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Korea's Challenges Ahead—Lessons from Japan's Experience

by Edda Zoli

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Korea's Challenges Ahead-Lessons from Japan Experience

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Abstract

This paper draws out the parallels between Korea and Japan in terms of demographics, potential growth, balance sheets, asset prices and inflation. Korea's demographic trends seem to track Japan's with a lag of about 20 years. Low productivity in the service sector and labor market duality are common to both countries and need to be addressed with structural reforms. While Korea's corporate balance sheets are stronger than Japan's in the early 1990s, Korea needs to progress with the restructuring of nonviable firms to avoid the adverse consequences of delayed balance-sheet repair that Japan experienced. Given its strong fiscal balance sheet position, Korea can afford using fiscal policy actively to incentivize corporate restructuring and structural reforms and cushion their possible short-term adverse impact. Korea can prevent bubbles in asset prices that were at the origin of Japan's initial crisis with the continued use of macroprudential policies. Although Korea does not appear to be headed toward deflation, new econometric analysis presented in the paper suggests that aging will exert a downward drag on its inflation going forward.

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I. INTRODUCTION

Korea's current demographic trends and economic environment have sparked comparisons with the Japanese economy. Indeed, some of the issues facing Korea presently and going forward are similar to those already confronted by Japan: one of the world's most rapid aging, the imminent prospect of a declining population, a dramatic fall in potential growth, and a significant slowdown in inflation. Is Korea about to enter a prolonged period of low growth-low inflation as severe as the one experienced by Japan?

Before drawing comparisons between the two economies, it is important to understand the factors that contributed to Japan's prolonged economic woes—the so called "lost decades".[2] Japan's initial crisis was sparked by the burst of the stock and real estate market bubbles in the early 1990s. That ignited a period of economic stagnation: annual growth, which had averaged 4 percent since the 1973 oil shock, fell to an average of 1½ percent between 1991 and 1994. The economy started to recover thanks to aggressive policy rates cuts and successive fiscal stimulus packages.

Then Japan's economy was hit by the shock wave of the 1997 Asian financial crisis. Japan's financial system was still engulfed with large nonperforming loans after the earlier busting of the asset bubbles, but their full scale was not properly diagnosed. When the external environment deteriorated with the Asian crisis, the mistrust among financial institutions escalated, triggering large-scale failures in the financial sector and a credit crunch. The real impact was severe, with GDP contracting in 1998 and 1999. When the economy seemed to mend again, renewed systemic stress was ignited by the collapse of the global information technology bubble in March 2000. A comprehensive strategy for balance-sheet repair in the corporate and banking sector was finally put in place in 2002–03.

A sustained recovery of Japan's economy seemed to be finally underway when the global financial crisis and the associated global recession hurt the country export-led growth. Then, following a short growth rebound in 2010-11, the economy was hit by the 2011 earthquake. The major change in policy regime—including fiscal stimulus, monetary easing and structural reforms—announced at the end of 2012 has so far been unable to lastingly revitalize the economy and lift the inflation rate up to the 2 percent target.

Japan's experience can provide useful policy lessons to Korea. This recount of Japan's "lost decades" shows that although Japan's economic woes were to some extent the consequence of a series of exogenous shocks that made Japan's experience rather distinctive, it is also clear that structural issues, domestic vulnerabilities and policy choices played a key role. To distill policy implications for Korea, this paper draws out the comparison between Korea and Japan in terms of demographics, potential growth, balance sheets, asset prices and inflation.

New econometric analysis is carried out to assess in particular whether Korea's low inflation in recent years reflects structural issues that will generate additional deflationary pressure going forward. Specifically, the empirical analysis investigates whether globalization and demographics have changed Korea's inflation process and will continue exerting deflationary pressures. More specifically, an inflation model is estimated that extends the traditional Phillips

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[2] Syed, Kang, and Tokuoka (2009) and Berkmen and Lee (2014) provide a description and analysis of the various phases of Japan's "lost decades."
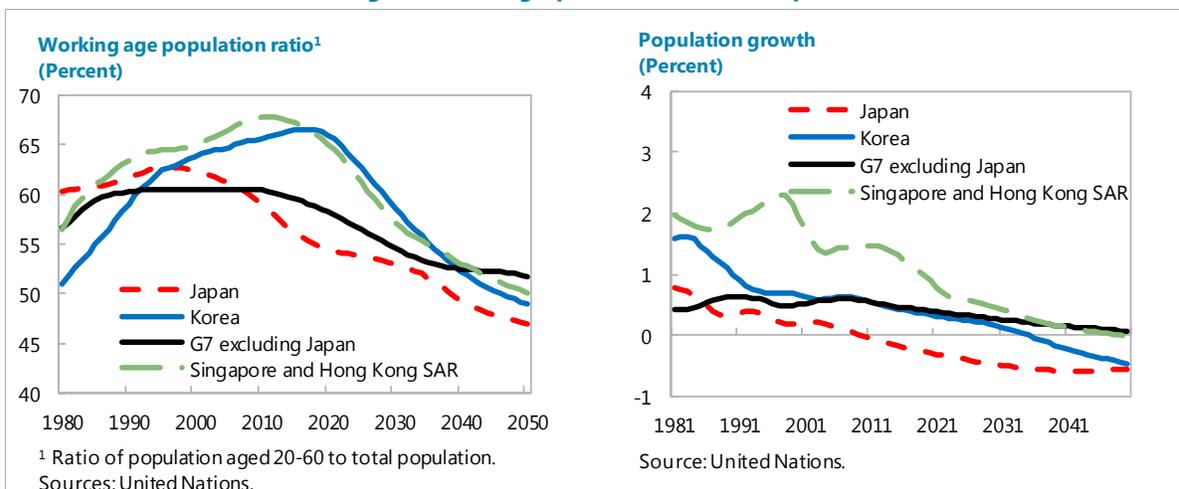
curve specification to include demographics and indicators of globalization among the explanatory variables. To anticipate the results, the analysis indicates that the cumulative decline in Korea's inflation over 2012-15 is almost completely explained by inflation expectations, economic slack, world oil price changes and aging, whereby globalization is found not to have had a significant impact. Hence, Korea's projected acceleration in aging is expected create increasing deflationary pressures in the near future.

This paper is organized as follows. Section II focuses on Korea's and Japan's potential growth trends and labor market segmentation. Section III compares the two countries' positions in terms of public and private sector balance sheets as well as equity and real estate prices. Section IV focuses on inflation and presents new empirical evidence on the impact of globalization and demographics on Korea's inflation process. Section V concludes.

II. STRUCTURAL ISSUES

Korea's demographic trends seem to track Japan's with a lag of about 20 years, reflecting large gains in longevity, low fertility rates, and limited immigration. After peaking at 63 percent in 1995, Japan's working-age population ratio declined to about 56 percent in 2015, while Korea's working-age population ratio is projected to peak at 66½ percent in 2017, and then fall quickly to 56 percent in less than 20 years (Figure 1).[3] Other advanced economies, e.g., Singapore and Hong Kong SAR, are expected to experience similar aging speed. However, what is rather distinctive about Korea is that its population will start shrinking soon—resembling Japan's experience. Indeed, Japan's population started to contract in 2010, while Korea's is expected to begin its decline in 2025–35. Population aging is likely to have major implications on the labor force, savings, investment, growth, and the current account and fiscal balances. In addition, it could have an impact on labor productivity, although the empirical evidence on this regard is mixed. The population decline, in turn, will adversely affect domestic demand.

Figure 1: Demographics in Korea and Japan

Working age population ratio[1]
(Percent)

Population growth
(Percent)

[1] Ratio of population aged 20-60 to total population.
Sources: United Nations.

Source: United Nations.

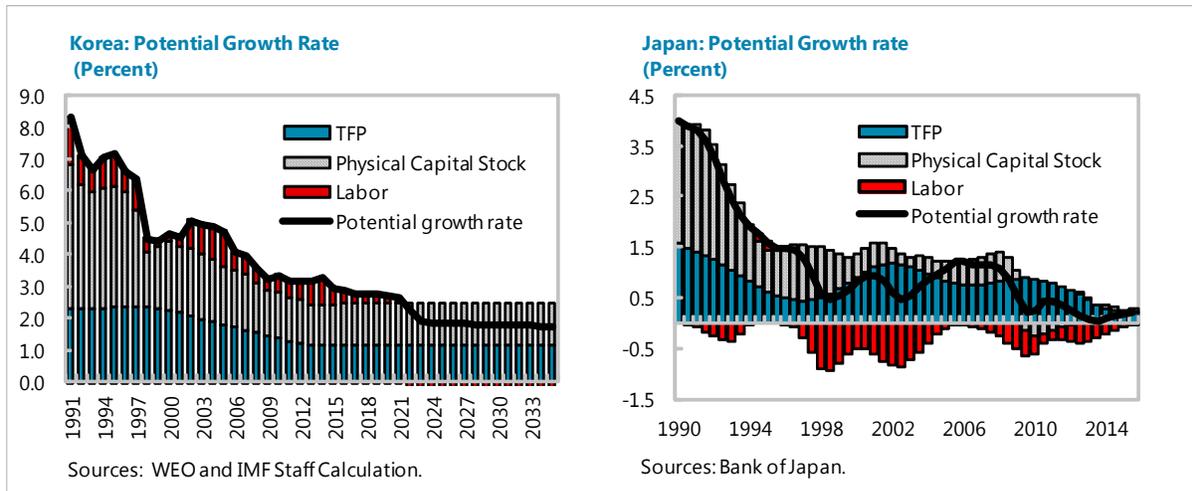Both in Japan and Korea potential growth has fallen sharply, reflecting similar factors. Japan's potential growth plunged from an average 4 percent in the late 1980s to less than 1 percent in

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[3] Working-age population is defined as share of population aged 20–64 in total population. Projections are based on the United Nations "medium variant scenario," that assume some increase in fertility going forward.

the 2000s (Figure 2). In the early 1990s, the decline was primarily the result of deceleration in capital formation and a reduction in total factor productivity growth. In the late 1990s, weak investment growth and declining labor inputs due to aging were the main culprits. Both sluggish investment and productivity growth were to a large extent the consequence of delayed restructuring and balance sheet repair (Danninger and Steinberg, 2015). Indeed, after the collapse of asset prices in the late 1980s, banks and firms were slow in addressing balance sheet problems, and nonviable "zombie" firms with low productivity continued to operate. As banks needed to rebuild capital buffers, lending was constrained, and private investment declined. Repeated fiscal stimulus was needed to support the economy.

In Korea potential growth dropped quite dramatically as well— from the record high of 8 percent in 1991 to 2.9 percent in 2015— reflecting a decline in the contributions from labor, capital inputs and productivity.[4] Slow restructuring of nonviable firms contributed to the productivity slowdown. As in the case of Japan, going forward, the contribution from labor inputs to potential growth will continue to shrink, based on demographics projections, even assuming a mild increase in participation.
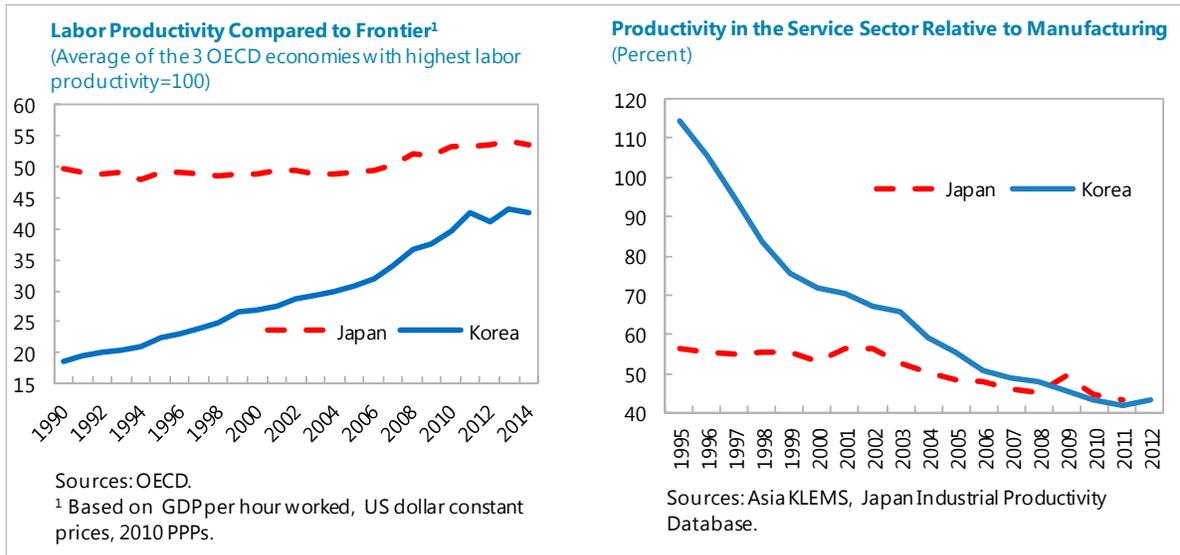
Figure 2. Korea's and Japan's Potential Growth

Korea: Potential Growth Rate (Percent)
Legend: TFP, Physical Capital Stock, Labor, Potential growth rate
Sources: WEO and IMF Staff Calculation.

Japan: Potential Growth rate (Percent)
Legend: TFP, Physical Capital Stock, Labor, Potential growth rate
Sources: Bank of Japan.

In both countries, productivity growth has been sluggish, especially in the non- manufacturing sector. In Korea, labor productivity rose at an average annual rate of 5.5 percent in 1990-2011, but it stagnated since then, and remains only 40 percent of that of the three most productive OECD countries (Figure 3). Similarly, in Japan labor productivity is about half that of the frontier OECD economies. Besides, in both countries labor productivity in the service sector is only half that in manufacturing, in contrast to OECD peers, where average productivity relative to manufacturing is 90 percent (OECD, 2016). In Japan, low productivity in the service sector reflects the low level of R&D in the sector—less than 10 percent of business R&D in recent years, well below the OECD average of 38 percent.

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[4] Previous empirical estimates of Korea's potential growth are Jain-Chandra and Zhang (2014) and IMF (2015).

Figure 3: Productivity

Labor Productivity Compared to Frontier¹
(Average of the 3 OECD economies with highest labor productivity=100)

Sources: OECD.
¹ Based on GDP per hour worked, US dollar constant prices, 2010 PPPs.

Productivity in the Service Sector Relative to Manufacturing
(Percent)

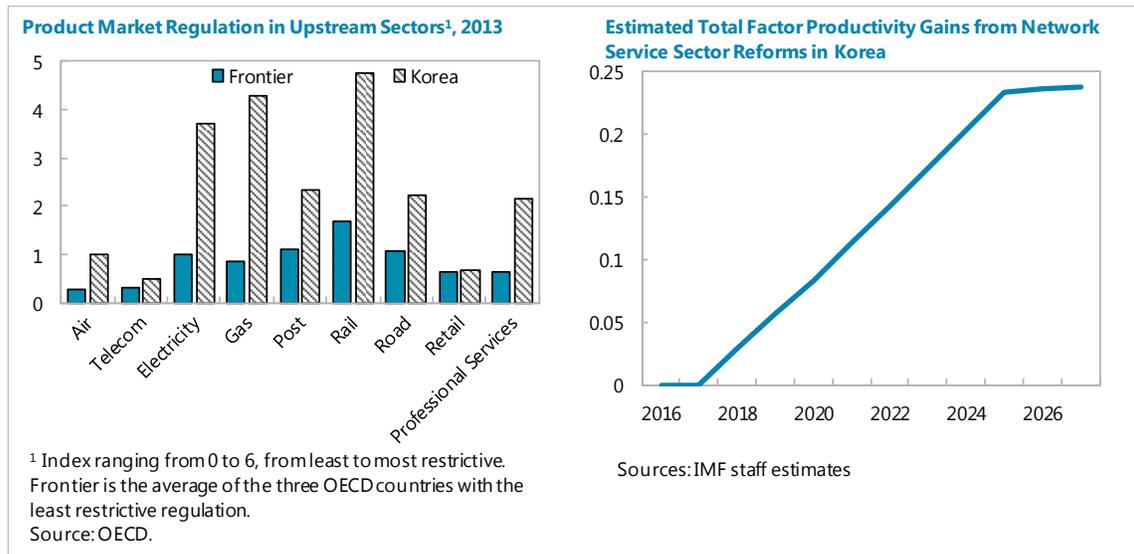Sources: Asia KLEMS, Japan Industrial Productivity Database.

In Korea, instead, productivity growth has been hobbled by inadequate competitive pressures, especially in upstream network sectors. Based on OECD product market regulation (PMR) indicators, the regulatory environment for upstream service sectors in Korea is very stringent compared with OECD average and best practices (Figure 4). [5] This holds true across the range of network sectors such as air, electricity, gas rail, road, and professional services, suggesting ample room for reforms to boost productivity. To assess the potential impact of service sector reform on productivity, we carried out an illustrative simulation, following the methodology in Bourlès et al. (2010) and Jain-Chandra and Zhang (2014).[6] The analysis suggests that if the regulatory burden in Korea's upstream network sectors were to diminish and reach the average of the three frontier OECD economies by 2025, it could boost annual TFP growth by nearly 0.25 percentage point each year (Figure 4).

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[5] OECD PMR indicators for each sector assesses the following aspects: entry regulation, public ownership, market structure and, where relevant, vertical integration (e.g., this is pertinent in the case of the electricity sector as to whether there is vertical separation between the transmission and generation segments of the electricity industry).
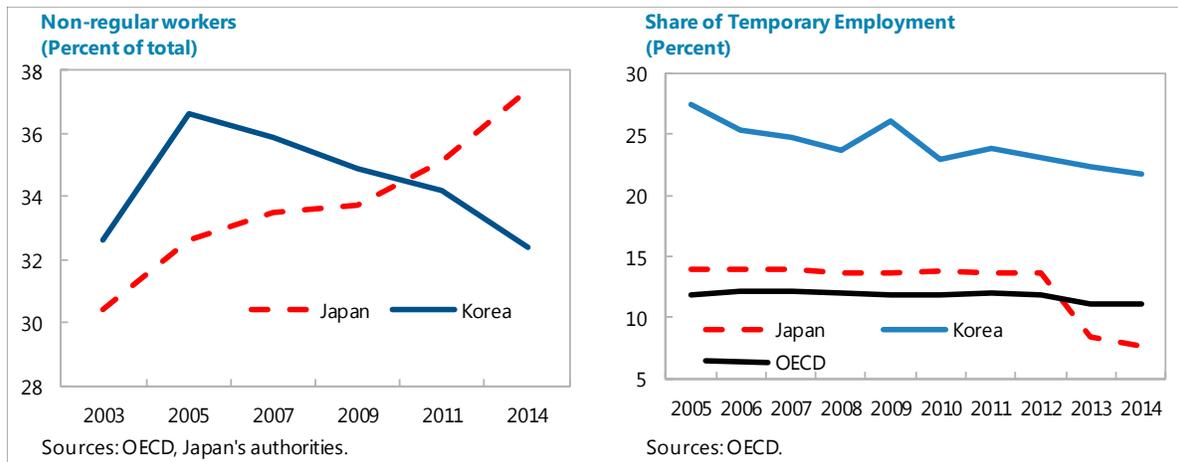
[6] Empirical evidence from OECD countries indicates that product market regulatory reform can lead to higher aggregate labor productivity. Since "network" industries produce key intermediate inputs for the rest of the economy, over regulation in these industries can curb competition and efficiency growth also in downstream firms (Bourlès et al., 2010 and Bouis and Duval, 2011).

Figure 4. Product Market Regulation in Upstream Sectors

Product Market Regulation in Upstream Sectors[1], 2013

¹ Index ranging from 0 to 6, from least to most restrictive. Frontier is the average of the three OECD countries with the least restrictive regulation.
Source: OECD.

Estimated Total Factor Productivity Gains from Network Service Sector Reforms in Korea

Sources: IMF staff estimates

Labor market segmentation is another common aspect for Korea and Japan, which also has an adverse effect on productivity. In Korea the share of temporary workers—a proxy for non-regular employees—was nearly 22 percent in 2014, double the OECD average. In Japan the share of non-regular workers grew steadily from 20 percent in the early 1990s to nearly 40 percent. This duality has taken a toll on productivity, as temporary workers have fewer incentives to excel, and employers do not invest in their development (Aoyagi and Ganelli, 2013)[7]. At a broader societal level, this segmentation has created a two-tiered workforce and contributed to inequality. Empirical evidence based on a cross-country of OECD economies suggests that reducing the difference in employment protection between regular and non-regular workers would substantially reduce labor market duality (Aoyagi and Ganelli, 2013).

**Figure 5: Non-regular and Temporary Workers.**

Non-regular workers (Percent of total)

Sources: OECD, Japan's authorities.

Share of Temporary Employment (Percent)

Sources: OECD.

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[7] International experience indicates that excessive duality can reduce TFP and therefore growth. Dolado et al. (2011), for example, conclude that 20 percent of the productivity slowdown in Spanish manufacturing between 1992 and 2005 is due to reliance on temporary work. Similarly, Damiani et al. (2011) find that deregulation of temporary contracts negatively affected the TFP growth rates in a panel of 14 EU countries and that these negative effects are stronger in industries where firms frequently open short-term positions.

III.   BALANCE SHEETS AND ASSET PRICES

Both Korea and Japan have to confront, or have confronted, balance sheet weaknesses, but the scale of the problem seems quite different. In Japan, corporate debt was very elevated in the 1990s, at over 140 percent of GDP (Figure 6). As noted above, delays in recognizing non-performing loans, cleaning up balance sheets, and adequately recapitalizing banks led to continued fragility in the banking system, which, in turn, limited its ability to extend new loans and support the economic recovery. After a process of deleveraging and slow restructuring in the 2000s, corporate debt reached about 100 percent of GDP in 2015. Korea's current corporate debt to GDP ratio is more moderate, at just over 100 percent of GDP, but certain sectors—such as shipbuilding, shipping, and petrochemicals—are in need of restructuring. Japan's experience highlights the importance of expeditiously recognizing NPLs, and strengthening balance sheets.

Figure 6: Balance Sheets

Korea: Debt to GDP (Percent) / Japan: Debt to GDP (Percent)

Sources: BIS, WEO.
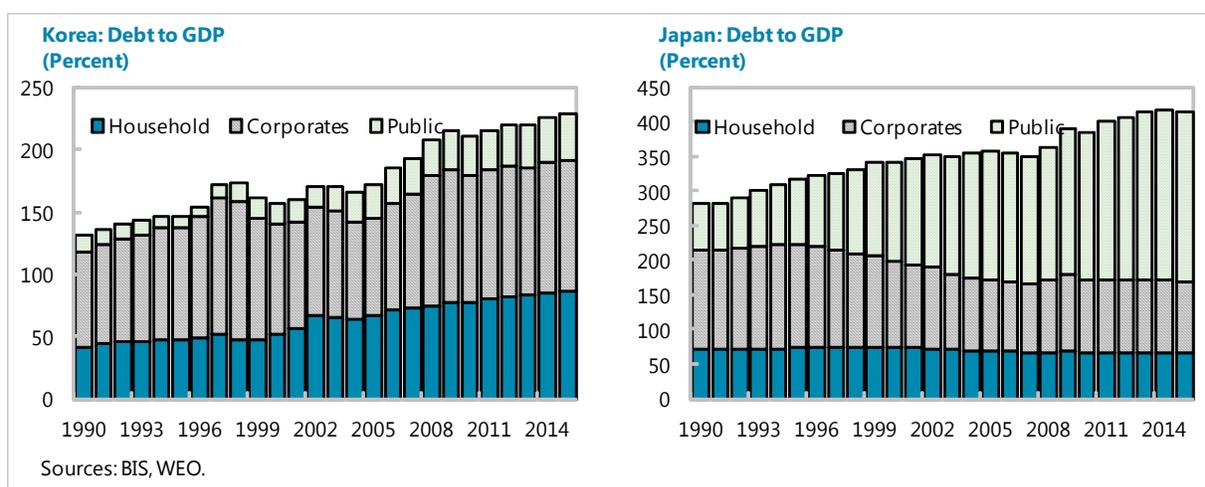
Household debt is higher in Korea than it has ever been in Japan. In the latter, the household debt to GDP ratio has been fairly steady at 65–70 percent, while in Korea it rose steadily from 40 percent of GDP in the early 1990s to nearly 90 percent of GDP today.[8] The Korean authorities have taken several steps to curb the rapid growth of household debt, including more stringent bank screening of loan applications and macroprudential measures. Nevertheless, further measures are needed: the DTI cap of 60 percent—which remains high in international comparison—should gradually be tightened toward 30 to 50 percent. The DTI cap should also be extended to apply to other types of household debt (including so-called "group loans"). In addition, prudential regulations across banks and nonbanks should be harmonized further.

The position of public sector balance sheets is a key difference between the two countries. Japan's public debt to GDP ratio soared from 70 percent in 1990 to around 250 percent in 2015, driven by social security spending, and fiscal stimulus packages in response to the slowing economy and to shocks— such as the 2011 earthquake. In contrast, Korea's public debt remains modest, less than 40 percent of GDP in 2015, although according to the authorities' projections it could reach 60, or even 100, percent of GDP by 2060 on account of population

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[8] The main drivers of such a sustained increase in Korea's household debt have been structural factors, such as demographics, the unique chonsei rental system, the structure of the mortgage market (IMF, 2016).

aging and slowing growth. The implication is that in Korea fiscal space can be used to incentivize and cushion the possible short-term adverse impact of structural reforms needed to boost potential growth.

Both Korea and Japan experienced a sharp correction in housing prices in the 1990s. After a 40 percent increase in the second half of the 1980s, Japan's real housing prices declined continuously from 1991 to 2007. This price correction played a major role in fueling the first stage of Japan's crisis in the early 1990s. In Korea the real housing prices plunged by more than 50 percent from their peak in 1989 to 2001. Since then the Korean authorities have introduced a series of macroprudential measures, such as loan-to-value ratio (LTV) and to debt-to-income limits that have helped avoid excessive housing price appreciation (Igan and Kang, 2011; Kim, 2013; Zhang and Zoli, 2016).[9] Also going forward this prudential regulation will help prevent booms-busts in the real estate market similar to the one that contributed to Japan's crisis.

Korea's stock market prices have followed a different pattern from Japan's. In the latter equity prices have been on a trend decline since the peak in 1989, with intermittent recoveries. They still remain at about 40 percent of their value at the peak at the end of 1989. Conversely, Korea's stock market has been far more buoyant, despite a deep plunge during the global financial crisis, thus supporting domestic demand.

Figure 7: Asset Prices

Source: OECD.

Sources: APDCORE Database; IMF staff calculations.
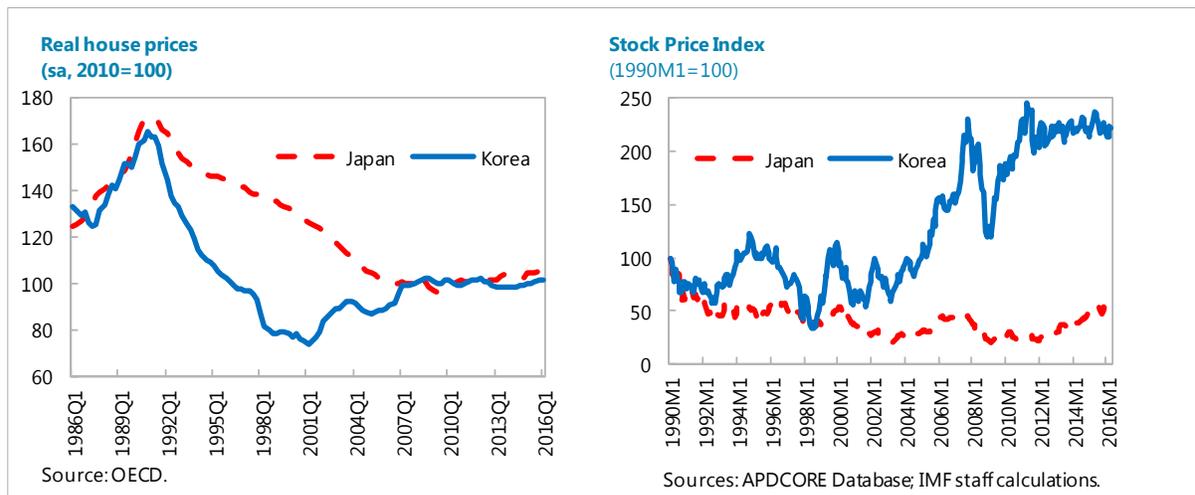
IV. INFLATION

The protracted period of low inflation in Korea has raised concerns that the country may be heading toward an environment of excessively low inflation like Japan's. Korea's average headline inflation rate plunged quickly from 4 in 2011 to around 1 percent in 2013, and below the authorities' target since late 2012. Movements in Korea's headline inflation since January 2011 appear similar to those in Japan in the early 1990s, when inflation slid from nearly 4

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[9] LTV and DTI regulations were introduced in 2002 and 2005, respectively, and adjusted in a broadly countercyclical manner ever since.

percent in early 1991 to 1 percent in 1993, before dipping into negative territory in 1995 (Figure 8).

Figure 8: Inflation (Year-on-Year, percent)

Source: Haver.
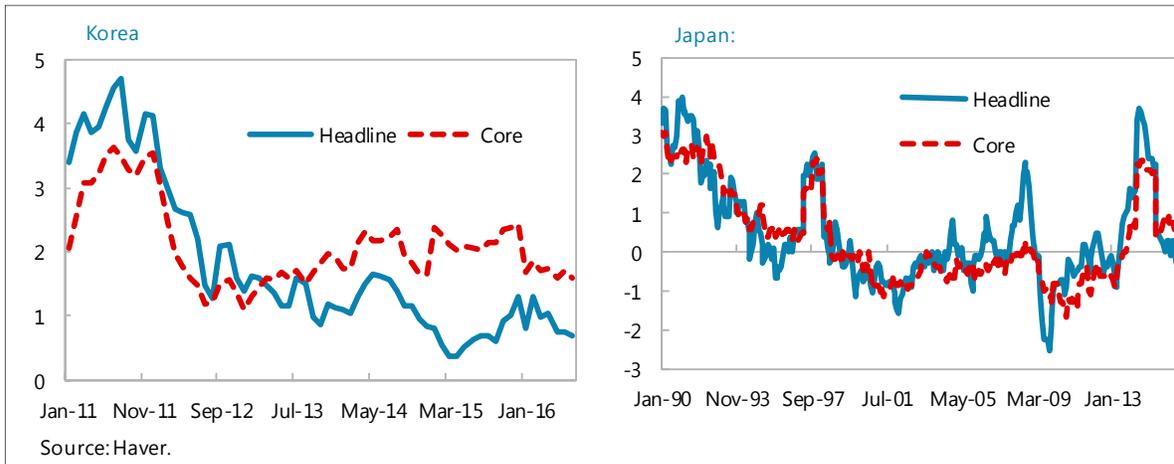
There are, however, some important differences between Korea's inflation now and Japan's inflation in the early 1990s. Korea's core inflation has remained more robust than headline, at around 2 percent in 2014 and 2015, with some moderation in 2016. Declining fuel and energy prices explain the positive differential between core and headline inflation over this period. In contrast, in Japan, core inflation was lower than headline inflation rate in the early 1990s, and then followed the same downward trend as headline inflation. Moreover, in Korea the share of consumption items with negative inflation remains modest. This share rose temporarily from less than 20 percent in 2012–13 to 30-40 percent in mid-2015, reflecting almost exclusively declining prices in fuel-related items. Instead, in Japan the fraction of the consumption basket with negative inflation—which increased steadily from less than 10 percent in 1990-91 to 50 percent at the end of 1995—comprised items from several different product groups (Figure 9).

Figure 9: Weight in CPI Basket of Items with Year-on-year Inflation below 1 Percent or Negative
(Percent, share of total, 3-month moving average)

Sources: Haver Analytics; and IMF staff calculations.
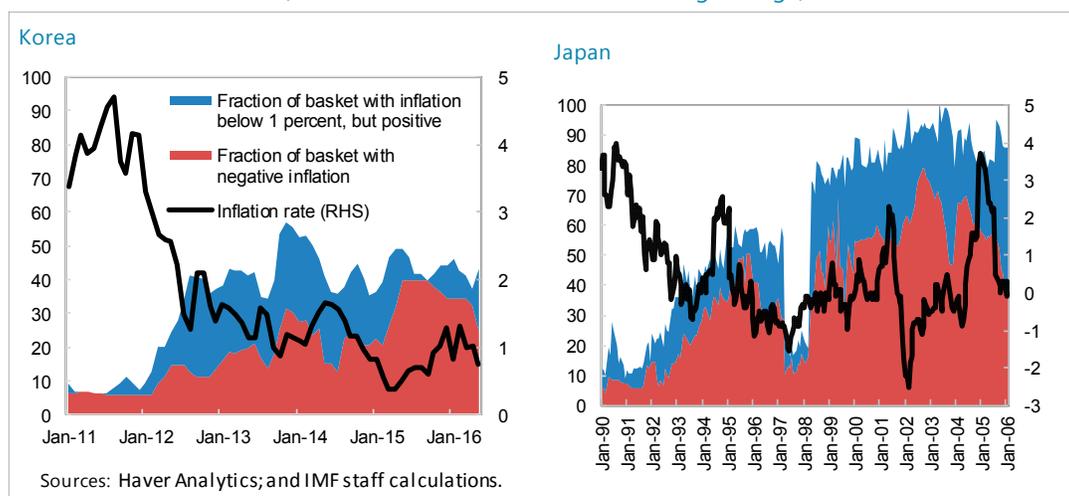
Even though Korea does not seem heading toward "Japan's style" deflation, the question remains on what factors have been pushing Korea's inflation down in recent years. More specifically, in addition to cyclical conditions and falling oil prices, have some structural factors contributed to lower inflation? If so, will those factors continue to create deflationary

pressure going forward? Empirical studies have suggested that globalization and demographics have helped drive inflation down in advanced economies since the early 1990s (IMF, 2006; Borio and Filardo, 2007; Anderson, Botman, and Hunt, 2014; Yoo, Kim and Lee, 2014). Is that the case for Korea—a very open economy, whose population is aging fast?

Since at least the early 1990s, there has been mounting evidence that the inflation process has been changing across the world: inflation has become much lower and more stable, and its sensitivity to measures of economic slack and change in input costs seems to have declined. Several explanations have been put forward to account for these developments, including improved monetary policy credibility, broad productivity gains, or cyclical conditions (Ball and Moffitt, 2001; Kamin, Marazzi, and Schindler, 2004; Buiter, 2000). Some have argued that increasing globalization has contributed to lower inflation rates across the world (IMF, 2006, Borio and Filardo, 2007).

Globalization could affect national inflation through different channels. First, financial integration may reduce policymakers' incentives to temporarily stimulate output by lowering rates, because of the possible adverse implications on international capital flow movements (Tytell and Wei, 2004). Second, deeper trade integration bolsters price competition in domestic markets by reducing barriers to market access for foreign producers. Third, globalization can raise productivity growth because of increased pressures to innovate and other forms of nonprice competition, thus boosting aggregate supply and lowering prices (IMF, 2006).

Demographics could also contribute to lower inflation in different ways. Aging could lower the price of land—for example, because the elderly live in smaller houses (Anderson, Botman and Hunt, 2014). It can also have an impact on inflation by discouraging demand for investment, as lower labor supply and productivity depress potential output and real rates of return (Ding, 2014). In addition, inflation can be affected by demographics if declines in population compress aggregate demand (Yoo, Kim and Lee, 2014). Several empirical studies have found that aging has contributed to deflation in Japan (Katagiri, 2012; Shirakawa, 2012, Anderson, Botman and Hunt, 2014; Botman, Liu and Westelius, 2016).[10] [11]

To investigate the possible impact of demographics and globalization on inflation, we estimate a model for inflation that extends the traditional Phillips curve specification for 13 economies, including 12 large advanced economies and China.[12] Because of globalization, a common factor is expected to affect domestic inflation, making the model residuals correlated across countries. Hence, the model is estimated using the Seemingly Unrelated Regression method.[13]

The dependent variable is the annual average inflation rate. The regressors include expected inflation, the domestic output gap and world oil price changes. The old-age dependency ratio is added as indicator of aging, and population growth is included in some model specifications. In

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[10] Katagiri (2012) found that unexpected shocks to demand structure due to aging produced about 0.3 percentage point deflationary pressure in the Japan economy.

[11] In an empirical study, Yoon, Kim and Lee (2014) find a negative significant impact of the old dependency ratio on inflation in OECD countries over 1960-2013.

[12] The sample consists of Australia, Canada, China, France, Germany, Hong Kong SAR, Italy, Japan, Korea, New Zealand, Singapore, United Kingdom, and United States over 1990-2015.

[13] This method exploits correlation in the residuals across countries to obtain more precise estimates of the parameters (Zellner, 1962).

addition, the explanatory variable set comprises alternative indicators of globalization: trade openness (proxied by the ratio of nominal non-oil exports and non-oil imports to GDP), and a measure of global economic slack (an average of countries' output gap, weighted by GDP)—similarly to Borio and Filardo, 2007. In some model specifications trade openness is also interacted with domestic output gap to assess whether the former makes inflation less responsive to output gap fluctuations, as suggested in IMF (2006). Most parameters of the model are allowed to vary across countries (constant, the output-inflation relationship, and the oil price coefficient). However, demographic and globalization indicators coefficients are assumed to be the same across countries.

The estimated coefficients of expected inflation, output gap, world oil price changes and the old-age dependency ratio are found to be significant and with the expected sign (Table 1). For Korea, Japan and most other economies in the sample, higher expected inflation, a positive output gap and increases in oil prices are associated with higher inflation. On the other hand, the coefficients of the population growth variables as well as those of the indicators of globalization are not statistically significant.
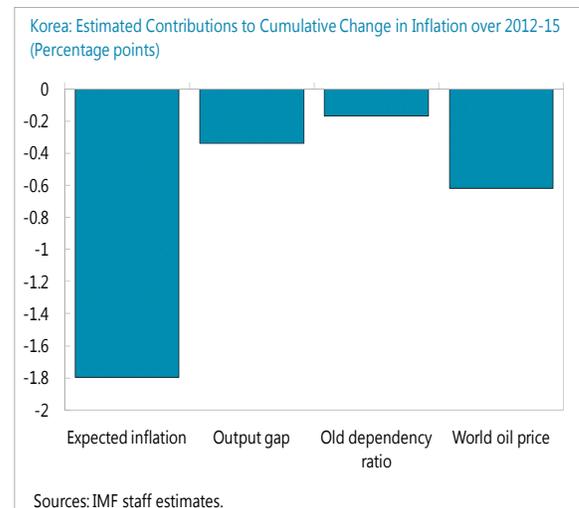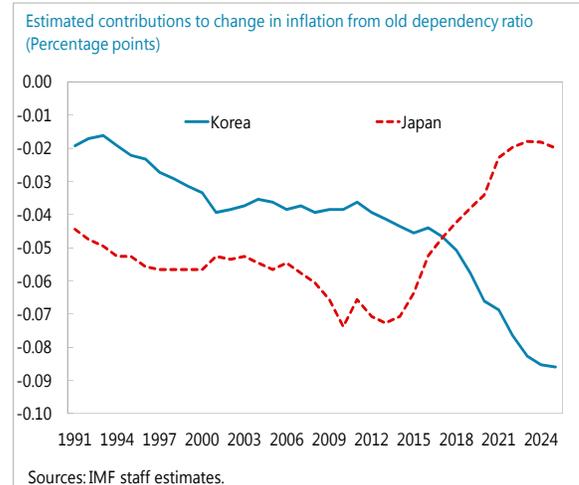
Table 1. Regression Results

Table : Regression results	(1)		(2)		(3)	
	Korea	Average other sample countries	Korea	Average other sample countries	Korea	Average other sample countries
Constant	-1.21	-0.24	-2.03	-0.85	-1.16	-0.25
P-value	0.01		0.00		0.01	
Expected inflation	1.33	1.18	1.39	1.14	1.32	1.23
P-value	0.00		0.00		0.00	
Output gap	0.15	0.14	0.17	0.04	0.13	0.01
P-value	0.04		0.02		0.08	
Global oil price(-1)	0.02	0.01	0.02	0.01	0.02	0.01
P-value	0.01		0.01		0.02	
Old dependency	-0.10	-0.10	-0.11	-0.11	-0.11	-0.11
P-value	0.03	0.03	0.02	0.02	0.02	0.02
Openness			0.01	0.01		
P-value			0.11	0.11		
Global output gap					0.00	0.00
P-value					0.55	0.55
Adjusted R-squared	0.8	0.5	0.8	0.4	0.8	0.5
Source: IMF staff estimates.						

Based on the model estimates, for Korea the cumulative change in inflation over 2012–15 (3.3 percentage points) is almost fully explained by expected inflation, the output gap, world oil price changes, and the old-age dependency ratio. The change in expected inflation plays a major role. The decline in world oil price over that period is estimated to have contributed by 0.6 percentage points, economic slack by 0.3 percentage points, and the increase in the old dependency ratio by nearly 0.2 percentage points.

Estimated contributions to change in inflation from old dependency ratio
(Percentage points)

Sources: IMF staff estimates.

The estimated model also allows a comparison of the contribution of aging to low inflation rates between Japan and Korea. Historically, changes in the old-age dependency ratio have been more disinflationary in Japan than in Korea; however, going forward there will be more disinflationary pressure in Korea, given that Japan has aged already, while Korea's aging will accelerate in the coming years. Based on these estimates, aging could contribute to a further decline in the inflation rate by 0.3 percentage points over the next five years. This suggests that the inflation could trend downward going forward. In this environment, it will be very important to ensure that expectations remain well anchored. At the same time, structural reforms aimed at raising the fertility rate could help reduce the deflationary pressure from aging.

Korea: Estimated Contributions to Cumulative Change in Inflation over 2012-15
(Percentage points)

Sources: IMF staff estimates.

V. CONCLUSION AND POLICY IMPLICATIONS

Korea has strong similarities with Japan with regard to the speed of population aging, the prospects of a declining population, and lagging productivity due to structural problems. Compared to Japan, Korea is entering the phase of accelerating aging with stronger corporate and public sector balance sheets. Nevertheless, Korea needs to progress with the restructuring of nonviable firms. Indeed, Japan's experience illustrates how delayed balance-sheet repair, compounded with other structural problems, contributed to a protracted period of economic stagnation.

Reforms to reduce Korea's labor market duality and promote more competition in the service sector are essential to support productivity gains, which—given the shrinking workforce— becomes more crucial catalyst for growth. An illustrative scenario presented in the paper, for example, indicates that reforms lowering Korea's regulatory burden in upstream network sectors to the OECD frontier could boost TFP annual growth by nearly 0.25 percentage point each year. Given its strong fiscal balance sheet position, Korea can afford using fiscal policy actively to incentivize structural reforms and cushion their adverse impact.

Japan's experience also clearly demonstrates the importance of preventing bubbles in asset price. In this respect Korea has taken key steps by setting up a macroprudential framework that has contributed to avoid excessive price evaluation in the real estate market. Macroprudential policies will need to remain key toolkits for Korea's policymakers also going forward.

Korea has low inflation but does not appear to be headed toward deflation, but aging will exert a downward drag on its inflation going forward. Unlike in the case of Japan in the early 1990s, Korea's core inflation remains above headline rates. Besides, only few CPI items have experienced outright price declines, triggered by plunging world oil prices. The new empirical analysis presented in the paper indicates that the cumulative decline in Korea's inflation over 2012-15 is almost fully explained by inflation expectations, economic slack, world oil price changes and aging, while globalization does not seem to have played a significant role. Given that aging is projected to accelerate in coming years, the latter will create increasing deflationary pressures going forward. Based on our estimates, aging could contribute to a further decline in the inflation rate by 0.3 percentage points over the next five years. Hence, monetary policy will need to ensure that expectations remain well anchored, while structural reforms to boost the fertility rate would be helpful to reduce the deflationary pressure from the aging population.

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