will yield an inflation overshooting of about 1 percent. Moreover, in the absence of aggressive accommodative monetary policy, real government debt will grow at a faster pace compared to the Ricardian policy regime.

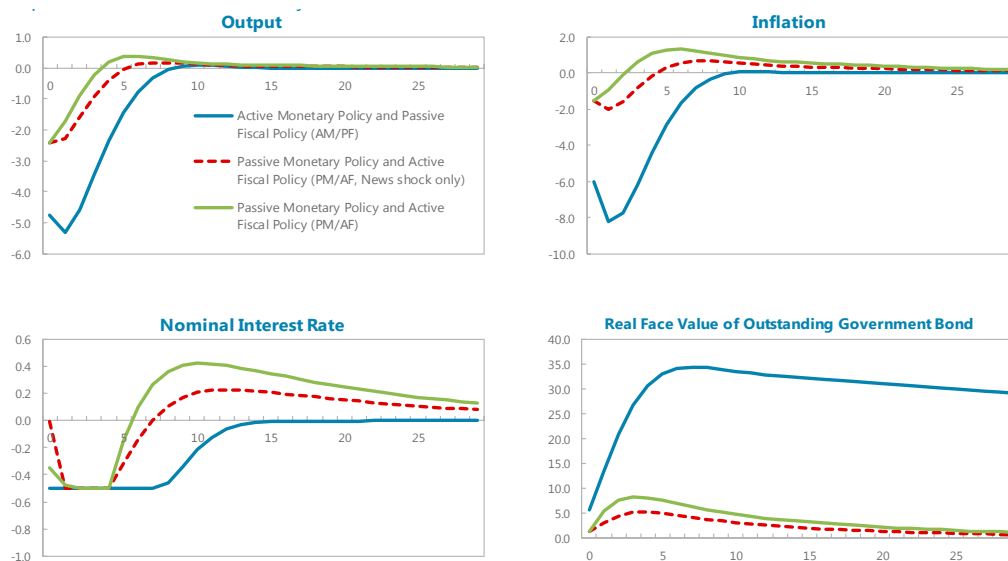
13. When the nominal interest rate is constrained by the ZLB, the non-Ricardian regime may help the economy recover at a faster pace. Figure 2 shows that the economy will escape the ZLB after 5 years under the non-Ricardian policy regime, whereas it will be constrained at the ZLB for about a decade under the Ricardian policy regime.

- Notably, active monetary policy alone risks a deeper recession. This is primarily because the prevailing low interest rate will limit the policy space of the central bank to counter negative output shocks and disinflation. Real debt dynamics are also worse under the Ricardian policy regime, due in part to the greater fall in the price level.
- By contrast, credible announcement of a non-Ricardian policy regime may trigger a virtuous cycle of reducing attractiveness of government bonds, increasing aggregate demand, and raising inflation. In addition, the realization of committed lower primary surpluses will provide additional momentum to boost output and inflation. The active response of inflation will in turn partially offset the effect of unbacked fiscal expansion on the accumulation of government bonds, leading to only a moderate increase in the real value of outstanding government bonds.

Figure 1. Simulations Under Alternative Policy Regimes (normal time, ZLB not binding)



Source: IMF Staff Calculations.

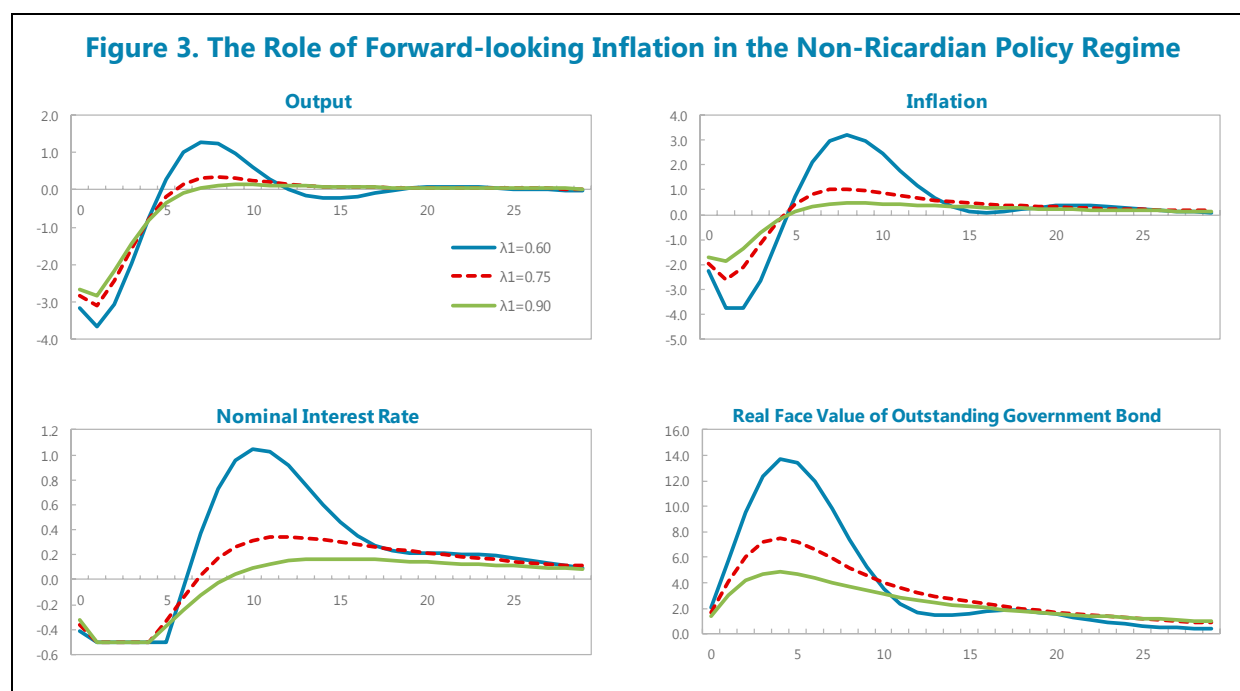
Figure 2. Simulations Under Alternative Policy Regimes (bad time, ZLB binding)

Source: IMF Staff Calculations.

E. Could an Unbacked Fiscal Expansion Work in Japan?

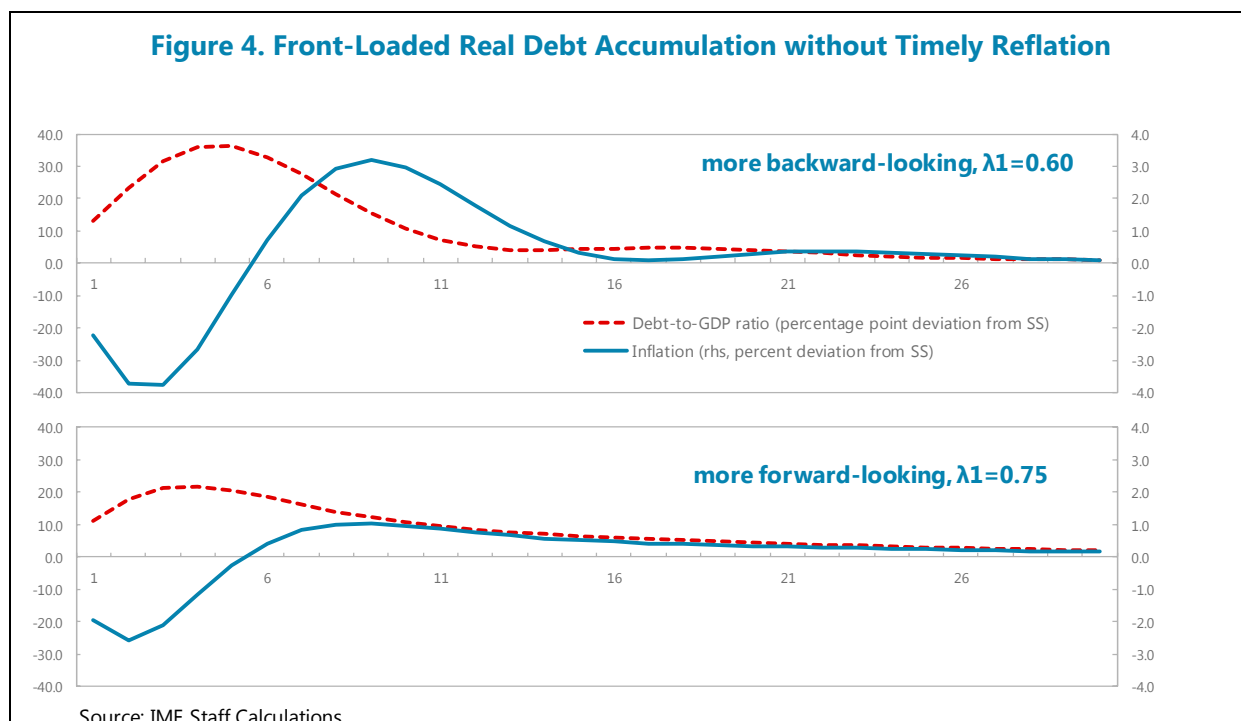
14. To understand whether an unbacked fiscal expansion could work in Japan, it is crucial to analyze the role of inflation expectations. Accordingly, the model was re-parameterized based on the GPM calibration for Japan and simulated using a range of parameter values that govern the forward-looking component in the Phillips Curve. The results are shown in Figure 3.

15. The more backward-looking are inflation expectations, the longer the economy stays at the ZLB and the more volatile are inflation dynamics. In the model, the relative importance of the forward-looking component of inflation expectations is denoted by λ_1 (a smaller value indicates more backward-looking inflation expectations). Figure 3 shows that, holding other things equal, more backward-looking inflation expectations lead to a longer duration at the ZLB. Moreover, the simulations show that highly backward-looking inflation expectations lead to a more volatile inflation response—inflation would initially be unresponsive to the negative shock (resulting in deeper deflation in the beginning) and then become more responsive in subsequent periods (greater overshooting) to make the solvency condition of government bonds hold. This raises a series of concerns about the robustness of an unbacked fiscal expansion when applied to Japan.



16. Backward-looking inflation expectations would also front-load the real debt accumulation without a timely reflation. Figure 4 shows the percentage point deviation of the government debt-to-GDP ratio from the steady state for $\lambda_1 = 0.6$ and $\lambda_1 = 0.75$, respectively. When the inflation expectation is less forward-looking ($\lambda_1 = 0.6$), the unbacked fiscal expansion will raise the debt-to-GDP ratio by 20 percent of GDP within one year and by 35 percent of GDP within 4 years. Meanwhile, the reflation process takes an extended time to materialize and requires an eventual inflation overshooting by 3 percentage points (i.e., a rise to 5 percent assuming an inflation target of 2 percent) to keep the government solvent.

17. The initial limited reflation progress and strong rise in the debt-to GDP ratio may test the government's resolve or trigger a fiscal confidence crisis. The simulations show that under more backward-looking inflation expectations, the negative output gap is almost closed after 5 years and the nominal interest is already above its ZLB. At that juncture, it is questionable whether it is still optimal or practical for the central bank and the fiscal authority to continue to coordinate under the non-Ricardian policy regime. On the one hand, weak inflation and debt overhang will pose questions regarding the effectiveness of the unbacked fiscal expansion, possibly resulting in the fiscal authority reneging on its commitment of no future tax hikes and spending cuts. This could further prolong the recovery while the accumulated debt could threaten medium-term debt sustainability and trigger a potential fiscal crisis. Alternatively, the perceived ineffectiveness of the unbacked fiscal expansion could generate calls for a more active monetary policy, encouraging the central bank to deviate from its passive monetary stance. This could, in turn, lead to an explosive combination of active monetary and fiscal policy and hyperinflation.



18. Simulations suggest that if inflation expectations are too backward-looking, an unbacked fiscal expansion will destabilize the economy. The simulations for Japan imply that there exists a lower bound for λ_1 (at approximately 0.55), below which there is no stable solution. In this case, an unbacked fiscal expansion would lead to an unsustainable debt path accompanied by uncontrolled inflation. Empirical evidence tends to agree that the relative weight of the forward-looking price setting behaviors in Japan is less than 0.55 or insignificant.¹⁵ This highlights the significant tail risks of applying the FTPL to Japan.

F. Other Concerns about an Unbacked Fiscal Expansion

19. Apart from problems arising from Japan's backward-looking inflation expectations, there are additional concerns about an unbacked fiscal expansion.

- First, Japan's public debt has already reached to an unprecedented high level, and it is not clear whether the public still believes that fiscal policy is Ricardian. Since inflation remains low this raises questions about the applicability of the FTPL.
- Second, given past unsuccessful attempts to reflate the economy, the commitment to an unbacked fiscal expansion may not be credible. In this case the outcome would be similar to that of backward-looking inflation expectations. Further, such an expansion requires that the government can credibly commit to return to Ricardian fiscal policy once inflation has reached its target. Ugai (2017) highlights the difficulty of this "two-stage commitment," as the public

¹⁵ IMF (2015)

would tend to expect that the government will be either irresponsible or responsible throughout the whole period.

- Finally, in Japan, most of the public liabilities are held by financial institutions either as JGBs or interest bearing excess reserves at the BoJ. It is therefore highly uncertain whether, and to what extent, the unbacked fiscal expansion would stimulate households' spending as suggested by the FTPL. Instead, decline in nominal bond prices associated with the fiscal expansion could negatively affect the balance sheets of financial institutions with adverse effects on financial stability. In this context, Gasper, Obstfeld and Rhee (2017) cautioned that risks associated with such a proposal could undermine the safe asset status of JGBs and lead to bond market scare.

G. Conclusions

20. Model simulations suggest that an unbacked fiscal expansion could generate inflation and help an economy exit the zero-lower bound relatively quickly. In normal times, the separation of responsibility, where monetary policy is responsible for achieving the inflation target while fiscal policy respects its budget constraint, works well. However, coordinating monetary and fiscal policies may be necessary when inflation is low and conventional monetary policy is constrained by the ZLB. This note analyzes a recent proposal that advocates that the government should commit to an unbacked fiscal expansion until the inflation target is reached. This could generate inflation more quickly and help the economy exit the ZLB earlier.

21. However, Japan's highly backward-looking inflation expectations will likely cause an unbacked fiscal expansion to generate unfavorable dynamics with associated risks well outweighing benefits. Backward-looking inflation expectations would lead to a front-loading of higher public debt and a delayed reflation process. Such dynamics may test the government's resolve or trigger a fiscal confidence crisis. At a worst, while still a plausible scenario, the unbacked fiscal expansion could immediately set public debt on an unsustainable path and generate an uncontrolled inflation spiral. Given these results, a comprehensive policy packages that takes advantage of the current economic environment by exploiting complementarities between macro-critical structural reforms and coordinated income and demand policies is likely to help reflate the economy at a much more favorable risk-benefit trade-off.

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TAX POLICY CHALLENGES OF AN AGING/DECLINING POPULATION¹

Japan faces the difficult challenge of balancing near-term fiscal support for growth with the inevitable task of reducing the overhang of public debt through medium-term fiscal consolidation—all set against the backdrop of an aging/declining population. Careful management of tax policy reform and revenue enhancement will be essential to achieving these twin objectives in a way that is growth friendly and preserves inter-generational equity. The consumption tax should remain at the heart of revenue reform, but pacing of rate increases is critical. Other potential tax measures should also be explored.

A. Background

1. Japan faces the difficult challenge of balancing near-term efforts to boost consumption and growth with the need for medium-term fiscal consolidation. With gross public debt projected to exceed 240 percent of GDP in 2017 and non-social-security related government spending already contained, raising tax revenues must be at the center of efforts to reduce the primary fiscal deficit.

2. IMF policy recommendations have focused primarily on increasing the consumption tax rate.² However, past experience with consumption tax increases in Japan (strong frontloading of consumption prior to

implementation, and sharp drops

thereafter) brings into question the

wisdom of relying on large step

increases in the consumption tax in

an environment of low growth, low

or negative inflation, and weak

consumption. Moreover, the political

economy of consumption tax

increases in Japan is challenging (the

2 percentage point planned

consumption tax increase has been postponed twice). Against this backdrop, this paper seeks to (i)

give a fresh assessment of the potential impact of consumption tax increases, its implication for the

appropriate pace of fiscal consolidation, and its suitability as a tax policy measure in an aging

society; and (ii) discuss other potential tax measures to supplement the consumption tax in a growth

friendly manner.

Japan - Structure of Tax Revenues, 2015

Tax Type	Revenue(Bil Yen)	Share (in percent)
Personal Income Tax	30,541	30.8
Consumption Tax	21,984	22.2
Corporate Income Tax	21,329	21.5
Tax on Goods and Services (other than Consumption Tax)	11,835	11.9
Property Tax	13,050	13.2
Others	406	0.4
Total	99,145	100.0

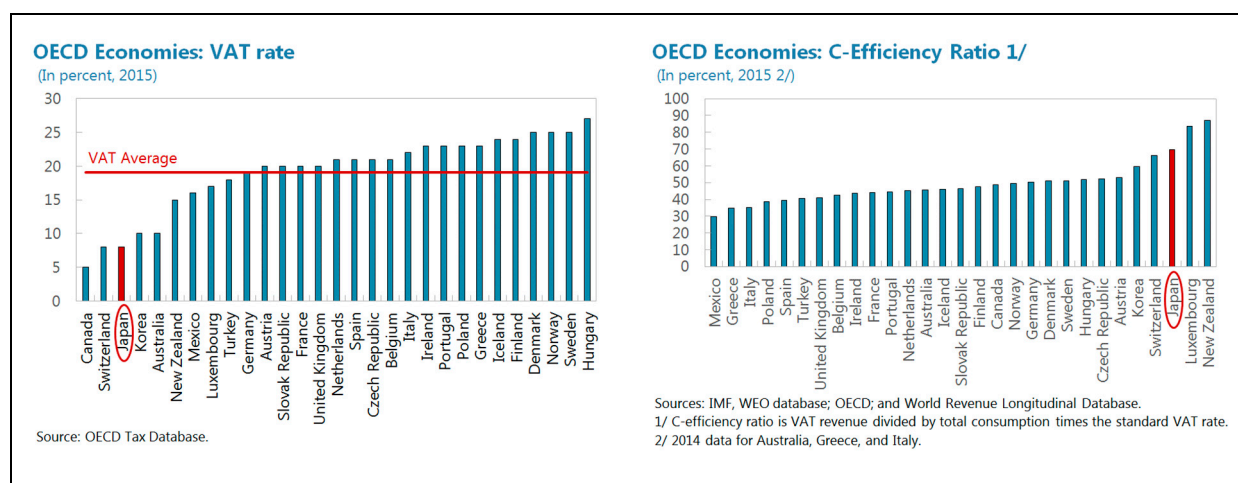
Source: OECD

¹ Prepared by Todd Schneider (APD) and Zoltan Jakab (RES).

² See IMF Staff Discussion Note (SDN 11/13), Raising the Consumption Tax in Japan: Why, When, How?, Michael Keen, Mahmood Pradhan, Kenneth Kang, and Ruud de Mooij.

B. Raising the Consumption Tax

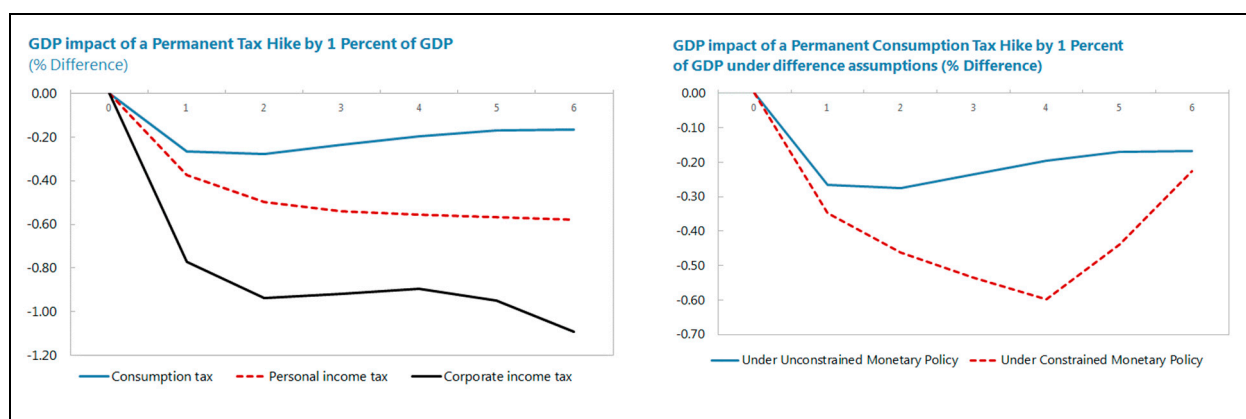
3. The consumption tax remains a preferred option for raising additional revenue given its low rate, broad base, and applicability across age groups. The relatively low level of revenue collected from the consumption tax (compared with VAT collections from other OECD countries) highlights the room for upward potential. In terms of scale of potential collection, the consumption tax also has clear advantages over most other forms of tax. It also provides a stable source of revenue in an aging society—consumption being smoother than, for instance, income. The consumption tax also distributes the tax burden more equitably across age cohorts, ensuring that those entering retirement pay a fair share toward the cost of retirement support. The efficiency of consumption tax collection is also high in Japan.



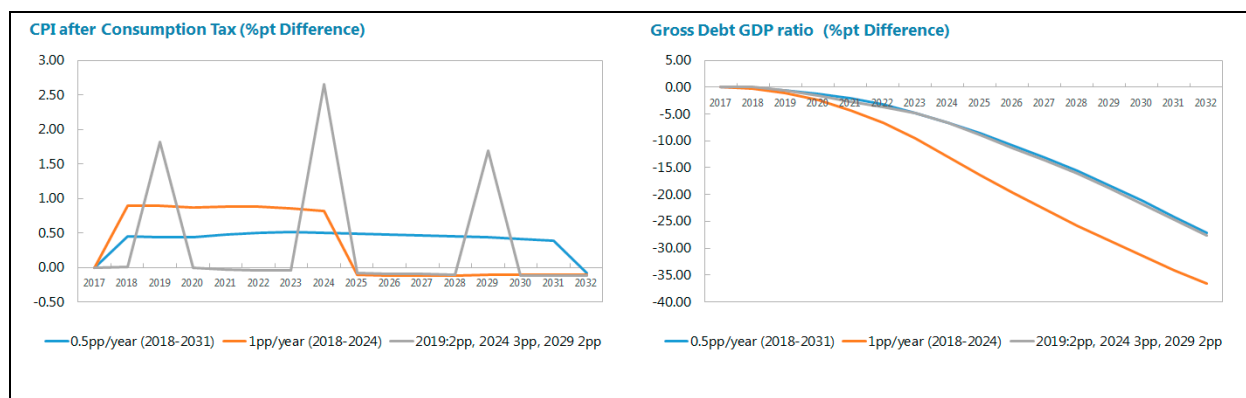
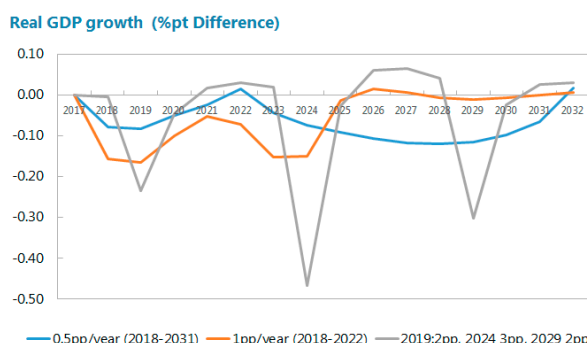
4. Model simulations confirm that raising the consumption tax rate is likely to be less detrimental to growth than other major tax options (personal income tax and corporate income tax)³. Compared to consumption tax increases, personal income tax increases result in a greater decrease in labor supply; corresponding increase in firms' labor cost to induce more labor supply; and consequent decline in investment. Corporate income tax increases result in a shaper and prolonged drop in investment given the decline in the return to capital.

5. While the consumption tax is the best choice from a growth perspective, constrained policy space and a higher fiscal multiplier pose additional challenges for fiscal consolidation. Lack of demand support through additional monetary easing (given that Japan is already at the zero lower bound) can substantially delay recovery from the negative shock from a higher consumption tax rate. In addition, an aging society and other factors could contribute to making households more myopic and liquidity constrained—thereby raising the fiscal multiplier of a tax rate increase (Saito, 2016). Given Japan's low potential growth of around 0.5 percent in the medium term, the path of consolidation should be gradual to avoid dampening growth momentum.

³ Simulations were performed with the 6-region version of Global Integrated Monetary and Fiscal (GIMF) model with the version described in Anderson and others (2013).



6. A gradual path for fiscal consolidation is also preferable from a cyclical management perspective. Figures below illustrate different paths of consumption tax hikes—each arriving at a 15 percent VAT rate⁴. A gradual increase of 0.5 percentage point every year starting from 2018 reduces the debt-GDP ratio by more than 20 percent in 2030, with the least growth volatility. An increase of 1 percentage point can achieve fiscal consolidation faster, but with a larger impact on growth and inflation until the 15 percent VAT is reached. A larger step increase of 2-3 percentage point with a 5-year interval (in line with the authorities' current plan) can achieve similar debt dynamics with the first scenario, but with significantly higher growth and inflation volatility. Given Japan's weak wage dynamics, higher inflation due to a consumption tax hike on top of the BoJ's efforts to achieve 2 percent inflation could result in a sharper-than-expected drop in real income.

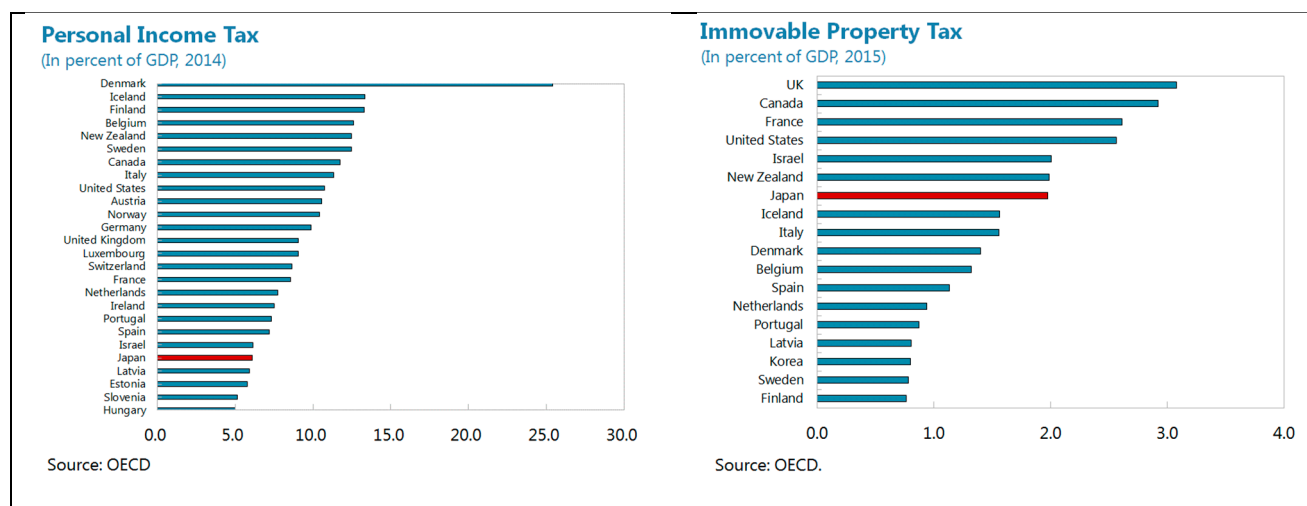


⁴ Simulations were performed under the assumptions of limited foresight and unconstrained monetary policy. With constrained monetary policy, the conclusions would not change significantly, albeit the negative impacts on growth would be stronger.

C. Other Tax Measures

7. Other tax policy options potentially worth consideration include tightening the personal income tax, increasing revenue from property taxes, inheritance tax, and asset/wealth taxes:

Personal income tax: Reforms should focus primarily on addressing inequality and eliminating work disincentives, but can potentially contribute to revenue growth. The top rate for Japan's



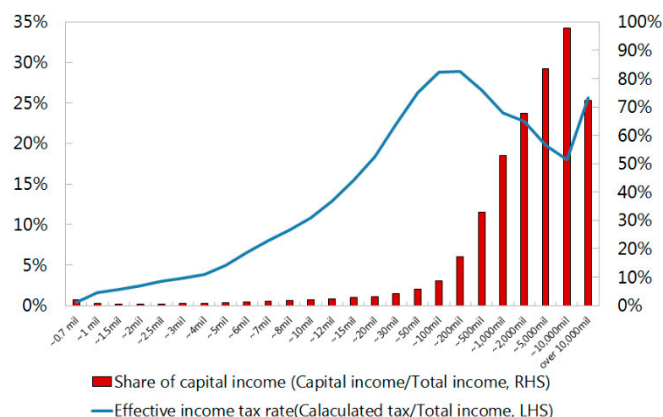
personal income tax rate is currently the third highest in the OECD, but the low collection level is indicative of ample deductions in the tax framework. The current income deduction framework (which allows high income earners to enjoy larger benefits) should be replaced with more progressive and specific measures such as targeted tax credits. These reforms need to be attuned to and provide support for macro-structural reforms. For example, eliminating disincentives to full-time or regular work stemming from the spousal tax deduction remains critical. Also, reducing exemptions for pension income, while introducing targeted tax credits for elderly workers could increase incentives for the elderly to remain in the labor market. A part of revenue gains from reducing deductions, on top of the indirect positive gains from less distortionary tax systems, can potentially contribute to revenue growth.

Property tax: Japan is in the upper ranks in the OECD with respect to property tax collection (which is administered at the local level) as a share of GDP. However, in Japan, only 30 percent of local tax revenue comes from recurrent property tax, compared with 100 percent in the UK and Australia, 90 percent in Canada, 75 percent in the US, and 53 percent in France. Apart from a more stable revenue base for local governments, raising property taxes and using the extra space to reduce transfers from the center could encourage growth (empirical growth studies robustly rank property tax as the most efficient tax).

Asset/wealth tax: Very few countries currently employ wealth taxes, and many of those that have used this tax vehicle in the past have since discontinued. There have been several motivations for asset/wealth taxes, but most prominent have been their use as part of a broader commitment to

income equality, and as a temporary measure in a broader fiscal consolidation effort. Those that have opted to eliminate the tax have generally cited administrative cost versus revenue collected or concerns about capital flight. However, for some countries (Switzerland, Italy, Spain) wealth taxes remain an important part of the overall tax structure or a component in a larger fiscal consolidation plan. The tax structure most compatible with an effective wealth tax is one with either zero or very few exemptions, a high threshold of liability, and a flat marginal rate that is set at a low level. For Japan, inequality may only be a moderate consideration for a wealth tax, given relatively low (albeit rising) Gini coefficients after redistribution. Capital flight (for tax avoidance) could also be a concern. The administrative cost of such a tax relative to potential collections could also be a difficult hurdle to pass (in India, for example the wealth tax was replaced with a 2 percent surcharge on incomes above a given (high) threshold—resulting in a substantially higher level of collection. However, there are some potential arguments in favor of a wealth tax from a productivity standpoint. The tax rate on capital income is relatively low in Japan, resulting in lower marginal tax rate for high income individuals. But, higher capital income taxation would raise burden on entrepreneurs who are more productive (and generate more income). Under wealth taxation, entrepreneurs who have similar wealth levels pay similar taxes regardless of their productivity—thus the tax burden would shift from productive entrepreneurs to unproductive ones if capital income tax were replaced with a wealth tax, potentially boosting productivity but increasing inequality (albeit amongst the wealthy) (Chen and others (2015)).

Personal Income Tax - Across Income Levels, FY2015



Source: National Tax Agency.

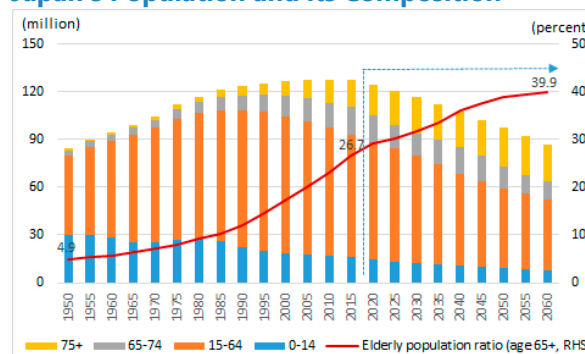
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JAPAN'S LIFETIME EMPLOYMENT AND GENDER INEQUALITY¹

1. Japan is the most aged country in the world and has very low fertility rate. Japan is the most aged country in the world with the ratio of population over the age of 65 at close to 27 percent. And the rate of population aging is expected to accelerate over the foreseeable future, as the birth rate remains lower than the replacement rate (1.45 in 2015 versus 2.1).²

Japan's Population and its Composition



2. At the same time, the country is currently facing an acute labor shortage. The unemployment rate is now the lowest among the OECD countries (2.9 percent versus the OECD average at 6.2 percent in Q4 2016), and is at the lowest level since 1994.

3. Japan therefore faces two related challenges—first to increase the input of labor by females both in the short term and the medium term, and second, to increase the fertility rate so as to slow, or possibly reverse, the decline in its population. These two goals are seemingly contradictory, however, they have been successfully addressed in Nordic countries (Kinoshita and Guo, 2015).

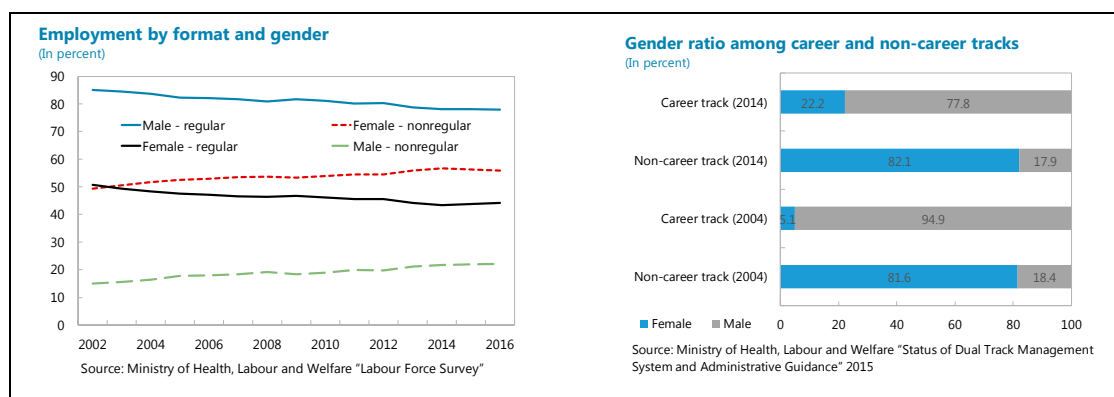
4. Lifetime employment is common for male workers. Japan's lifetime employment system, backed by seniority-based wages, became the standard after the 1950's. Even after revising the Dispatched Workers Act in the late 1990's to raise labor market flexibility, the system persists (especially for men) as employment laws make it almost impossible to fire regular workers. Nearly 30 percent of men work at the same firm where they started—virtually unchanged since 1990. Only 19 percent of women stay at the same firm, and the ratio has been declining.

5. Women are overrepresented in non-regular jobs. While Japan's female labor force participation rate is already higher than the OECD average, more than 50 percent of women in the labor force are non-regular workers, compared to 20 percent of men. Women choose non-regular work to balance the demands of child care, elder care, and housework, due to limited

¹ Prepared by Naoko Miake.

² The fertility rate has picked up slightly from the bottom marked in 2006 (1.26), which can be partially explained by the increase in the birth rates amongst those at the tail end of the baby boom (aged 30-39). With the continuous decline in marriage rates, and the decline in the number of women in the reproductive age, this modest rebound is expected to end by 2018.

availability of childcare and nursing facilities.³ The choice also reflects frequent demands for overtime (which is weakly regulated and either unpaid or underpaid) in the lifetime employment system, at the worst case leading to death from overwork ('karoushi').⁴ Also, regular works usually require frequent job rotation (which often involves compulsory relocation). Due to lack of remote-work possibilities and family support, women usually decide to leave their jobs when their spouses are relocated.⁵ Some choose non-regular work because regular positions are not available. If regular-work contracts allowed flexible or shorter working hours, female non-regular workers would likely shift to regular contracts with higher wages.



6. Recent increases in the work force are concentrated in non-regular positions. The proportion of non-regular workers rose from 20.3 percent in 2004 to 37.5 percent in 2016. Part-time non-regular workers' wage (per hour) is about half of full-time regular workers. This has suppressed the overall wage bill despite a labor shortage, putting downward pressure on wage-price dynamics.

7. The dual-track system pays less for female regular workers. Women entering the work force under regular contracts are often relegated to lower-paid jobs under the dual-track system—a fast track for management stream employees (career track) and a slow path for routine, clerical work (non-career track). Although both tracks are open, men dominate the former. Companies require workers to commit to their track before hiring, and limit track switching. Some companies mandate relocation as a condition for applying for the career track, discouraging those who share family responsibilities (mostly women). Women in non-career track are deprived of training opportunities and thus limited chance for promotion, resulting in lower wages compared to male peers.

8. Wage scale is largely set on the number of dependents rather than merits. The root of gender wage gap can be found a needs-based wage scale which large employers have

³ Childcare capacity rose by 500,000 in 2009-16, but waitlisted children remained above 20,000 for the same period.

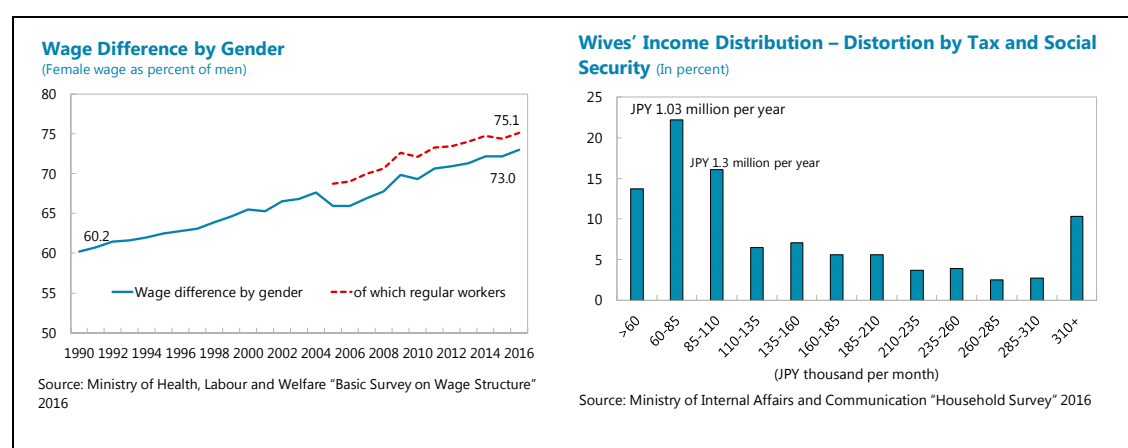
⁴ Between April 2015 to March 2016, there were 205 suicides and 246 deaths from overwork (officially reported through workers' compensation claim). A white paper on the 'death from overwork' revealed that 22.7 percent of companies have full-time staff working overtime at least 80 hours per month, a threshold which is regarded to increase health risks.

⁵ In 2015, about 60 thousand women left their workplace due to their spouses' relocation. 40 percent of women who left their jobs at the timing of marriage answered that her husband's relocation triggered her resignation from work.

introduced since 1946. Under a needs-based wage scale, wages are set mostly depending on the number of dependents in a typical single-earner employee's household (63.2 percent of base wage), rather than the workers' skills/ability (24.4 percent), location (6.8 percent) or seniority (4.4 percent). This wage scale assumed a full-time male worker as the sole bread earner. The system excluded female worker from the framework, as women were asked to leave their jobs upon marriage, or their retirement age for female workers at 28-35 years until mid-1980's so that 'jobs would not become obstacles to their marriage'.

9. Collateral-based lending discourages female entrepreneurship. Women could possibly seek higher income by starting up their own businesses. However, women's entrepreneurship seems to be discouraged by limited access to finance. Women-owned start-ups have 11-14 percentage point lower probability of obtaining loans when they need credit (Higuchi and Kodama 2014). Japanese financial institutions' over-reliance on collateral- and personal-based lending could be discouraging women's entrepreneurship. Lower wages slow down women's accumulation of assets that could be used as seed money. Japanese women's weak legal position on real estate eliminates chances to use their property as collateral for start-ups. Mifune (2006) shows that nearly 80 percent of married women do not have property rights (even partially) for their residence, although nearly 50 percent of married women had contributed financially toward its purchase. Women holding property rights are concentrated among widowers, as property rights are mainly transferred through inheritance. They tend to be old or risk-averse to start a new business.

10. Tax and social security systems discourage female labor. The tax system deters female labor from taking on regular positions. Many non-regular workers intentionally choose fewer hours or lower wages, as they are exempted from income and residential tax if they earn less than JPY 1.03 million per year, and from social security premiums if they earn less than JPY 1.3 million per year. Household heads can also receive spousal allowance if the second-earner (typically the woman) earns less than the threshold, which is usually set below the tax or social security premium threshold.



11. Japan's ruling Liberal Democratic Party's Tax Commission recommended in 2014 to abolish the spousal deduction which penalizes the second-earner's income and benefits higher-income households than lower-income, or to replace with a more neutral couple deduction. However, the government *raised* the threshold for spousal deduction from JPY 1.03 million to JPY 1.5 million, effective January 2018.

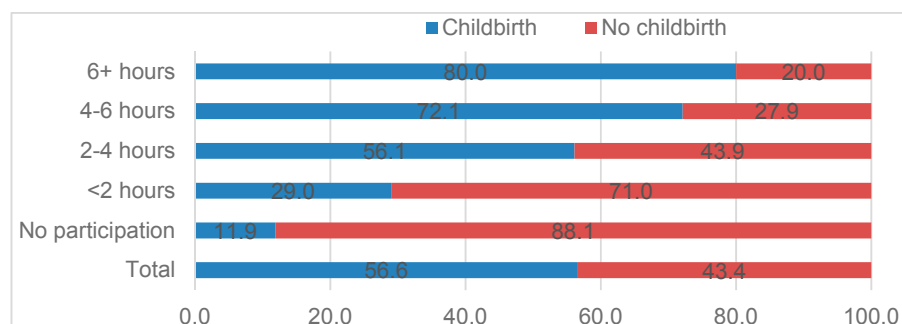
12. Success in equalizing opportunities within the labor market hinges on comprehensive policy action. The experience of other advanced countries in undertaking tax reforms to increase FLFPR is instructive in this situation. For example, when Canada replaced a spousal tax exemption with a non-refundable tax credit in 1988, a significant increase occurred in labor force participation among women (around 10 percentage points), especially among women married to higher-income husbands (Crossley and Jeon, 2007). This was the direct result of having marginal tax rates for women that no longer depended on the (typically higher) marginal tax rates of their spouses.

13. Reform of employment contracts, and tax and social security systems is a prerequisite to raise female labor force participation and to create upward pressure on wage-price dynamics. If the spousal tax deduction is completely removed, female workers between age 20-34 is likely to increase by about 3 percentage point, and about 2 percentage point for age between 20-64. As employers provide spousal allowance, the impact of the removal of spousal tax deduction can be even larger. If all the spousal benefits are removed, married women's labor participation rate could raise by 4.5 to 10 percentage points and their working hours could increase by 22 percent (Oishi 2003). However, the tax and social security reform alone is not sufficient.

14. More public investment in family support is required, and finding its stable financing is an urgent issue. Municipalities, especially those in metropolitan areas, are reluctant to invest in childcare facilities capacity increase, as the number of women in reproductive age will decrease in a few years. When placing the children at certified nursery schools, mothers are prioritized by criteria including their work and marital status, health and income, and whether the child has siblings. This point system puts non-regular workers at lower priority compared to regular workers, making it even more difficult for job-seekers to return to their jobs or part-time workers to seek a full-time job.

15. Societal attitudes in which males contribute to household work could be a powerful lever both to increase female labor force participation, and increase fertility. If women can get more child rearing support from their husbands, it would be easier for them to continue to work. However, with 85 percent of full-time employees working overtime, it is difficult in reality to share the childcare burdens among a working couple if both of them have regular works. Men's commitment to house work and family responsibilities can have a significant impact on fertility. Data suggests that the more time spent by a husband in house work and childcare, the higher the chances that couples will have a second child.

Childbirth within 11 years after the first child by husband's participating hours in housework and childcare during days-off (in percent)



Source: MHLW "Panel Survey in the 21st Century" 2015.

16. Time limit to reverse the demographic trend is 2018. As the second-generation baby boomers (born between 1971 and 1974) will pass their reproductive age by 2018, the Japanese government is facing a very limited window to deploy sufficient childcare support policies and to conduct working style reform. Without strong and concerted efforts on multiple fronts, it will be technically impossible to turn around the declining demographic trend even if the fertility rate increases, given that the number of women in reproductive age will drop sharply after 2019.

17. Gender gaps will undermine the country's growth potential. Gender gaps and inequality in economic empowerment between men and women in Japan is deeply rooted, and it has discouraged highly-educated women to fully contribute to economic growth and productivity. The ongoing shift in the industrial structure toward more high-technology, knowledge-intensive and service-oriented sectors will make the economic cost of gender discrimination even higher than in a traditional "blue-collar" manufacturing-based economy.

18. Work-style reform for both men and women is necessary. Providing childcare support and reforms of the tax system to reduce or eliminate the penalty on secondary income earners are necessary but not sufficient. Additional efforts are needed to change the "working style" (long working hours, workplace discrimination against women with families, low male contribution to childcare and elderly care, etc.) in Japan's public and private sectors to simultaneously boost female labor force participation, female wages and the fertility rate. Furthermore, bringing changes in societal attitudes, so that men and women would share both economic and family responsibilities, are the key for sustainable economic and population growth. The fact that the number of women in the reproductive age will fall sharply in the next two years increases the urgency of making these changes.

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