



REPUBLIC OF KOREA

August 2016

2016 ARTICLE IV CONSULTATION—PRESS RELEASE; STAFF REPORT; AND STATEMENT BY THE EXECUTIVE DIRECTOR FOR THE REPUBLIC OF KOREA

Under Article IV of the IMF's Articles of Agreement, the IMF holds bilateral discussions with members, usually every year. In the context of the 2016 Article IV consultation with the Republic of Korea, the following documents have been released and are included in this package:

- A **Press Release** summarizing the views of the Executive Board as expressed during its July 29, 2016 consideration of the staff report that concluded the Article IV consultation with the Republic of Korea.
- The **Staff Report** prepared by a staff team of the IMF for the Executive Board's consideration on July 29, 2016, following discussions that ended on June 8, 2016, with the officials of the Republic of Korea on economic developments and policies. Based on information available at the time of these discussions, the staff report was completed on July 14, 2016.
- An **Informational Annex** prepared by the IMF staff.
- A **Statement by the Executive Director** for the Republic of Korea.

The IMF's transparency policy allows for the deletion of market-sensitive information and premature disclosure of the authorities' policy intentions in published staff reports and other documents.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
PO Box 92780 • Washington, D.C. 20090
Telephone: (202) 623-7430 • Fax: (202) 623-7201
E-mail: publications@imf.org Web: <http://www.imf.org>
Price: \$18.00 per printed copy

International Monetary Fund
Washington, D.C.



INTERNATIONAL MONETARY FUND



Press Release No. 16/377
FOR IMMEDIATE RELEASE
August 12, 2016

International Monetary Fund
700 19th Street, NW
Washington, D. C. 20431 USA

IMF Executive Board Concludes 2016 Article IV Consultation with the Republic of Korea

On July 29, 2016, the Executive Board of the International Monetary Fund (IMF) concluded the Article IV consultation¹ with the Republic of Korea.

After decades of impressive economic progress, Korea's growth has slowed, and the economy is facing a number of structural headwinds, including: unfavorable demographics; heavy export reliance; pockets of corporate vulnerabilities; labor-market distortions; lagging productivity; a limited social safety net; and high household debt. Inequality and poverty are also of concern. On the positive side, Korea has considerable fiscal space to manage these challenges.

Growth has been sluggish since 2012, reflecting not only a series of shocks but also a steady decline in the economy's growth potential. The authorities have responded proactively with fiscal and monetary support, along with measures to contain the rapid increase in household debt. Activity started to pick up in the second half of last year but slowed again in the first quarter, reflecting the expiry of the consumption tax cut (which was later extended), weaker fixed investment, and a payback in inventory accumulation.

Growth is projected to tick up to 2.7 percent this year and 3.0 percent in 2017, with inflation remaining subdued. The anticipated pickup in activity is based on growing private consumption, a stronger housing market, and the impact of fiscal and monetary easing. On the other hand, export prospects will likely remain difficult, weighing on fixed investment. Credit is expected to continue to grow, partly reflecting the impact of interest rate cuts, but at a slower pace consistent with the tightening of prudential measures and the envisaged moderation in construction investment after 2017.

Executive Board Assessment²

Executive Directors commended Korea's remarkable economic achievements over the past sixty years. They noted, however, that the Korean economy now faces structural constraints to sustain its strong growth, including rapid population aging, a heavy reliance on exports, rising corporate

¹ Under Article IV of the IMF's Articles of Agreement, the IMF holds bilateral discussions with members, usually every year. A staff team visits the country, collects economic and financial information, and discusses with officials the country's economic developments and policies. On return to headquarters, the staff prepares a report, which forms the basis for discussion by the Executive Board.

² At the conclusion of the discussion, the Managing Director, as Chairman of the Board, summarizes the views of Executive Directors, and this summary is transmitted to the country's authorities. An explanation of any qualifiers used in summings up can be found here: <http://www.imf.org/external/np/sec/misc/qualifiers.htm>.

vulnerabilities, labor market distortions, and lagging productivity. Directors supported the authorities' strong emphasis on structural reforms to overcome these constraints and raise growth potential.

Directors broadly agreed that, given Korea's low public debt, fiscal support can be used to incentivize structural reforms, cushion any adverse effects, and support growth. They concurred that a carefully targeted expansion of social expenditure over the medium term could help reduce poverty and inequality and aid rebalancing by bolstering consumption and raising productivity. In this context, they acknowledged the authorities' aim to safeguard long run fiscal sustainability, in view of future challenges arising from demographic change and possible reunification. A few Directors noted that there is room to accommodate higher social spending in the medium term without being offset by additional revenue or expenditure cut. A few other Directors felt that any additional spending should be budget neutral or met by a revenue enhancement. Directors welcomed the authorities' consideration of a fiscal rule to anchor fiscal sustainability over the medium term.

Directors supported the authorities' efforts on corporate restructuring, and urged timely implementation of such efforts for distressed firms while ensuring an adequate social safety net for affected workers. They welcomed the plan to recapitalize the policy banks, but stressed the importance of sufficient budgetary resources and the need to unwind the bridge financing provided by the Bank of Korea.

Directors concurred that labor market reforms are critical to address segmentation and boost female labor force participation. They underscored the need to promote competition in the service sector and among small and medium enterprises to raise productivity. They also welcomed the authorities' strategy to develop a "creative economy" by fostering innovation.

Directors broadly agreed that fiscal and monetary policies should remain supportive, in view of the current weak conjuncture and downside risks, and welcomed the authorities' announced fiscal stimulus and recent policy rate cut. A few Directors, however, expressed caution regarding the effectiveness and potential implications of further fiscal and monetary stimulus. Directors recommended tightening and harmonizing macroprudential standards across banks and nonbanks to contain risks from rising household debt.

Regarding the external sector, some Directors called for a more explicit focus on reduction of the current account surplus. Directors stressed the need to continue to allow the exchange rate to move flexibly to facilitate rebalancing and adjustment to shocks. They recommended limiting intervention to addressing disorderly market conditions and encouraged disclosure of such interventions. Directors supported the authorities' plan to ease capital flow management measures.

Table 1. Korea: Selected Economic Indicators, 2012–17

	2012	2013	2014	2015	Projections	
					2016	2017
Real GDP (percent change)	2.3	2.9	3.3	2.6	2.7	3.0
Total domestic demand	1.2	0.7	2.5	3.7	2.4	3.3
Final domestic demand	1.4	2.5	2.5	2.9	3.0	3.4
Consumption	2.2	2.2	2.0	2.4	2.7	3.5
Gross fixed investment	-0.5	3.3	3.4	3.8	3.6	3.2
Stock building 1/	-0.1	-1.7	0.0	0.8	-0.5	-0.1
Net foreign balance 1/	1.6	1.5	0.4	-1.2	-0.3	-0.3
Nominal GDP (in trillions of won)	1,377	1,429	1,486	1,559	1,622	1,697
Saving and investment (in percent of GDP)						
Gross national saving	35.2	35.3	35.3	36.2	36.3	35.6
Gross domestic investment	31.0	29.1	29.3	28.5	28.8	29.2
Current account balance	4.2	6.2	6.0	7.7	7.5	6.5
Prices (percent change)						
CPI inflation (end of period)	1.4	1.1	0.8	1.3	1.5	2.2
CPI inflation (average)	2.2	1.3	1.3	0.7	1.2	1.9
Core inflation (average)	1.7	1.6	2.0	2.2		
GDP deflator	1.0	0.9	0.6	2.2	1.4	1.6
Real effective exchange rate	1.1	9.2	6.6	3.4	...	...
Trade (percent change)						
Export volume	5.6	4.8	4.4	2.5	1.2	2.2
Import volume	0.5	4.3	4.7	3.1	1.9	2.8
Terms of trade	-1.7	3.3	1.7	12.0	2.9	-1.8
Consolidated central government (in percent of GDP)						
Revenue	22.1	21.5	21.2	21.3	22.0	21.7
Expenditure	20.6	20.9	20.8	21.0	21.1	20.6
Net lending (+) / borrowing (-)	1.6	0.6	0.4	0.3	0.8	1.0
Overall balance	1.3	1.0	0.6	0.0	0.3	0.5
Excluding Social Security Funds	-1.3	-1.5	-2.0	-2.4	-2.3	-2.0
General government debt	32.2	34.3	35.9	37.9	38.7	39.0
Money and credit (end of period)						
Credit growth	3.7	3.2	7.4	7.6	6.7	6.5
Overnight call rate	2.8	2.5	2.0	1.5	...	...
Three-year AA- corporate bond yield	3.3	3.3	2.4	2.1	...	...
M3 growth	7.8	6.5	8.7	9.0	...	...
Balance of payments (in billions of U.S. dollars)						
Exports, f.o.b.	603.5	618.2	613.0	548.8	521.5	541.9
Imports, f.o.b.	554.1	535.4	524.1	428.5	398.1	423.7
Oil imports	108.3	99.3	94.9	55.1	47.7	57.4
Current account balance	50.8	81.1	84.4	105.9	103.6	93.1
Gross international reserves (end of period) 2/	323.2	341.7	358.8	363.2	350.9	334.8
In percent of short-term debt (residual maturity)	181.0	203.5	208.8	228.4	230.8	230.5
External debt (in billions of U.S. dollars)						
Total external debt (end of period)	408.9	423.5	424.4	395.4	384.2	374.8
Of which: Short-term (end of period)	128.0	111.8	116.4	107.1	101.1	94.9
Total external debt (in percent of GDP)	33.4	32.4	30.1	28.7	27.9	26.1
Debt service ratio 3/	7.0	7.2	7.9	8.9	9.0	8.6

Sources: Korean authorities; and IMF staff estimates and projections.

1/ Contribution to GDP growth.

2/ Excludes gold.

3/ Debt service on medium- and long-term debt in percent of exports of goods and services.



REPUBLIC OF KOREA

STAFF REPORT FOR THE 2016 ARTICLE IV CONSULTATION

July 14, 2016

KEY ISSUES

Background. After decades of impressive economic progress, Korea's growth has slowed, and the economy is facing a number of structural headwinds, including: unfavorable demographics; heavy export reliance; pockets of corporate vulnerabilities; labor-market distortions; lagging productivity; a limited social safety net; and high household debt. Inequality and poverty are also of concern. On the positive side, Korea has considerable fiscal space to manage these challenges.

Policies for long-term growth and inclusion. Structural reforms in the above areas are critically important. Fiscal policy can be used in a complementary manner, both to incentivize such reforms and to cushion any possible negative effects. In addition, a carefully targeted expansion of social expenditure, sustained over the medium term, could address inequality while bolstering consumption-led growth and even contributing to financial stability. Fiscal rules could be introduced to ensure that additional spending is financed by eventual revenue increases, to preserve sustainability.

Near-term macroeconomic policies. The recently announced fiscal stimulus and monetary easing were appropriate, and the fiscal package should be finalized and implemented as soon as possible. Given the weak conjuncture and downside risks, the macro policy stance should remain supportive. Prudential regulations should be tightened, and better harmonized across financial institutions, to contain risks from household debt. The exchange rate should remain flexible, and the authorities should continue to avoid persistent, one-sided intervention.

Implications for rebalancing. Many of the above policies will not only boost growth but also change its composition—corporate investment will rise, public and private saving will decline, and the large current account surplus will moderate gradually. As the economy rebalances, the economy will become less dependent on volatile external demand, and households will share more in national growth outcomes. Moreover, rebalancing will contribute to global economic resilience, and this too will benefit Korea.

Approved By
**Kalpana Kochhar and
 Martin Kaufman**

Discussions were held in Seoul and Busan during May 26–June 8, 2016. The staff team included K. Kochhar (head), K. Mathai, D. Ding, E. Zoli, J. Shin, R. Mano (all APD), and L. Ratnovski (RES). K. Choi and I. Park (OED) participated in the discussions. L. Tolentino, C. Arbelaez, and S. Paroutzoglou (all APD) assisted in preparing this report.

CONTENTS

CONTEXT	4
RECENT DEVELOPMENTS AND PROSPECTS	7
A. Recent Developments	7
B. Outlook and Risks	10
POLICY DISCUSSIONS	12
A. Boosting Potential Growth and Fostering Inclusion	12
B. Providing Short-term Support and Addressing Vulnerabilities	18
C. Implications for Rebalancing	21
STAFF APPRAISAL	21
 BOXES	
1. Korea's External Position	8
2. The Authorities' Plan for Shoring up the Capital of Policy Banks	13
3. Developing the "Creative Economy"	15
4. Toward a Rule-Based Fiscal Framework	17
 FIGURES	
1. Structural Issues	23
2. The Real Economy	24
3. Monetary and Financial Sector	25
4. External Sector	26
 TABLES	
1. Selected Economic Indicators, 2012–17	27
2. Medium-Term Projections, 2014–21	28
3. Balance of Payments, 2012–17	29
4. Statement of Central Government Operation, 2012–17	30
5. Financial Soundness Indicators	31

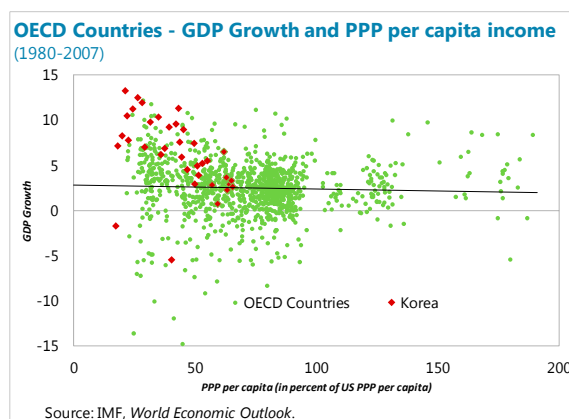
ANNEXES

I. Debt Sustainability Analysis _____	32
II. External Sector Assessment _____	34
III. Risk Assessment Matrix _____	35
IV. Main Recommendations from the 2015 Article IV Consultation and Follow Up _____	37
V. Korea's Challenges—Parallels with Japan _____	38
VI. Quantifying the Impact of China's Rebalancing on Korea's Income and Trade _____	46
VII. Corporate Debt: A Firm-Level Investigation _____	57
VIII. Corporate Restructuring and its Macro Effects _____	64
IX. Household Debt _____	70

CONTEXT

1. Korea has had a remarkable track record of economic performance. One of thirteen success stories identified by the Commission on Growth and Development (2008)¹, Korea embarked on, and adhered to, a government-guided export-promotion strategy that delivered average growth in excess of 7 percent for nearly fifty years. Per capita income surged from 5 percent of that of the United States in 1960 to around 55 percent by the time of the global financial crisis. Within two generations, Korea vaulted into the OECD, its goods and services became known around the globe, and its national corporate champions entered the ranks of the world's most recognized companies. At the same time, the fruits of this success were widely shared. Land reform in the 1950s, low-cost education opportunities, a dynamic business environment, and high social mobility helped facilitate an egalitarian development path, and social indicators have long been impressive.

2. Growth, however, has now declined, and income convergence may slow in the face of structural headwinds. The economy has suffered a series of exogenous shocks since the global financial crisis, but underlying growth prospects also appear to have weakened. Staff estimate that potential growth has dropped from 7 percent in the early 1990s to below 3 percent now. At this rate, Korea may find it difficult to move quickly to the OECD income frontier. Moreover, Korea faces serious structural challenges, many of which will imply a further decline in potential growth. These include:



- **Demographics.** With one of the lowest birth rates in the world, Korea is also one of the world's most rapidly aging societies, and fiscal outlays are expected to rise sharply.² The fraction of the population that is of working age is projected to peak in 2017 and decline rapidly thereafter, depressing potential employment and growth. The overall population is expected to start declining after 2025, with negative implications for domestic demand.
- **Export dependence.** Korea's economic success came on the back of exports, but that heavy reliance may now be a liability in a world of slowing trade. With exports exceeding 50 percent of GDP—one of the highest shares among advanced economies—Korea is heavily exposed to spillovers, particularly from China, its largest trading partner. China's slowing growth, rebalancing toward domestic demand, and moving up the value chain will all affect Korea substantially.³

¹ The Growth Report: Strategies for Sustained Growth and Inclusive Development, Commission on Growth and Development (2008).

² Population aging is one way in which Korea resembles Japan. Annex V draws out further parallels.

³ See Annex VI, which develops a trade model that attempts to quantify Korea's vulnerability to spillovers from China. Also see Chapter 3 of the Spring 2016 APD REO, "China's Evolving Trade with Advanced Upstream Economies and

- **Sectoral weaknesses and corporate vulnerabilities.** Some of the heavy industrial sectors that underpinned Korea's past growth—for instance, shipbuilding, shipping, steel, and petrochemicals—are now facing bleak prospects globally given the trade slowdown and competition from China. As in other countries, excess capacity in these sectors may need to be shed. While Korean corporates overall appear relatively healthy, there are a number of firms in these particular sectors that are struggling and will need to be restructured.⁴
- **Labor-market issues.** Korea's problem of a declining working-age population is compounded by labor-force participation rates, particularly for females, that are below the OECD average. In addition, the highly segmented labor market is distorted and inefficient—employers' easy access to "non-regular" labor not only promotes inequality among workers but also leads to under-investment in firm-based training; separately, the heavily seniority-based compensation system leads firms to push older, more skilled workers into early retirement, to the detriment of overall labor productivity.
- **Lagging productivity.** Labor productivity is particularly low in the service sector—much lower than in peer economies, and only half that of manufacturing—reflecting in part regulatory barriers to competition. Productivity is also disappointing among SMEs—just one-third of what it is among large enterprises (and down from one-half in the late 1980s).⁵
- **Insufficient social protection.** Korea has rapidly traversed from emerging- to advanced-economy status and has not yet built a comprehensive social safety net. The Basic Livelihood Security Program (BLSP), introduced in 2000, provides cash and in-kind benefits to the most vulnerable but is substantially less generous than the OECD average. The National Pension System (NPS) currently covers about one-third of the elderly, and the OECD reports that pension benefits were only around one-quarter of the average wage in 2015.⁶ These inadequacies boost private-sector precautionary savings and depress consumption and growth. They also may have contributed to increasing household debt: many retirees borrow to open (risky) small businesses, in an attempt to supplement their incomes. Total social spending amounts to just 10 percent of GDP, less than half the OECD average, and while population aging will drive this up sharply over the long run, social spending will remain relatively low for the next twenty years, with multiple adverse consequences.
- **Rising household debt.** This represents both a short-term vulnerability, with possible risks to financial stability, and a structural issue, insofar as high debt can depress households' propensity to consume and dampen medium-term growth.⁷

Commodity Exporters" as well as Chapter 2 of the same publication, "Navigating the Transition: Trade and Financial Spillovers from China."

⁴ Annex VII presents some stress tests of Korean corporates and, using Korean data, estimates the positive effect that restructuring can have on employment and investment. Annex VIII analyzes the international evidence and finds that corporate restructuring episodes are associated with increased growth in the future.

⁵ OECD Economic Surveys: Korea 2016.

⁶ OECD Economic Surveys: Korea 2016.

⁷ Annex IX provides a detailed look at these issues.

3. Income inequality and poverty are also issues of concern. Korea's Gini coefficient had fallen to among the lowest in the world in the mid-1990s and then rose somewhat in the wake of the Asian crisis. While the Gini coefficient remains near the OECD average today, the gap between the richest and poorest quintiles is now slightly higher than average. Moreover, social mobility, traditionally achieved through education and entrepreneurship, is not as strong as in the past—only 20 percent of households were able to move to a higher income bracket between 2011 and 2014, while a similarly sized share slid into a lower bracket. Finally, relative poverty rates, particularly among the elderly, are among the highest in the OECD.⁸

4. Low public debt affords policymakers room to respond to some of these challenges, although Korea faces fiscal pressures in the long run. With debt just 38 percent of GDP now, and on a downward trajectory over the next decade or two,⁹ Korea has substantially more fiscal space than most OECD comparators. Over the longer term, however, fiscal pressures mount. The authorities' conservative baseline projections show debt reaching 60 percent of GDP by 2060 on account of population aging, but slowing growth and the potential costs of possible future reunification with North Korea could push debt far higher than this. The authorities place high priority on fiscal consolidation, which could keep debt around 40 percent of GDP in the long run.¹⁰

5. Against this background, the Article IV discussions focused on the structural and fiscal reforms needed to boost growth and make it more inclusive. Korea may not reprise the sustained, very rapid growth it achieved in decades past, but sensible, well-targeted reforms can help the country to lean against the many headwinds that it faces, improve potential growth, and spur job creation. As described below, a comprehensive package of structural reforms, backed by the judicious use of Korea's fiscal space, is needed to boost growth and improve welfare. Such policies will also likely contribute to a gradual rebalancing of the economy, which will increase Korea's resilience and also make the global economy safer. It may be challenging to develop consensus for these reforms, even with fiscal support, but they are needed for Korea to realize its full potential. Status quo policies will not suffice.

6. Policies also need to be calibrated carefully to provide short-term support to the economy while addressing risks. Given the weak conjuncture and downside risks, recently announced fiscal support and monetary easing were appropriate, and the fiscal package should be finalized and implemented as soon as possible. In addition, going forward, the macro policy stance should remain supportive. Prudential regulations should be tightened, and also harmonized across banks and nonbanks, to contain risks from household debt. The exchange rate should continue to be allowed to move flexibly, with intervention limited to addressing disorderly market conditions.

7. Economic policymaking may be challenging given the current political environment. In the April general election, the ruling Saenuri party lost its plurality in the National Assembly. Given Korea's presidential system, President Park will remain in power until her (single) term ends in

⁸ OECD Economic Surveys: Korea 2016.

⁹ See Annex I.

¹⁰ Ministry of Strategy and Finance, "2060 Long-Term Fiscal Outlook Report," December 4, 2015.

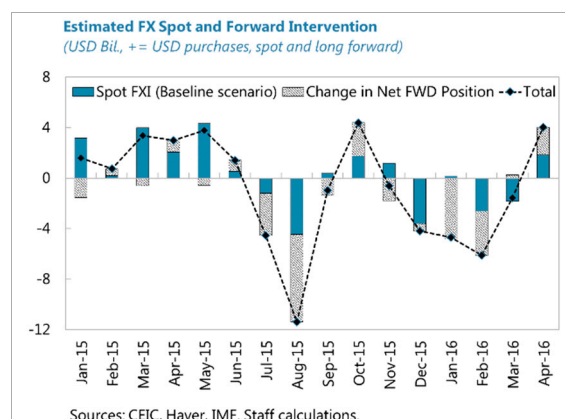
February 2018, but with the legislature now led by the opposition parties, the passage of economic reforms may be complicated.

RECENT DEVELOPMENTS AND PROSPECTS

A. Recent Developments

8. Activity has been sluggish since 2012. The economy has been buffeted by shocks—the Sewol ferry accident in 2014, the outbreak of the Middle East Respiratory Syndrome (MERS) in mid-2015, and the global trade slowdown more recently—in response to which the authorities proactively provided monetary and fiscal support, including policy rate cuts, a supplementary budget and tax cuts in 2015, and frontloading of expenditure plus a recently announced fiscal package for 2016. Activity started to pick up in the second half of last year but slowed again in the first quarter, reflecting the expiry of the consumption tax cut (which was later extended), weaker fixed investment, and a payback in inventory accumulation, which had made strong contributions to growth in 2015. The most recent high-frequency data have been mixed, while the output gap remains negative (around 1½ percent of potential GDP).

9. The weak external environment has weighed heavily on Korea. As in many other regional economies, nominal exports fell sharply during 2015 and early 2016, with the largest declines seen in exports to Asian partners and emerging markets in other regions. Export volumes held up somewhat better but have declined this year. Reflecting Korea’s integration in global supply chains, the decline in exports led to a decline in imported parts as well, and given soft domestic demand and low commodity prices, overall imports fell even more sharply than exports did, pushing the current account surplus to a record-high 7¾ percent of GDP in 2015.¹¹ (See Box 1.) At the same time, Korea experienced portfolio outflows in the aftermath of the “RMB tantrum,” in anticipation of Fed “lift-off,” and, to a lesser extent, following Brexit. After two years of appreciation, the real effective exchange rate began to weaken, and the authorities appear to have sold foreign-exchange reserves during several months over the past year. Financial conditions generally remain stable, despite substantial volatility in capital flows at times. Brexit led to initial sharp losses in Korean equities and the value of the won, but these were largely reversed in the following week, amid continued uncertainty in global markets.



¹¹ Low oil prices caused the current account surplus to swell by around 2 percent of GDP, with some of this expected to reverse in the future, but there was little positive impact on growth, possibly because weak prices partly reflected weak global demand, which was a negative for Korea.

Box 1. Korea's External Position¹

Korea has one of the world's largest current account surpluses relative to GDP. Heavy investment kept the current account in deficit during most of Korea's rapid growth phase, and it was only after the Asian crisis that the current account balance reliably turned to surplus. During 1999–2009, it averaged 1½ percent of GDP, but since the global financial crisis, it has risen sharply, reaching 7¾ percent in 2015. A similar outturn is expected this year. Korea's net international investment position (NIIP) turned positive for the first time in 2014 and reached 14½ percent of GDP in 2015.

There are explanations for part of the current account surplus. Given the weak conjuncture, it is natural both that household saving would rise and that investment would decline. Large changes in terms of trade—particularly related to the oil price—have also played a significant role in widening the surplus. Korea's demographics—its rapidly aging population, and the many citizens in prime saving years—are another factor, as is the objective of saving for possible future reunification costs. Finally, it is important to correct for certain balance-of-payments accounting practices in BPM6—in particular, retained earnings that accrue to foreign owners of Korean capital will eventually have to be paid out, and this justifies part of the saving implied by the current account surplus.

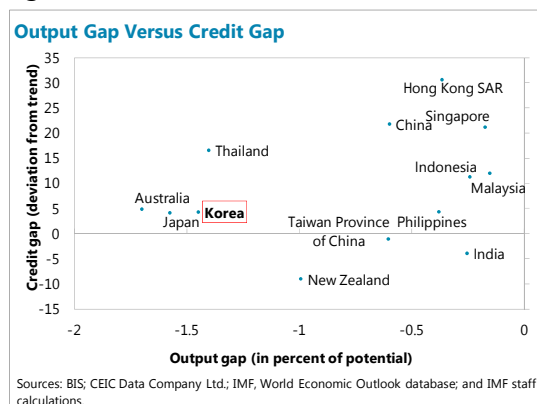
Nonetheless, a current account gap remains. After adjusting for all of the above factors, the current account surplus appears to be on the order of 3 percent of GDP larger than justified by medium-term fundamentals and desirable policies.

The current account gap is a symptom of underlying imbalances, which can be addressed through policies. The gap implies that the economy is saving too much and investing too little, to the detriment of Korea's own welfare. Appropriate structural and fiscal policies can boost consumption and growth, improve productivity, and stimulate corporate investment, all of which will lead to a stronger economy in which households share more equitably in economic outcomes. At the same time, the economy will rebalance somewhat away from volatile external demand (but not completely, as Korea is a small, open economy). The current account surplus will decline, and Korea's stock of net foreign assets will continue to grow, albeit somewhat more slowly. All of this will also make the global economy more resilient, which again will be to Korea's benefit.

¹ A comprehensive external sector assessment is provided in Annex II.

10. Reflecting economic slack and low oil prices, inflation has been subdued. Headline CPI inflation dropped, by early 2015, to its lowest levels since mid-1999 and even now hovers around 1 percent, well below the Bank of Korea's (BOK's) target, which was recently reduced from a range of 2½–3½ percent to 2 percent. Core inflation has been more robust, with some moderation in early 2016, reflecting the dissipation of the impact of the 2015 cigarette-excise hike.

11. While the real economy has lagged, the credit cycle appears to be more advanced. Total private credit is only slightly above trend, given sluggish corporate borrowing. Credit growth to the household sector, however, reached 11 percent y/y in 2015 on the back of earlier rate cuts and a loosening of macroprudential measures. About one-third of this credit has come from non-bank financial institutions



(NBFIs), such as insurance companies,¹² mutual credit cooperatives, savings banks, and securities companies. The growth of nonbank household credit has accelerated and may continue doing so as banks' lending standards tighten.

12. The financial system remains resilient. Financial soundness indicators—capital adequacy, liquidity, and asset quality of both banks and NBFIs—are relatively strong on a point-in-time basis, but they may weaken as banks realize losses on exposures to firms affected by the economic slowdown; indeed, the banking sector's NPL ratio ticked up to 1.9 percent in March 2016.¹³ Bank credit growth has weakened recently and could slow further given elevated credit risk in the corporate sector. In addition, bank profitability is very low by international standards, possibly on account of banks' policy responsibilities, as well as the low nominal interest rate environment. The government recently implemented the Basel Committee's recommendations on additional capital requirements for domestic systemically important banks (D-SIBs) and countercyclical capital buffers (which were set at zero initially).

	Total Assets (pct GDP)	Return on Assets	Asset growth, p.a	Substandard assets ratio	Capital ratio	Minimum capital req't	Regulatory framework
Commercial banks	101	0.58	6.3	1.1	14.8	8 to 14 ^{1/}	Basel III
Insurance companies	50	0.72	11.4	0.3	284.8	100	Risk-based standard
Mutual credit coops	38	0.43	6.1	2	8.1	2 to 5	Basel I; tax exempt interest
Securities companies	24	5.36	9.4	n/a	526	150	Net capital ratio
Credit-spec. financial co's	13	1.84	10.2	1.9	21.3	7 to 8	Adjusted capital ratio
Savings banks	3	1.66	11.3	11.6	14.3	6 to 7	Basel I

Source: Bank of Korea FSR 2016H1, IMF staff calculations.

1/: 8 (Basel minimum) + 1 (D-SIB by 2019) + 2.5 (CConsB by 2019) + 2.5 (CCyB as conditions permit) = 14

13. Household debt surged last year. Debt reached 163 percent of net disposable income—above the OECD average of 131 percent. Some key drivers have been: (i) population aging;¹⁴ (ii) a sustained rise in *chonsei* prices;¹⁵ and (iii) the recovery in housing prices.¹⁶ Against this background, the authorities announced more stringent bank screening of loan applications, a faster restructuring of the mortgage market toward amortizing and fixed-rate loans, and tighter LTV limits on nonbanks' nonresidential mortgages. The authorities are also considering asking banks to monitor a comprehensive debt-service ratio (DSR) for borrowers. Following the announcement of these

¹² Insurance companies in Korea can—unusually, in international comparison—make direct loans to households, including both mortgages and loans collateralized by the value of insurance policies.

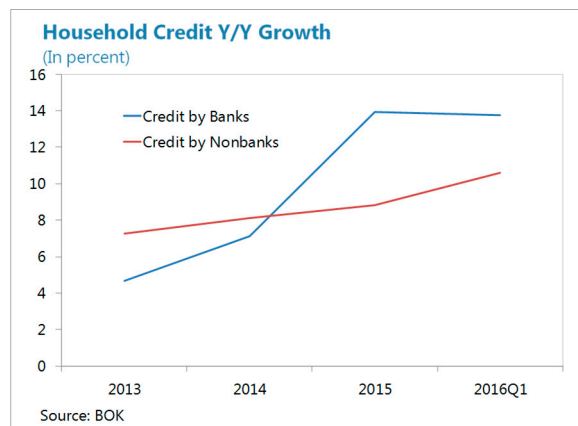
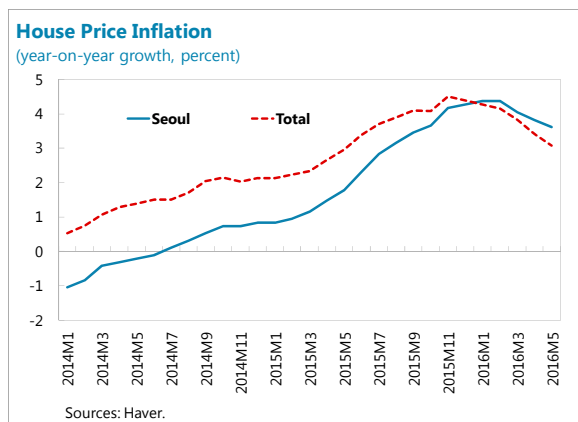
¹³ Corporate restructuring could also pose a risk, but commercial banks' exposure to vulnerable sectors is relatively limited, and loan loss reserves are adequate, with a coverage ratio of more than 145 percent, as of March 2016.

¹⁴ As discussed in Annex IX, many of the elderly borrow once retired so as to open small businesses with which to supplement their old-age income.

¹⁵ Under the *chonsei* rental system, two years of rent are typically paid with an upfront deposit, which is often borrowed from a bank. Landlords have steadily been demanding higher deposits in recent years on account of lower interest rates.

¹⁶ House prices have been rising in the Seoul metropolitan area, while prices in other regions have weakened after increasingly rapidly over the past few years. Overall, house prices do not seem overvalued according to the usual affordability metrics, as discussed further in Annex IX.

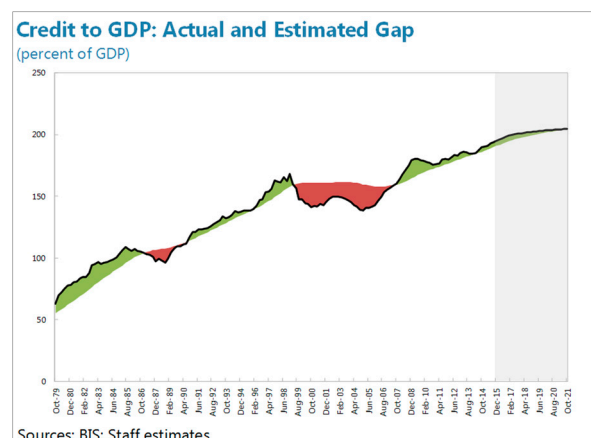
measures, which are under gradual implementation, the growth of household bank mortgages began to moderate—as did house prices—though other household loans continued to grow rapidly.



14. Pockets of vulnerability persist in the corporate sector. Aggregate corporate leverage is moderate, with nearly 90 percent of companies having a debt-to-equity ratio of less than 2. But the financial soundness of firms in certain export-oriented industries, as well as construction, has deteriorated as sales have slumped. The share of vulnerable firms—those with an interest-coverage ratio below 1.5—has been high since the global financial crisis and rose beyond 35 percent last year. Stress tests suggest that a 1 percent slowdown in external demand would reduce Korean corporates' earnings growth by up to 1¼ percent, with serious implications for corporate investment and economic growth.¹⁷

B. Outlook and Risks

15. Staff continue to forecast a modest recovery. Broadly in line with Consensus, staff forecast growth to tick up to 2.7 percent this year and 3.0 percent in 2017, with inflation remaining subdued and the output gap closing only by 2021. The anticipated pickup in activity is based on growing private consumption, a stronger housing market, and the impact of fiscal and monetary easing. On the other hand, export prospects will likely remain difficult. Sluggish exports and heightened uncertainty will weigh on fixed investment, and stockbuilding will continue to be a drag. Credit is expected to continue to grow, partly reflecting the impact of interest rate cuts, but at a slower pace consistent with the tightening of



¹⁷ See Annex VII for detail of these stress tests, as well as the 2015 Article IV Consultation for Korea, which analyzed the impact of weaker corporate balance sheets on investment. Annex IV describes how policy recommendations from the last Article IV Consultation were taken up.

macroprudential measures, the narrowing of the credit gap, and the envisaged moderation in construction investment after 2017.

16. Risks are to the downside. A number of factors could lead to weaker outcomes than indicated in the baseline forecast:¹⁸

- **Domestic risks.** Private consumption has been weak for several years, and the assumed rebound may not materialize, particularly given the drag from household debt. Corporate restructuring, while essential for the longer term, could lead to higher unemployment and weaken consumption (although strong social safety nets would minimize this effect). Corporate restructuring could also have an adverse short-term impact on banks' balance sheets, hampering their ability to extend credit and causing them to tighten lending standards.
- **External risks.** Korea is one of the countries most heavily exposed to China, and a hard landing there, or a significant slowdown beyond WEO projections, would depress Korea's exports further. A faster-than-expected move by China up the value chain could also generate more competition for Korea. On the other hand, rebalancing toward consumption could raise Chinese demand for a wide array of Korean goods and services, including cultural products. (See Annex VI.) Finally, tighter or more volatile global financial conditions—particularly following Brexit—could lead to capital outflows, falling asset prices, and rising funding costs, with adverse effects on activity.

Authorities' views

17. The authorities had a slightly more optimistic forecast than staff, while acknowledging that growth momentum is weaker than desired. They agreed that household debt can be a drag on consumption and growth but also suggested that the increase in household saving over the past few years partly reflects rising life expectancy. They were less concerned about the unwinding of expenditure frontloading since revenue overperformance would allow the budget to be executed according to plan. They suggested that their efforts to increase budget execution rates, along with the carryover from last year's stimulus, as well as the planned new stimulus, would help to support growth. They noted that risks from corporate restructuring could be contained, as budget provisions for unemployment benefits would cover affected workers, while arrangements were being made to ensure that creditor banks remain well capitalized (see below). While they were closely monitoring possible spillovers from China, they felt that Korea's position in global value chains and diversified export base could help mitigate these risks. Instead, they saw the possibility of disruptive global market conditions as the main risk to the forecast. Brexit was not seen as likely to have a substantial impact on Korea, given that direct trade and financial linkages between Korea and the U.K. are limited; the authorities, however, noted that medium- and long-term risks could exist during the U.K.'s exit negotiation process. Finally, they suggested that higher oil prices could benefit Korean exports by boosting demand in oil-exporting nations.

¹⁸ See the risk assessment matrix in Annex III for further details.

POLICY DISCUSSIONS

A. Boosting Potential Growth and Fostering Inclusion

18. With the economy facing major structural headwinds, a comprehensive set of policies is key to reinvigorating long-run growth and fostering inclusion. Structural measures are needed in a number of areas, including corporate restructuring, labor market reform, and productivity enhancement. Fiscal policy can play a complementary role, to incentivize these reforms and to cushion their near-term impact. In addition, social safety nets should be strengthened, both to address inequality and poverty, and also to boost consumption-led growth and contribute to rebalancing. Given long-term fiscal pressures, enhanced social spending would eventually need to be paid for with revenue increases (or cuts in other expenditure), and the authorities could commit to this, and thus ensure debt sustainability, by introducing a set of formal fiscal rules.

Corporate restructuring

19. The authorities have made substantial progress on corporate restructuring. A three-track approach has been devised, covering: (1) shipbuilding and shipping; (2) more routine cases of individual distressed firms across the economy; and (3) the overcapacity sectors of steel, petrochemicals, and construction. In early June, the government announced broad plans for Track 1, along with measures to recapitalize two policy banks that could face losses as firms are restructured.¹⁹ (See Box 2.) The authorities also announced their intention to further improve policy lending (including the banks' capacity to handle corporate restructuring), which staff see as key to helping avoid future problems. In addition, to minimize the impact of corporate restructuring on employment and the regional economy, the government on June 30 designated the shipbuilding industry as a sector that would require special support. Tracks 2 and 3 may proceed with minimal government involvement, with the latter aided by the recently passed "one-shot" law, which streamlines procedures and offers tax incentives for mergers and acquisitions.

20. Staff commended the authorities for their focus on corporate restructuring and urged that it proceed expeditiously. Speedy implementation of the strategy, including not only financial but also operational restructuring of distressed firms, combined with social spending to help affected workers is critical. Staff's empirical analysis suggests that resolving the debt overhang could meaningfully boost investment and stimulate hiring, and a review of the international evidence suggests that corporate restructuring is associated with higher GDP growth afterward, and that swift, decisive action is vital.

21. The authorities' preemptive action to safeguard the capital position of the policy banks is also welcome and should be done with adequate fiscal support. Recapitalization of policy banks is the responsibility of the fiscal authorities, although procedural constraints have also implied a short-term role for the BOK in providing bridge financing. Staff see this involvement as consistent with the BOK's mandate for price and financial stability, but to ensure continued monetary independence and fiscal accountability, the exposure should be unwound—i.e., either

¹⁹ As of June 2015, specialized banks, including Korea EXIM, KDB, and other public banks, accounted for almost half of the credit supplied to large firms with an ICR below one for a prolonged period.

repaid from fiscal resources or sold through markets—as soon as possible, and the government should back up its intention to support an early exit of the BOK by providing sufficient resources for recapitalization in the budget. At the same time, the financial supervisory authorities should continue to monitor commercial banks' exposure to vulnerable sectors, and continue to require banks to maintain sufficient loan loss reserves.

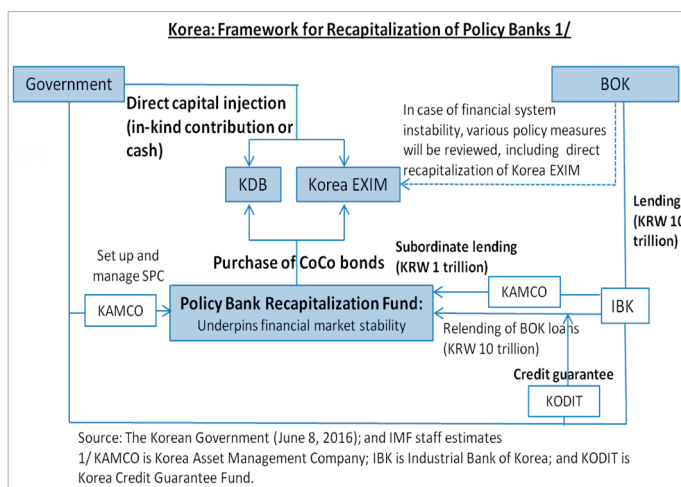
Box 2. The Authorities' Plan for Shoring up the Capital of Policy Banks

The state-owned policy banks Korea EXIM and KDB are the main creditor banks for many of the firms in the five vulnerable sectors identified by government. Their lending to the shipbuilding and shipping industries amounted to KRW 58 trillion (around 3½ percent of GDP) as of March 2016. The banks are currently adequately capitalized, but the government estimates that KRW 5 to 8 trillion in additional capital would be required for them to continue meeting Basel III requirements after some loans are written down in the process of corporate restructuring. Recapitalization would safeguard financial system stability and ensure that the banks remain able to fulfill their policy functions.

The government will provide KRW 1 trillion of in-kind, Tier 1 capital (shares in state-owned enterprises) to Korea EXIM in 2016. It also plans to provide additional Tier 1 capital to Korea EXIM and KDB through the 2017 budget. And in case of systemic financial risk, the government and the BOK, which has a 12.4 percent ownership stake in Korea EXIM, may also consider additional direct capital injections into that bank.

Separately, a Policy Bank Recapitalization Fund of up to KRW 11 trillion has been set up under the management of the Korea Asset Management Company (KAMCO). The

fund will be financed by KRW 1 trillion in loans from the Industrial Bank of Korea (IBK, another policy bank), on behalf of the government, as well as up to KRW 10 trillion in loans from the BOK.¹ The BOK's exposure will enjoy two levels of credit protection, since it will be senior to KAMCO's junior tranche, and since it will be insured by the Korea Credit Guarantee Fund (KODIT), which is in turn fully backed by the government. The BOK's loans will be of short tenor (one year or less, as per the Bank of Korea Act), but the BOK can lend again.



The fund, which was launched on July 1, will purchase policy banks' Tier 1 or Tier 2 contingent convertible (CoCo) bonds, on a capital-call basis. The pattern of use of the fund will depend on the extent and speed of corporate restructuring, in addition to the credit condition of the vulnerable industries. The fund will be in operation through end-2017. This date may be changed during the end-year review of the fund, but in any case the government has expressed its support for early redemption of the BOK loans.

¹ The BOK can lend only to banks, and its contribution to the fund will thus be channeled via the IBK. The IBK's own contribution will be channeled via KAMCO to benefit from favorable risk weighting.

Labor markets

22. Labor market reforms are another key priority. The September 2015 Tripartite Agreement between unions, employers and the government contained many important reforms but later lost support from some key actors. A package of labor laws, based on the Tripartite Agreement, is now stalled in the National Assembly. The government remains committed to labor-market reform and has issued policy guidance to employers to promote the “wage-peak” system, emphasize performance-based assessment, and clarify conditions for dismissal. Key priorities are as follows:

- **Addressing labor market duality.** Market segmentation results in youth unemployment, inequality, and insufficient investment in training. A priority is to dampen firms’ incentives to hire non-regular workers by: (i) fostering cooperative labor relations; (ii) expanding benefits for non-regular workers; and (iii) reducing labor-market rigidities by introducing performance-based assessment and clear conditions for dismissal. In addition, broadening access to training for non-regular workers will foster productivity.
- **Boosting labor force participation.** Addressing labor market duality will help improve female job participation and increase birth rates, but further measures are also needed—these could include providing well-targeted support for childcare, facilitating flexible work arrangements, improving work-life balance, enhancing job search and training support, and addressing gender-based job inequalities.

Productivity

23. Boosting productivity in the service sector and among SMEs is another area of focus. Korea’s regulatory environment for upstream service sectors (e.g., electricity, gas, and rail) is very stringent in international comparison. Staff estimates suggest that if this regulatory burden were to diminish and reach the OECD frontier by 2025, it could boost TFP growth by about $\frac{1}{4}$ percentage point each year. Significant productivity gains can also be achieved by promoting competition and deregulation in healthcare, education, and professional services. As for the SMEs, government policy should prioritize fostering growth and innovation, rather than shielding less competitive firms. Staff analysis suggests that Korea is one of the countries most exposed to China’s rebalancing. Korea may need to move further up the value chain, develop sectors that benefit from increased consumption in China, and enhance its traded services sectors, and as all that happens, the SME sector will also need to respond dynamically.

24. Against this backdrop, the government recently announced a three-pronged strategy to strengthen the service sector. The plan includes: (i) promoting synergies between services and manufacturing; (ii) revamping infrastructure oriented toward services; and (iii) nurturing new businesses, notably in healthcare and tourism. To this end, the government will provide greater tax benefits and other financial support and will also embark upon deregulation to promote competition. The overall objective is to ensure that public policy supports both manufacturing and services in an equitable fashion, and the authorities aim, in this way, to promote the creation of 250,000 new jobs in the service sector, and to increase the sector’s share of the economy from 60 percent currently to 65 percent by 2020.

Complementary fiscal policy

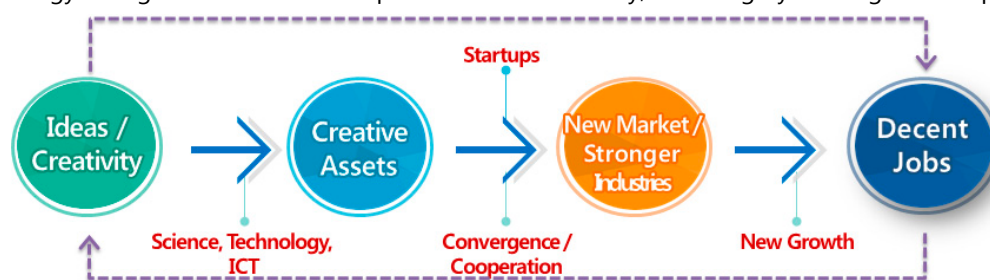
25. Fiscal support should be mobilized to incentivize and cushion any adverse impacts of structural reforms. Additional, well-targeted subsidies for children and for childcare, for instance, could stem declining fertility and improve labor force participation. Fiscal incentives could perhaps be designed to make Korea's substantial R&D activity more effective, complementing the authorities' efforts to promote a "creative economy." (See Box 3.) And fiscal support, including unemployment insurance benefits, retraining opportunities, and job-search facilities, could assist workers affected by corporate restructuring or labor market reforms—this would allow more equitable outcomes and increase the likelihood of developing consensus for structural reforms.

Box 3. Developing the "Creative Economy"

In the face of declining growth, the government is implementing a strategy to develop Korea's "creative economy." The export-led growth model was a good match in a world of expanding trade, but some rebalancing may now be needed. The Korean authorities are seeking to foster innovation and create new firms and decent jobs. The intention is to transform the economy by creating a virtuous business ecosystem that facilitates the emergence of new industries and promotes higher-value added in existing industries. The government hopes that these efforts will raise total factor productivity, reduce savings, and boost private investment.

A wide range of measures have been introduced, including:

- **Centers for Creative Economy and Innovation.** The government has set up 17 Centers for Creative Economy and Innovation (CCEIs) nationwide, which provide close support to start-up entrepreneurs. The centers serve as R&D clusters and provide customized support matching each venture's growth stages, all the way up to expansion into global markets. The government also aims to develop the Pangyo Creative Economy Valley as a Korean version of the Silicon Valley.
- **Start-ups and venture capital.** The government has facilitated firms' access to venture capital and IPOs, enhanced "cooperative competition" between large firms and SMEs, and strengthened the regulatory environment for the protection of intellectual property (IP) rights by creating a market for trading IP (i.e., a stock exchange for small firms).
- **New markets and industries.** The government has tried to create new markets and industries through the fusion of science, technology and ICT, notably in biomedical sectors, nanomaterials, and renewable energy. The government has also promoted M&A activity, including by revising laws on private equity.



Source: Government of Korea; Ministry of Science, ICT, and Future Planning.

The government sees these efforts as bearing fruit. The number of start-ups exceeded 30,000 for the first time in 2015, and new start-up investment reached an unprecedented level. The innovation centers are operating in full swing throughout the nation, and a total of KRW 176.6 billion of investment for 1,050 startups has been secured, with 7,044 cases of test product support carried out as of May 2016.

26. In addition, a carefully targeted expansion of social expenditure, sustained over the medium term, could yield multiple benefits. Increasing social spending would directly reduce relative poverty among vulnerable groups such as the elderly, nearly half of whom are poor.²⁰ It could also—by increasing those groups’ disposable income and reducing households’ need for precautionary savings—boost consumption-led growth and reduce the economy’s reliance on volatile external demand. It could contribute to financial stability by reducing retirees’ borrowing to open small businesses. And it would give the authorities more room to rationalize support to SMEs, thus boosting labor productivity. Staff see scope for increases in the basic income as well as the national pension, among other programs. Additional spending to strengthen the public education system would also be desirable.²¹

27. To preserve sustainability, revenue increases will be needed in the long term to pay for expanded social spending, and fiscal rules could help ensure that these materialize. Increasing revenues too early would, by reducing household disposable income, undercut the desired boost to consumption and growth. But given the long-run fiscal challenges facing Korea, it is clear that compensatory measures will be needed eventually. Increases in social contributions would be a natural place to focus,²² and tax measures could also be considered—at just 21 percent of GDP, Korea’s revenue burden is currently one of the lowest in the OECD.²³ A set of fiscal rules could help make the authorities’ commitment to future measures more credible. (See Box 4.)

Authorities’ views

28. The authorities vigorously agreed on the importance of structural reforms to boost growth, foster inclusion, and rebalance the economy. They noted that corporate restructuring would move ahead quickly and that the unemployment fund would provide sufficient coverage for affected workers. They agreed that fiscal policy would play the lead role in policy bank recapitalization and viewed BOK involvement as fully consistent with its mandate, noting that such involvement would be as part of a contingency plan. Going beyond corporate restructuring, they emphasized that the government had laid out a broad reform agenda that includes: (i) labor-market reform; (ii) reforms in state-owned enterprises (SOEs); (iii) measures to improve Korea’s already impressive educational system; and (iv) financial sector reforms, focused on deregulation and technological innovation. In aid of all of these, the government has emphasized

²⁰ OECD Economic Surveys: Korea 2016.

²¹ Improving the quality of schools and access to public afterschool tutoring would reduce Korean households’ private spending on education, which, at 38 total spending, is nearly double the OECD average.

²² In this context, a faster pace of increases in the retirement age could also be considered. Automatic adjustment mechanisms could also be envisaged, whereby the authorities would commit to introducing a particular revenue measure if the debt, or the deficit, breached a certain threshold.

²³ Box 6 in the 2015 Article IV Consultation staff report discusses Korea’s taxes in international comparison and suggests some areas for reform—viz., streamlining tax expenditures, including deductions and exemptions under the personal income tax and corporate income tax; reducing income shifting, and the resultant loss of tax revenue, caused by differing personal, corporate, and capital gains tax rates; and moving property taxes away from transaction-specific levies and more toward recurrent taxes on property owned. Increasing the VAT rate from the current 10 percent—one of the lowest in the world—to the OECD average of 18 percent could, for instance, yield 3¾ percent of GDP in extra revenues. Similarly, reducing the unusually large standard deduction under the personal income tax could generate 3¼ percent of GDP in revenues. There may also be room to raise the CIT rate.

the need to improve the services sector, and it has implemented a strategy to develop the “creative economy.”

Box 4. Toward a Rule-Based Fiscal Framework

The Korean authorities are deeply committed to fiscal prudence, and their budget formulation and execution are generally very sound. Against this background, it is no surprise that the general government debt-GDP ratio is only about one-third of the OECD average.

Korea’s current fiscal framework, however, faces two main challenges:

- **Countercyclical policy.** Supplementary budgets can be introduced only under very specific, and quite limited, circumstances (e.g., war, natural disaster, or a recession). While this usefully guards against repeated revisions to the original budget, it may also at times hamper policymakers’ ability to conduct countercyclical short-term fiscal policy.¹
- **Long-term anchor.** While the authorities’ commitment to long-term fiscal sustainability is well understood, and they have laid out scenarios in which consolidation efforts keep debt around 40 percent of GDP in the long run, there is no formal anchor in place.

A rule-based fiscal framework could address these challenges. Fiscal rules have been increasingly used around the world—only 5 countries had one in 1990, but nearly 80 did by 2012 (Schaechter et al., 2012)²—and Korea may benefit as well. This topic is currently under discussion in Korea, and a proposal may be submitted in the near future. Staff intend to do further work in this area, drawing on recent Fund analysis³ and including consideration of the appropriate design and escape clauses. One possibility would be to introduce a pair of rules:

- A **structural budget balance rule** would provide a framework for countercyclical fiscal policy, though it could also introduce some communication difficulties, given the uncertainty in estimating the output gap.
- This could be combined with a **debt ceiling**—this would anchor public debt at a prudent level while allowing policymakers the flexibility to choose the tax and spending mix. Some public discussion would be required to pin down the appropriate debt level—it may be that 40 percent of GDP over the long run is too conservative, especially considering the multiple benefits of additional social spending, as described above, including the aim of rebalancing the economy.

¹ Indeed, formal econometric analysis suggests that there is room to enhance the degree of countercyclicality of fiscal policy. See Égert, B. (2010), “Fiscal Policy Reaction to the Cycle in the OECD: Pro- or Counter-cyclical?” OECD Economics Department Working Papers, No. 763, OECD Publishing.

² Schaechter, A., Kinda, T., Budina, N., and Weber, A., 2012. “Fiscal Rules in Response to the Crisis—Toward the “Next-Generation” Rules. A New Dataset,” IMF Working Paper, WP/12/187.

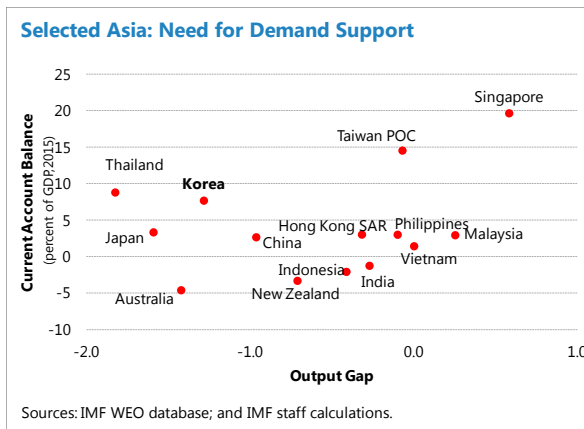
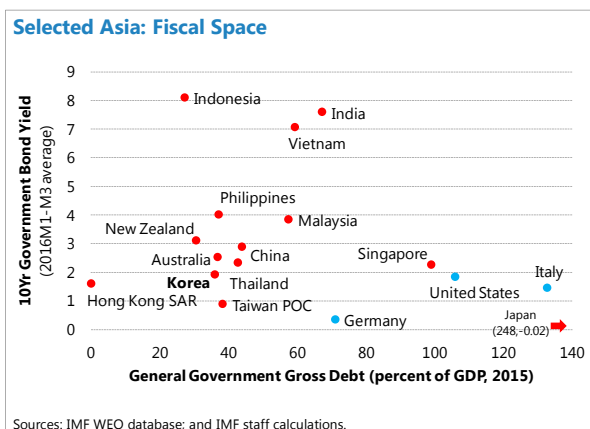
³ See, for example, IMF (2016), “Flexible Fiscal Rules and Countercyclical Fiscal Policy,” IMF Working Paper, WP/16/8, and also IMF (2009), “Fiscal Rules—Anchoring Expectations for Sustainable Public Finances,” IMF Staff Paper.

29. The authorities were open to staff’s fiscal policy recommendations but stressed the importance of preserving long-run sustainability. They were in full agreement on the need for fiscal policy to support structural reforms. They also agreed on the benefits of a stronger social safety net, but they noted that social spending was already on a rising trajectory, and they were wary of introducing new entitlements. Their strategy for dealing with rising social spending is first to look for possible increases in pension and healthcare contributions from those who would be enjoying larger benefits, next to seek savings through discretionary expenditure reform, and only then to consider increased taxation, which they do not envisage for the time being. Fiscal rules have been under discussion in Korea, and the authorities welcomed staff’s further analysis of the topic.

B. Providing Short-term Support and Addressing Vulnerabilities

Fiscal policy

30. Given the weak conjuncture and downside risks, staff urged additional fiscal stimulus, as the primary instrument to bolster aggregate demand. The authorities' plans to ensure full execution of the budget and to provide off-budget stimulus of KRW 6.5 trillion (close to ½ percent of GDP) appeared helpful but not sufficient, especially since the frontloading of budget spending in the first half of the year implied at least some fiscal tightening during the rest of 2016, which would hinder the recovery. Staff suggested that Korea is one of the few Asian economies with both the need and the space for fiscal stimulus. A package of about 1 percent of GDP—ideally implemented as a supplementary budget—would be similar to the 2015 stimulus and likely sufficient to boost growth toward the authorities' target of 3 percent, without threatening debt sustainability.²⁴ As Korea already has well developed infrastructure, stimulus spending could instead focus on targeted transfers to the most vulnerable (and most likely to spend). Tax measures could also be considered.



31. On June 28, the authorities announced a fiscal package of more than KRW 20 trillion (1¼ percent of GDP) to support the economy and employment. This will include a KRW 10 trillion supplementary budget, as well as spending through other channels, such as the SOEs.²⁵ While the supplementary budget is still being formulated, the overall package will feature a broad mix of measures including: larger unemployment benefits; economic support, via public infrastructure spending and other measures, of the regions most affected by corporate restructuring; an increased tax deduction for housing rent; and tax incentives for the replacement of old diesel cars and for the purchase of highly energy-efficient home appliances, to name just a few elements. These measures are placed in the context of a broader government economic strategy, including an effort to develop 11 new growth engines for the economy. Staff estimate that the fiscal package will boost GDP by around 0.3 percent, spread over 2016 and 2017.²⁶ While the government expects that these

²⁴ Multipliers are on the order of 0.3—low, given the economy's extreme openness. (See *Fiscal Expenditure and Macroeconomic Policy*, Korea Institute for Public Finance, March 2013.)

²⁵ The KRW 6.5 trillion in SOE spending announced earlier in the year is part of the package.

²⁶ This is already built into the forecast.

measures will largely be paid for by revenue overperformance (and thus will not require additional borrowing), this nonetheless represents discretionary stimulus to the economy.

Monetary policy

32. Staff also recommended monetary easing, and following the BOK's recent rate cut, a continued supportive stance appears to be appropriate. Monetary policy may not by itself provide strong stimulus—it could create negative wealth effects for deposit holders, it could raise *chonsei* prices²⁷ and thus reduce renters' disposable income, and it will not address structural factors behind weak investment and exports. Nonetheless, staff saw a case for coordinated fiscal and monetary easing, to send a strong signal and boost confidence. Risks to household debt could be addressed via a tightening of macroprudential policy, and risks of capital outflows were seen as manageable. After keeping the policy interest rate at 1.5 percent for almost a year, the BOK cut the rate by 25 basis points on June 9, just after the Article IV mission. In light of the weak conjuncture and downside risks, the BOK should maintain a supportive stance.

Macroprudential and external sector policies

33. Further measures are needed to address macrofinancial risks:

- **Household debt.** The authorities have responded to the rapid growth of household debt with several measures, but the DTI cap of 60 percent remains high in international comparison and 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”²⁸); the planned monitoring of a debt-service ratio is a welcome step in this direction. These measures should reduce financial risks and, by reducing household debt, also help consumption and growth.
- **Nonbank credit.** While nonbank lending to households is smaller than bank lending and grew at a slower rate in 2015, it has accelerated this year. This deserves close monitoring, not only because of the risks nonbank credit has posed in other countries (and indeed, in Korea as well, during the past), but also because, in Korea's highly tiered financial system, nonbanks cater to less creditworthy customers and thus face elevated risks. Staff recommended the continued harmonization of prudential regulations across banks and nonbanks. This includes insurance companies, which engage in direct lending to policyholders but may have limited expertise in assessing credit risk, as well as savings banks and mutual credit cooperatives, which have looser capital requirements than commercial banks, and whose lending is often used by households to finance risky small businesses.
- **Institutional framework.** As recommended in the 2013 FSAP, separating macroprudential policymaking from crisis management would increase transparency and accountability among the relevant agencies and ensure greater independence.

²⁷ Landlords tend to ask for increased *chonsei* deposits when rates fall in order to keep their interest income up.

²⁸ These are taken by a group of prospective apartment buyers and guaranteed by developers and public credit guarantee corporations.

34. The planned easing of measures aimed at curbing capital inflows is appropriate. After the global financial crisis, the authorities introduced macroprudential tools and capital flow management measures to contain exposure to liquidity risk and foreign-exchange risk. These included a ceiling on banks' loan-to-deposit ratio, a leverage cap on banks' foreign exchange derivatives positions, and a levy on foreign exchange funding. The government expanded the application of the macroprudential stability levy to NBFIs in 2015 while narrowing the application to short-term FX borrowing. These measures were successful in increasing financial sector resilience by limiting exposure to liquidity risk, reducing maturity mismatches caused by short-term FX borrowing, and more generally lengthening the maturity of the financial sector's FX borrowing. Recently the authorities announced a relaxation of some of these measures, including raising the leverage cap and allowing for a lower bank levy in case of sudden capital outflows. These are appropriate given that the pressure of capital inflows has declined as the interest differential has narrowed.

35. The exchange rate should continue to be allowed to move flexibly, with intervention remaining limited to addressing disorderly market conditions. A flexible exchange rate will help the economy to weather external shocks, a role that can be supported with appropriate macroprudential measures, such as the planned FX liquidity coverage ratio.²⁹ Staff also suggested that publishing data on intervention, with an appropriate lag, as in most advanced economies, could be considered.

Authorities' views

36. The authorities agreed that macro policies should be supportive. While they believed that earlier announced fiscal measures (such as expenditure frontloading and SOE spending) would provide more support than staff acknowledged, they were nonetheless open to further stimulus and later announced a package, to guard against the possible negative impacts of corporate restructuring, difficult external conditions, and the end of the earlier consumption tax cut. As for monetary policy, the authorities emphasized the importance of considering the timing of possible Fed tightening, as well as the risks of capital outflows and of growing household debt. Nonetheless, given the weak conjuncture, the BOK eased on June 9.

37. There was also broad agreement on staff's other short-term policy recommendations. The authorities agreed on the need to monitor the growth of household debt closely and expected it to moderate in the future as a result of recent measures. They also agreed on the need to harmonize requirements across banks and nonbanks to contain nonbank credit growth. They did not, however, see the need to change the current institutional framework for macroprudential policy and crisis management. On external sector policy, the authorities noted that exchange rate flexibility

²⁹ The authorities plan to introduce a foreign-currency liquidity coverage ratio (FX LCR) in 2017. While the regulation has not been issued yet, the intention is to require commercial banks to hold at least 60 percent of their foreign-exchange debt in high-quality liquid assets to withstand a 30-day net cash outflow in case of systemic risk. (The required ratio increases gradually to 80 percent by 2019.) Foreign bank branches are exempted. Basel III suggests that an FX LCR can be a useful monitoring tool. Basel III also requires implementation of a general LCR, which Korea implemented in 2015.

would continue. While they continued to have concerns that publication of intervention data could lead to speculative moves in the markets, this remains under consideration, in the context of negotiating trade agreements.

C. Implications for Rebalancing

38. Many of the policies described above will help to rebalance the economy. They will tend to reduce savings, boost investment, and support growth. For example: strengthened safety nets will reduce the need for private precautionary saving and boost consumption; corporate restructuring will, over time, promote increased investment; and measures to boost the birthrate and increase labor-force participation will raise growth, while labor-market reforms will boost productivity. All of these steps will imply a reduction of Korea's large current account surplus—but not an elimination, or reversal, of that surplus, meaning that Korea's stock of net foreign assets will continue to grow, albeit more slowly. The exchange rate will need to stay flexible to accommodate this transformation. Rebalancing will make the economy more resilient and help sustain Korea's growth in a world of slowing trade. It will also have the salutary effect of making the global economy less vulnerable, which will be to the benefit of an open economy like Korea.

Authorities' views

39. The authorities saw the increase in the current account surplus as a temporary phenomenon and agreed that rebalancing would be beneficial. The authorities agreed that terms-of-trade gains and weak domestic demand contributed to the large current account surplus, as did some Korea-specific factors, such as the country's particular demographic profile and the fiscal challenge of possible future reunification with North Korea. Nonetheless, they agreed that narrowing of the surplus from its current level would be desirable. They also agreed on the importance of exchange rate flexibility but emphasized that the current account surplus is unrelated to a weak exchange rate.

STAFF APPRAISAL

40. Korea has made remarkable economic progress over the past sixty years, but potential growth has slowed and inequality and poverty are areas of concern. The country is facing major structural headwinds including: rapid population aging; a heavy reliance on exports; corporate vulnerabilities; labor market distortions; and lagging productivity, particularly in the service sector and among SMEs. Staff strongly support the priority that the Korean authorities have placed on structural reforms to counter these headwinds.

41. Corporate restructuring has been an area of particular emphasis for the authorities. Staff commend the authorities for their focus on this key issue and urge that plans for financial and operational restructuring of distressed firms be implemented swiftly, while ensuring an adequate social safety net to assist affected workers is critical. The authorities also deserve praise for proactively making arrangements to safeguard policy banks' capital positions, and fiscal policy should play the lead role in this process.

42. Given Korea's low public debt, there is space to use fiscal policy in a complementary fashion. Fiscal support can incentivize structural reforms and cushion any possible adverse effects. In addition, a carefully targeted expansion of social expenditure, sustained over the medium term, could reduce poverty and inequality, bolster consumption-led growth, and even contribute to financial stability. Given the long-term fiscal pressures from population aging, increased spending would need to be matched by eventual revenue increases, and the authorities could formalize their commitment to such measures, and to fiscal sustainability overall, by introducing fiscal rules.

43. Given the weak conjuncture and downside risks, macroeconomic policies should remain supportive. The authorities have already been proactive in their short-term policy responses, recently announcing a new fiscal stimulus and cutting the policy rate, both of which were appropriate. The fiscal package should be finalized and implemented as soon as possible, and going forward, the macro policy stance should remain supportive. Macroprudential standards should be tightened, and also harmonized across banks and nonbanks, to contain risks. The exchange rate should continue to be allowed to move flexibly, with intervention limited to addressing disorderly market conditions. Most advanced economies also publish intervention data, with an appropriate lag.

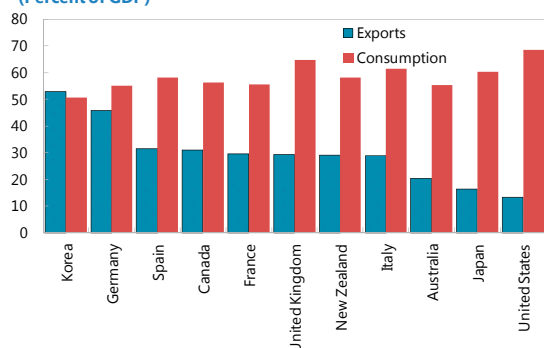
44. Many of the policies described above will tend to reduce savings, boost investment, and support growth. Korea's large current account surplus will moderate slowly over time, and the economy will be able to rebalance away from weak and volatile external demand. The exchange rate will need to be flexible to accommodate this transformation, and to help the economy weather external shocks.

45. Staff recommend that the next Article IV consultation be held on the standard 12-month cycle.

Figure 1. Structural Issues

Korea's economy relies more heavily on exports than other advanced economies do.

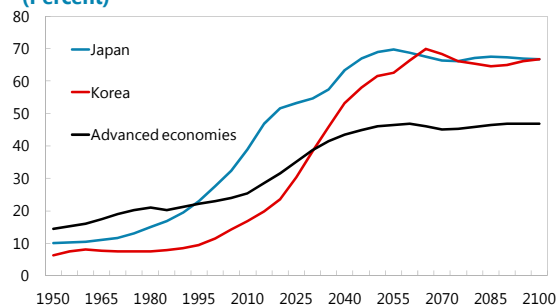
Exports and Consumption, average 2011-15
(Percent of GDP)



Source: IMF, World Economic Outlook.

The speed of aging is one of the highest in the world.

Old-dependency ratio¹
(Percent)



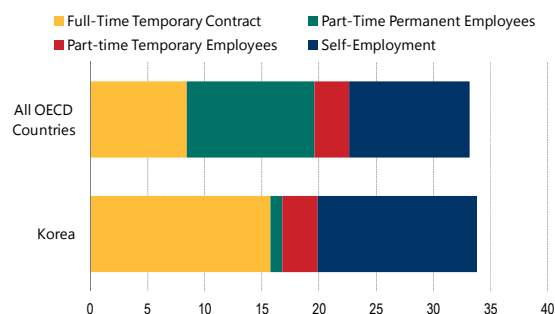
¹ Ratio of population aged 65+ per population aged 20-64. Assume no change in the fertility rate.

Source: United Nations.

The share of temporary workers in Korea is double the OECD average.

Non-Regular Employment by Type in 2013

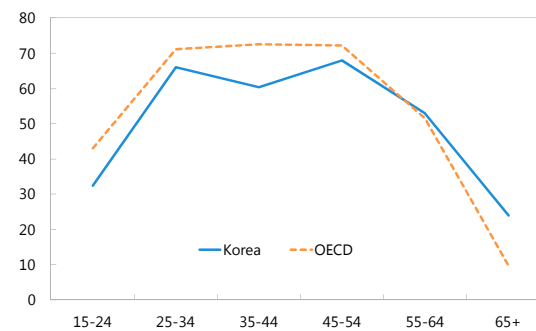
(In percent of total employment)



Source: Organization for Economic Cooperation and Development (OECD).

Female labor force participation is below the OECD average, and more so for women aged 35-44.

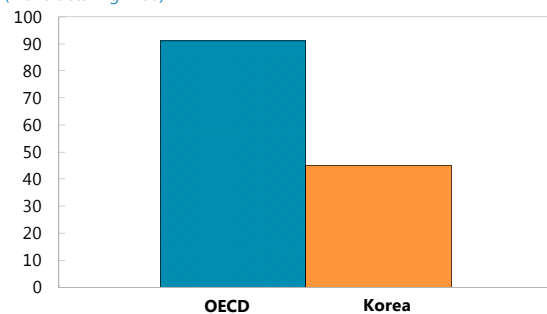
Labor Participation of Female in 2014: Korea and OECD
(Percent)



Sources: OECD Employment Outlook Database.

Labor productivity in the service sector is only about half of what it is in manufacturing.

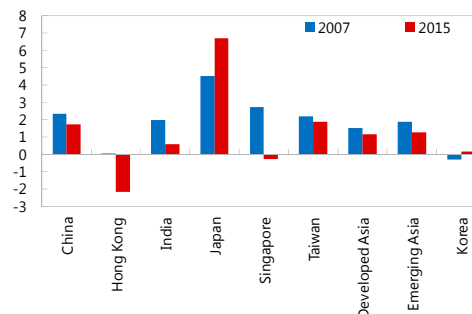
Productivity in the Service Sector Relative to Manufacturing
(Manufacturing=100)



Source: OECD National Accounts database

Corporate performance is weak, especially in some sectors.

Corporate Sector Interest Coverage Ratio 1/
(25th percentile)



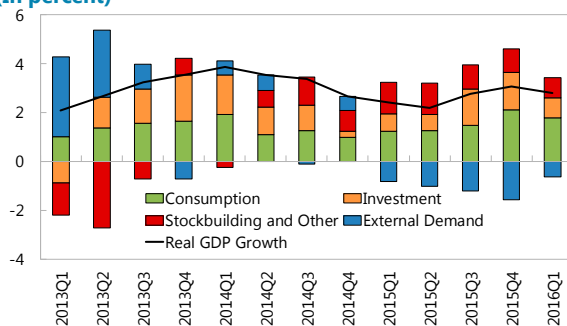
Source: Corporate Vulnerability Unit toolkit.

1/ Interest coverage is ratio of EBIT to interest payments.

Figure 2. The Real Economy

Growth has been weak, especially after shocks in 2014 and 2015.

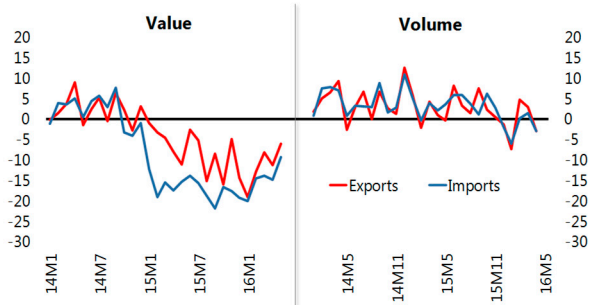
Contributions to GDP Growth (In percent)



Sources: CEIC Data Company Ltd; and IMF staff estimates.

Nominal imports and exports contracted sharply, although volumes held up somewhat better.

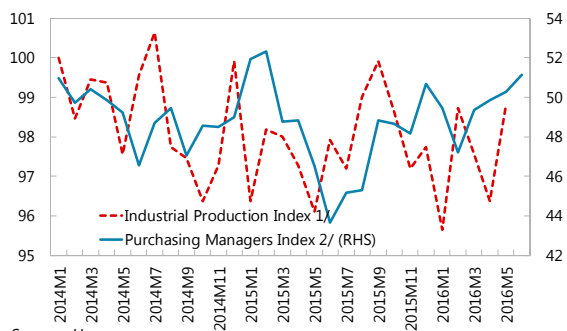
Import/Export (Y-o-Y growth)



Sources: CEIC Data Company Ltd.; Haver Analytics; and IMF staff calculations.

The manufacturing PMI has rebounded somewhat.

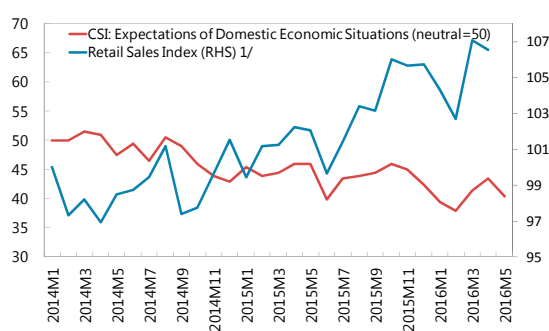
Industrial Production and Purchasing Manager Index



Sources: Haver.
1/ Base: 2014M1=100
2/ Manufacturing Output (SA, 50+ = Expansion)

Retail sales have also improved, while consumer sentiment remains weak

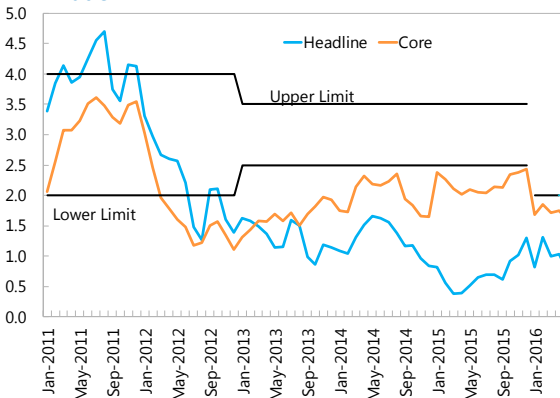
Retail Sales and Consumer Sentiment Indices



Sources: Haver.
1/ Base: 2014M1=100

Inflation has been well below the BOK's target...

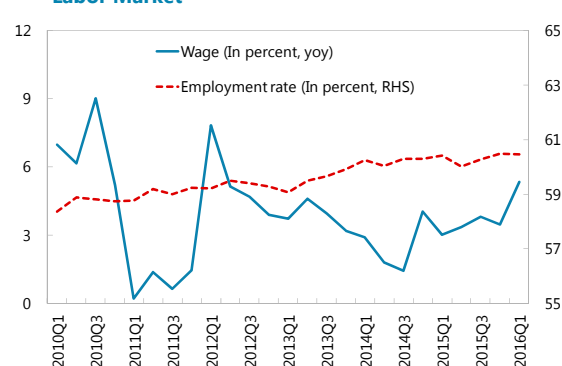
Inflation



Source: Haver

...and annual wage growth has been weak.

Labor Market

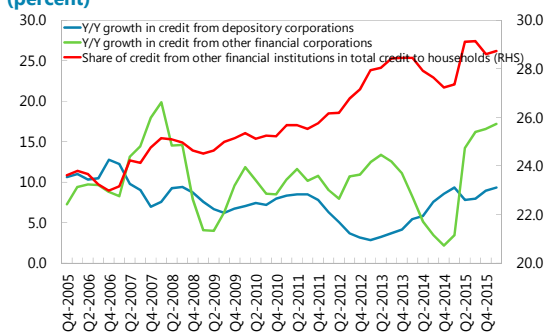


Sources: CEIC Data Company; and Korea Statistics.

Figure 3. Monetary and Financial Sector

Household lending from non-bank financial institutions has been increasing rapidly...

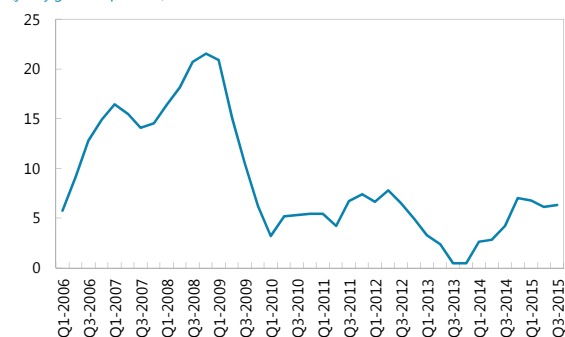
Credit to Households (percent)



Sources: Haver

...while credit growth to firms remains weak, albeit with some recent recovery.

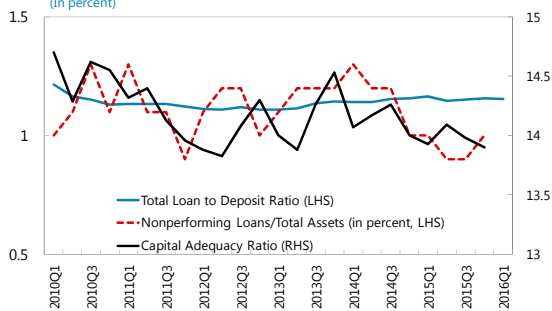
Credit to Corporations (y-o-y growth, percent)



Sources: Haver.

The banking sector remains sound.

Banking Indicators (in percent)

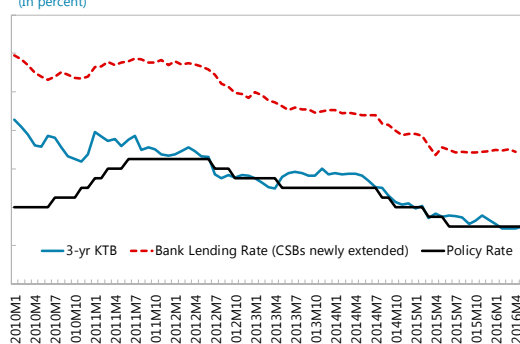


Source: Financial Supervisory Service (FSS)

Note: Total loan consists of Bank Account, Trust Account, and Merchant Banking Account.

Interest rates remain at historical lows.

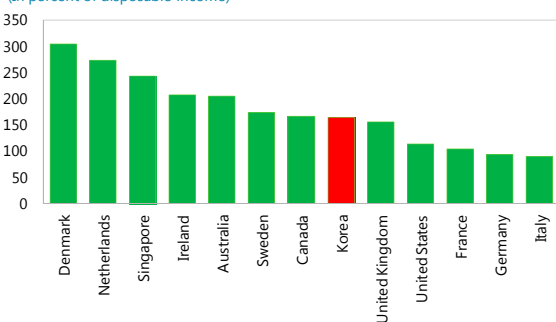
Interest Rate (in percent)



Source: CEIC Data Company Ltd.

Household debt is sizable, but has not reached the highs of some other advanced economies.

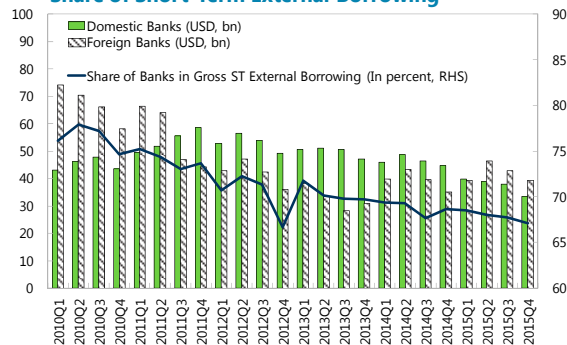
Household Debt, 2014 (in percent of disposable income)



Sources: OECD; Singapore Department of Statistics; and IMF staff calculations.

Banks' short-term external debt remains below pre-GFC levels.

Share of Short-Term External Borrowing



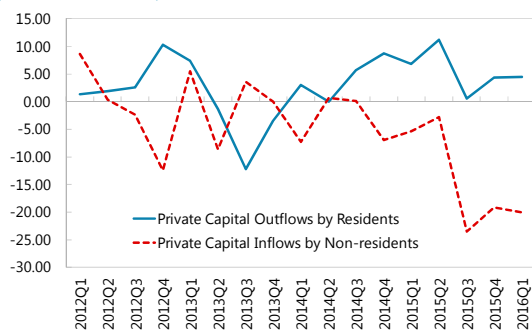
Source: CEIC Data Company Ltd.

Figure 4. External Sector

Korea experienced moderate capital outflows in late 2015 and early 2016.

Capital Flows

(in billions of U.S. dollars)

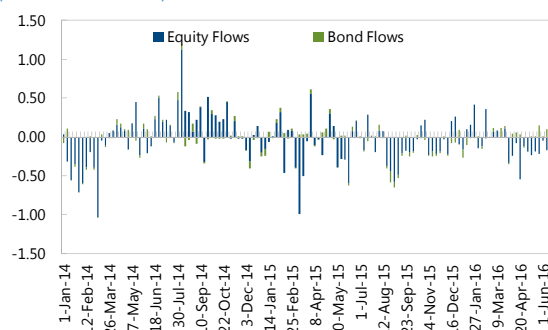


Sources: Haver; IMF staff calculations.

Portfolio net flows turned negative after the "RMB" tantrum.

EPFR Mutual Funds and ETF Flows

(in billions of U.S. Dollars)

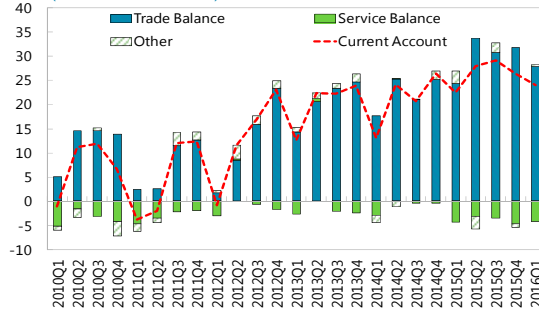


Sources: Haver.

The current account surplus reached record highs...

Current Account Balance

(in billions of U.S. dollars)

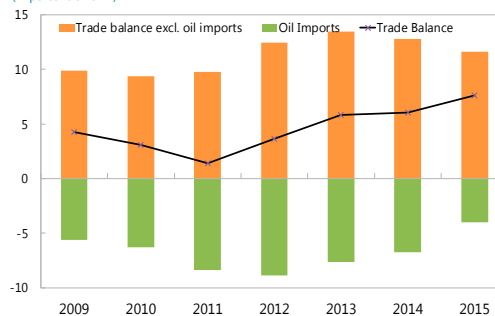


Sources: CEIC Data Company Ltd.; IMF staff estimates.

...as oil imports shrank.

Trade Balance and Oil Imports

(in percent of GDP)

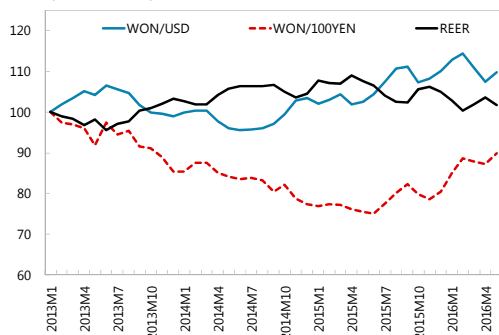


Sources: CEIC Data Company Ltd.; IMF staff estimates.

In recent months the won depreciated against the Japanese yen and the US dollar.

Exchange Rates

(Jan. 2013=100)



Source: IMF APDCORE database; Haver.

In spite of the sizable current account surplus, reserve accumulation was moderate.

Changes in FX Reserves versus Real Effective Exchange Rate Movements against U.S. Dollar

(Percent change)

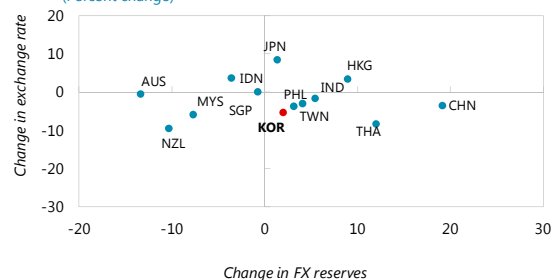
Sources: IMF APDCORE database; and IMF staff estimates.
Note: Percentage changes between March 2015 and March 2016.

Table 1. Korea: Selected Economic Indicators, 2012–17

	2012	2013	2014	2015	Projections	
					2016	2017
Real GDP (percent change)	2.3	2.9	3.3	2.6	2.7	3.0
Total domestic demand	1.2	0.7	2.5	3.7	2.4	3.3
Final domestic demand	1.4	2.5	2.5	2.9	3.0	3.4
Consumption	2.2	2.2	2.0	2.4	2.7	3.5
Gross fixed investment	-0.5	3.3	3.4	3.8	3.6	3.2
Stock building 1/	-0.1	-1.7	0.0	0.8	-0.5	-0.1
Net foreign balance 1/	1.6	1.5	0.4	-1.2	-0.3	-0.3
Nominal GDP (in trillions of won)	1,377	1,429	1,486	1,559	1,622	1,697
Saving and investment (in percent of GDP)						
Gross national saving	35.2	35.3	35.3	36.2	36.3	35.6
Gross domestic investment	31.0	29.1	29.3	28.5	28.8	29.2
Current account balance	4.2	6.2	6.0	7.7	7.5	6.5
Prices (percent change)						
CPI inflation (end of period)	1.4	1.1	0.8	1.3	1.5	2.2
CPI inflation (average)	2.2	1.3	1.3	0.7	1.2	1.9
Core inflation (average)	1.7	1.6	2.0	2.2		
GDP deflator	1.0	0.9	0.6	2.2	1.4	1.6
Real effective exchange rate	1.1	9.2	6.6	3.4	...	...
Trade (percent change)						
Export volume	5.6	4.8	4.4	2.5	1.2	2.2
Import volume	0.5	4.3	4.7	3.1	1.9	2.8
Terms of trade	-1.7	3.3	1.7	12.0	2.9	-1.8
Consolidated central government (in percent of GDP)						
Revenue	22.1	21.5	21.2	21.3	22.0	21.7
Expenditure	20.6	20.9	20.8	21.0	21.1	20.6
Net lending (+) / borrowing (-)	1.6	0.6	0.4	0.3	0.8	1.0
Overall balance	1.3	1.0	0.6	0.0	0.3	0.5
Excluding Social Security Funds	-1.3	-1.5	-2.0	-2.4	-2.3	-2.0
General government debt	32.2	34.3	35.9	37.9	38.7	39.0
Money and credit (end of period)						
Credit growth	3.7	3.2	7.4	7.6	6.7	6.5
Overnight call rate	2.8	2.5	2.0	1.5	...	...
Three-year AA- corporate bond yield	3.3	3.3	2.4	2.1	...	...
M3 growth	7.8	6.5	8.7	9.0	...	...
Balance of payments (in billions of U.S. dollars)						
Exports, f.o.b.	603.5	618.2	613.0	548.8	521.5	541.9
Imports, f.o.b.	554.1	535.4	524.1	428.5	398.1	423.7
Oil imports	108.3	99.3	94.9	55.1	47.7	57.4
Current account balance	50.8	81.1	84.4	105.9	103.6	93.1
Gross international reserves (end of period) 2/	323.2	341.7	358.8	363.2	350.9	334.8
In percent of short-term debt (residual maturity)	181.0	203.5	208.8	228.4	230.8	230.5
External debt (in billions of U.S. dollars)						
Total external debt (end of period)	408.9	423.5	424.4	395.4	384.2	374.8
Of which: Short-term (end of period)	128.0	111.8	116.4	107.1	101.1	94.9
Total external debt (in percent of GDP)	33.4	32.4	30.1	28.7	27.9	26.1
Debt service ratio 3/	7.0	7.2	7.9	8.9	9.0	8.6

Sources: Korean authorities; and IMF staff estimates and projections.

1/ Contribution to GDP growth.

2/ Excludes gold.

3/ Debt service on medium- and long-term debt in percent of exports of goods and services.

Table 2. Korea: Medium-Term Projections, 2014–2021

	Projections							
	2014	2015	2016	2017	2018	2019	2020	2021
Real GDP (percent change)	3.3	2.6	2.7	3.0	3.1	3.0	3.0	3.0
Total domestic demand	2.5	3.7	2.4	3.3	3.4	3.5	3.6	3.6
Final domestic demand	2.5	2.9	3.0	3.4	3.5	3.6	3.6	3.6
Consumption	2.0	2.4	2.7	3.5	3.6	3.6	3.6	3.6
Gross fixed investment	3.4	3.8	3.6	3.2	3.4	3.5	3.6	3.6
Stock building 1/	0.0	0.8	-0.5	-0.1	-0.1	0.0	0.0	0.0
Net foreign balance 1/	0.4	-1.2	-0.3	-0.3	-0.2	-0.3	-0.3	-0.4
Prices, period average (percent change)								
Consumer price	1.3	0.7	1.2	1.9	2.0	2.0	2.0	2.0
GDP deflator	0.6	2.2	1.4	1.6	1.7	1.9	1.9	1.9
Savings and investment (in percent of GDP)								
Gross national savings	35.3	36.2	36.3	35.6	35.1	34.9	34.8	34.4
Gross domestic investment	29.3	28.5	28.8	29.2	29.1	29.1	29.1	29.2
Current account balance	6.0	7.7	7.5	6.5	5.9	5.8	5.6	5.2
Money and credit (end of period)								
Credit growth 2/	7.4	7.6	6.7	6.5	6.1	5.9	5.9	5.9
Consolidated central government (in percent of GDP)								
Revenue	21.2	21.3	22.0	21.7	21.5	21.5	21.5	21.5
Expenditure	20.8	21.0	21.1	20.6	19.8	19.3	19.2	19.1
Net lending (+) / borrowing (-)	0.4	0.3	0.8	1.0	1.7	2.2	2.3	2.4
Overall balance	0.6	0.0	0.3	0.5	1.2	1.7	1.8	2.0
Excluding Social Security Funds	-2.0	-2.4	-2.3	-2.0	-1.4	-0.9	-0.7	-0.6
Trade (percent change)								
Merchandise exports	-0.8	-10.5	-5.0	3.9	3.5	3.8	4.0	3.4
Volumes 3/	4.4	2.5	1.2	2.2	3.0	3.2	3.1	3.2
Merchandise imports	-2.1	-18.2	-7.1	6.4	4.7	4.7	5.3	4.7
Volumes 3/	4.7	3.1	1.9	2.8	3.6	3.9	3.9	4.0
Terms of trade	1.7	12.0	2.9	-1.8	-0.6	-0.2	-0.5	-0.4
Balance of payments (in billions of U.S. dollars)								
Current account	84.4	105.9	103.6	93.1	88.7	91.1	92.3	89.0
(In percent of GDP)	6.0	7.7	7.5	6.5	5.9	5.8	5.6	5.2
Trade balance	88.9	120.3	123.4	118.2	117.0	117.3	116.1	113.9
Merchandise exports	613.0	548.8	521.5	541.9	560.6	581.7	604.9	625.7
Merchandise imports	524.1	428.5	398.1	423.7	443.6	464.4	488.8	511.8
External debt								
In billions of U.S. dollars 4/	424.4	395.4	384.2	374.8	367.4	361.8	358.0	356.2
(In percent of GDP)	30.1	28.7	27.9	26.1	24.6	23.1	21.9	20.9
Of which: Short-term (end of period)	8.2	7.8	7.3	6.6	5.9	5.2	4.6	4.0
Debt service ratio 5/	7.9	8.9	9.0	8.6	8.7	8.8	8.7	8.4
Memorandum items:								
Nominal GDP (in trillions of won)	1,486	1,559	1,622	1,697	1,779	1,868	1,960	2,058
Per capita GDP (in U.S. dollars)	27,989	27,215	27,061	28,158	29,182	30,417	31,690	32,786
Output gap (percent of potential GDP)	-0.9	-1.3	-1.5	-1.3	-1.0	-0.7	-0.4	0.0

Sources: Korean authorities; and IMF staff estimates and projections.

1/ Contribution to GDP growth.

2/ Depository corporations credit to private sector.

3/ Customs clearance basis.

4/ Includes offshore borrowing of domestic financial institutions and debt contracted by their overseas branches.

5/ Debt service on medium- and long-term debt in percent of exports of goods and services.

Table 3. Korea: Balance of Payments, 2012–17
(In billions of U.S. dollars, unless otherwise indicated, BPM6 sign)

	2012	2013	2014	2015	Projections	
					2016	2017
Current account balance	50.8	81.1	84.4	105.9	103.6	93.1
Trade balance	49.4	82.8	88.9	120.3	123.4	118.2
Exports	603.5	618.2	613.0	548.8	521.5	541.9
(growth rate, in percent)	2.8	2.4	-0.8	-10.5	-5.0	3.9
Imports	554.1	535.4	524.1	428.5	398.1	423.7
(growth rate, in percent)	-0.7	-3.4	-2.1	-18.2	-7.1	6.4
Services	-5.2	-6.5	-3.7	-15.7	-24.0	-27.9
Primary income	12.1	9.1	4.2	5.9	9.3	8.4
Secondary income	-5.5	-4.2	-5.0	-4.6	-5.1	-5.7
Financial and capital account balance	38.4	63.8	71.5	97.7	115.8	109.2
Financial account	38.4	63.8	71.4	97.7	115.8	109.2
Portfolio investment, net 1/	-9.4	4.9	26.8	51.1	63.1	55.9
Direct investment, net	21.1	15.6	18.8	22.6	24.0	25.4
Inflows	9.5	12.8	9.3	5.0	5.0	5.0
Outflows	30.6	28.4	28.0	27.6	29.0	30.5
Other investment, assets	8.6	37.1	38.4	15.5	20.5	19.5
Other investment, liabilities	-18.0	-6.2	12.5	-8.5	-8.2	-8.4
Of which: trade credits	-1.8	0.3	-0.5	-4.1	-3.9	-4.0
Of which: short-term loans	-14.7	-5.7	5.6	-2.2	-2.2	-2.2
Of which: medium- and long-term loans	1.7	-0.5	5.3	0.1	0.1	0.1
Capital account	0.0	0.0	0.0	-0.1	0.0	0.0
Net errors and omissions	0.8	-1.0	5.0	3.9	0.0	0.0
Overall balance	-13.2	-16.3	-17.9	-12.1	12.2	16.1
Financing	13.2	16.3	17.9	12.1	-12.2	-16.1
Change in reserves (increase +)	13.2	16.3	17.9	12.1	-12.2	-16.1
Net IMF purchases	0.0	0.0	0.0	0.0	0.0	0.0
World Bank/AsDB 1/	0.0	0.0	0.0	0.0	0.0	0.0
Memorandum items:						
Current account balance (in percent of GDP)	4.2	6.2	6.0	7.7	7.5	6.5
Trade balance (in percent of GDP)	4.0	6.3	6.3	8.7	9.0	8.2
Gross reserves minus gold	323.2	341.7	358.8	363.2	350.9	334.8
(in months of imports of goods and services)	5.9	6.4	6.7	8.0	8.1	7.3
External debt	408.9	423.5	424.4	395.4	384.2	374.8
(in percent of GDP)	33.4	32.4	30.1	28.7	27.9	26.1
Short-term external debt (inc. trade credits)	128.0	111.8	116.4	107.1	101.1	94.9
Nominal GDP (U.S. dollars)	1222.8	1305.6	1411.3	1377.9	...	...

Sources: Korean authorities; and IMF staff estimates and projections.

1/ Includes financial derivatives, net.

Table 4. Korea: Statement of Central Government Operations, 2012–17

	2012	2013	2014	2015	Projections	
					2016	2017
	(In trillions of won)					
Revenue	304.7	308.0	315.0	332.6	356.1	367.5
Tax revenue	203.0	201.9	205.5	217.9	236.7	247.7
Social contributions	52.0	55.2	59.8	62.7	65.3	68.3
<i>Of which:</i> Social security contributions	43.9	46.1	49.8	53.1	55.2	57.8
Other revenue	49.6	51.0	49.7	51.9	54.0	51.4
Expenditure	283.2	298.7	308.8	327.3	342.5	349.9
Expense	272.1	287.0	297.4	315.8	330.1	338.0
Net acquisition of nonfinancial assets	11.1	11.7	11.4	11.4	12.4	11.9
Net lending (+) / borrowing (-)	21.5	9.3	6.2	5.3	13.6	17.6
Less: Policy lending	3.0	-4.9	-2.3	5.5	8.8	8.8
Overall balance	18.5	14.2	8.5	-0.2	4.8	8.8
Less: Social Security Fund balance	35.9	35.3	38.0	37.8	41.8	43.2
Overall balance excluding Social Security Funds	-17.4	-21.1	-29.5	-38.0	-37.0	-34.4
Net acquisition of financial assets	35.8	15.5	10.3	8.8	22.6	29.3
Domestic	35.0	15.2	10.1	8.6	22.2	28.7
Currency and deposits	-0.7	-0.3	-0.2	-0.2	-0.5	-0.6
Loans	35.8	15.5	10.3	8.8	22.6	29.3
Others	0.0	0.0	0.0	0.0	0.0	0.0
Foreign	0.7	0.3	0.2	0.2	0.5	0.6
Currency and deposits	0.0	0.0	0.0	0.0	0.0	0.0
Loans	0.7	0.3	0.2	0.2	0.5	0.6
Monetary gold and SDR	0.0	0.0	0.0	0.0	0.0	0.0
Net incurrence of liabilities	14.3	6.2	4.1	3.5	9.0	11.7
Domestic	14.3	6.2	4.1	3.5	9.0	11.7
Foreign	0.0	0.0	0.0	0.0	0.0	0.0
Loans	0.0	0.0	0.0	0.0	0.0	0.0
	(In percent of GDP)					
Revenue	22.1	21.5	21.2	21.3	22.0	21.7
Tax revenue	14.7	14.1	13.8	14.0	14.6	14.6
Social contributions	3.8	3.9	4.0	4.0	4.0	4.0
<i>Of which:</i> Social security contributions	3.2	3.2	3.4	3.4	3.4	3.4
Other revenue	3.6	3.6	3.3	3.3	3.3	3.0
Expenditure	20.6	20.9	20.8	21.0	21.1	20.6
Expense	19.8	20.1	20.0	20.3	20.4	19.9
Net acquisition of nonfinancial assets	0.8	0.8	0.8	0.7	0.8	0.7
Net lending (+) / borrowing (-)	1.6	0.6	0.4	0.3	0.8	1.0
Less: Policy lending	0.2	-0.3	-0.2	0.3	0.5	0.5
Overall balance	1.3	1.0	0.6	0.0	0.3	0.5
Less: Social Security Fund balance	2.6	2.5	2.6	2.4	2.6	2.5
Overall balance excluding Social Security Funds	-1.3	-1.5	-2.0	-2.4	-2.3	-2.0
Memorandum items:						
Operating balance (trillion won)	32.6	21.0	17.6	16.7	25.9	29.5
In percent of GDP	2.4	1.5	1.2	1.1	1.6	1.7
Primary balance (trillion won)	24.5	18.1	14.2	3.9	25.4	39.6
In percent of GDP	1.8	1.3	1.0	0.3	1.6	2.3
Nominal GDP (trillion won)	1,377.5	1,429.4	1,486.1	1,558.6	1,621.9	1,697.1
Central government debt (trillion won)	425.1	464.0	503.0	556.5	593.6	628.0
In percent of GDP	30.9	32.5	33.9	35.7	36.6	37.0
General government debt (trillion won)	443.1	489.8	533.2	590.5	627.6	662.0
In percent of GDP	32.2	34.3	35.9	37.9	38.7	39.0

Sources: Ministry of Strategy and Finance; and IMF staff estimates and projections.

Table 5. Korea: Financial Soundness Indicators

	2010	2011	2012	2013	2014	2015
			(Growth rate, in percent)			
Credit to Private Sector 1/	4.9	6.8	3.7	3.2	7.4	7.6
Loans to Households	8.1	8.5	5.2	6.0	6.7	11.0
Bank Loans to Households	5.4	5.7	2.5	3.0	8.0	8.5
			(In percent)			
Regulatory Capital to Risk-Weighted Assets 2/	14.3	14.0	14.3	14.5	14.2	...
Regulatory Tier 1 Capital to Risk-Weighted Assets	11.3	10.7	11.1	11.4	11.7	...
Non-performing Loans Net of Provisions to Capital	3.4	2.6	3.1	3.6	3.8	...
Non-performing Loans to Total Gross Loans	0.6	0.5	0.6	0.6	0.6	...
Return on Assets	0.7	1.0	0.7	0.3	0.6	...
Return on Equity	9.7	13.2	8.2	4.0	7.2	...
Interest Margin to Gross Income	73.1	73.6	78.3	82.2	70.0	...
Non-interest Expenses to Gross Income	60.6	63.9	71.4	75.3	59.8	...
Liquid Assets to Total Assets (Liquid Asset Ratio)	35.2	35.4	36.2	33.8	34.0	...
Liquid Assets to Short Term Liabilities	117.5	109.3	111.3	107.9	118.4	...
Net Open Position in Foreign Exchange to Capital	0.9	0.9	0.2	-0.2	0.1	...

Source: Financial Soundness Indicators (FSI); Haver.

1/ Depository corporations.

2/ From this indicator on: Depository corporations only. Data for 2014 pertains to 2014Q2.

Annex I. Korea—Debt Sustainability Analysis

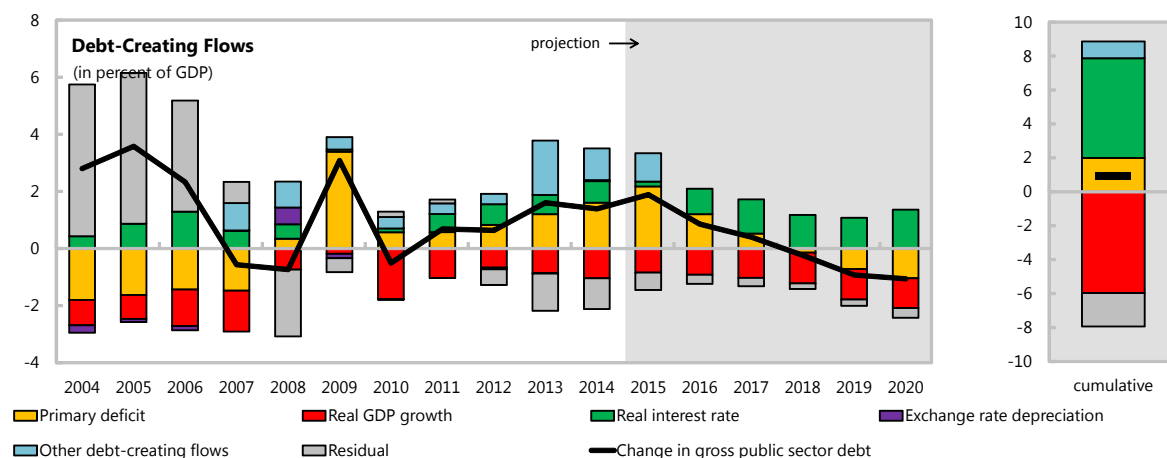
Baseline Scenario (In percent of GDP unless otherwise indicated)

Debt, Economic and Market Indicators ^{1/}

	Actual			Projections						As of April 30, 2016	
	2004-2012 ^{2/}	2013	2014	2015	2016	2017	2018	2019	2020		
Nominal gross public debt	28.0	32.5	33.9	35.7	36.6	37.0	36.8	35.8	34.8	Sovereign Spreads EMBIG (bp) ^{3/}	-4
Public gross financing needs	5.4	6.0	6.7	7.4	7.6	7.4	6.7	5.7	5.7	5Y CDS (bp)	64
Real GDP growth (in percent)	3.9	2.9	3.3	2.6	2.7	2.9	3.1	3.0	3.0	Ratings	Foreign
Inflation (GDP deflator, in percent)	2.1	0.9	0.6	2.2	1.5	1.7	1.7	1.7	1.8	Moody's	Aa2
Nominal GDP growth (in percent)	6.1	3.8	4.0	4.9	4.2	4.6	4.8	4.8	4.9	S&Ps	AA-
Effective interest rate (in percent) ^{4/}	4.5	3.1	3.0	2.8	4.2	5.1	5.1	4.8	5.9	Fitch	AA

Contribution to Changes in Public Debt

	Actual			Projections						cumulative	debt-stabilizing primary balance ^{9/}
	2004-2012	2013	2014	2015	2016	2017	2018	2019	2020		
Change in gross public sector debt	1.3	1.6	1.4	1.9	0.9	0.4	-0.2	-0.9	-1.1	0.9	
Identified debt-creating flows	-0.1	2.9	2.5	2.5	1.2	0.7	0.0	-0.7	-0.7	2.9	
Primary deficit	-0.1	1.2	1.6	2.2	1.2	0.5	-0.1	-0.7	-1.0	2.0	0.3
Primary (noninterest) revenue and grants	17.4	16.5	16.2	16.3	16.3	16.1	16.1	16.1	16.1	97.0	
Primary (noninterest) expenditure	17.3	17.7	17.8	18.4	17.5	16.6	16.0	15.4	15.1	99.0	
Automatic debt dynamics ^{5/}	-0.4	-0.2	-0.3	-0.7	0.0	0.2	0.1	0.0	0.3	-0.1	
Interest rate/growth differential ^{6/}	-0.4	-0.2	-0.3	-0.7	0.0	0.2	0.1	0.0	0.3	-0.1	
Of which: real interest rate	0.6	0.7	0.8	0.2	0.9	1.2	1.2	1.1	1.4	5.9	
Of which: real GDP growth	-1.0	-0.9	-1.0	-0.8	-0.9	-1.0	-1.1	-1.1	-1.0	-6.0	
Exchange rate depreciation ^{7/}	0.0	0.0	0.0	...	...	...	...	...	...	...
Other identified debt-creating flows	0.4	1.9	1.1	1.0	0.0	0.0	0.0	0.0	0.0	1.0	
Net privatization proceeds (negative)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Contingent liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
General government debt- change (fudnii)	0.4	1.9	1.1	1.0	0.0	0.0	0.0	0.0	0.0	1.0	
Residual, including asset changes ^{8/}	1.4	-1.3	-1.1	-0.6	-0.3	-0.3	-0.2	-0.2	-0.3	-2.0	



Source: IMF staff.

1/ Public sector is defined as the central government (excl. social security fund).

2/ Based on available data.

3/ Long-term bond spread over U.S. bonds.

4/ Defined as interest payments divided by debt stock (excluding guarantees) at the end of previous year.

5/ Derived as $[(r - \pi(1+g) - g + ae(1+r))/(1+g+\pi+gn)]$ times previous period debt ratio, with r = interest rate; π = growth rate of GDP deflator; g = real GDP growth rate; a = share of foreign-currency denominated debt; and e = nominal exchange rate depreciation (measured by increase in local currency value of U.S. dollar).

6/ The real interest rate contribution is derived from the numerator in footnote 5 as $r - \pi(1+g)$ and the real growth contribution as $-g$.

7/ The exchange rate contribution is derived from the numerator in footnote 5 as $ae(1+r)$.

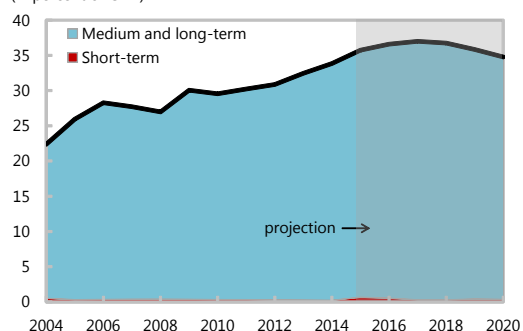
8/ Includes asset changes and interest revenues (if any). For projections, includes exchange rate changes during the projection period.

9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

Composition of Public Debt

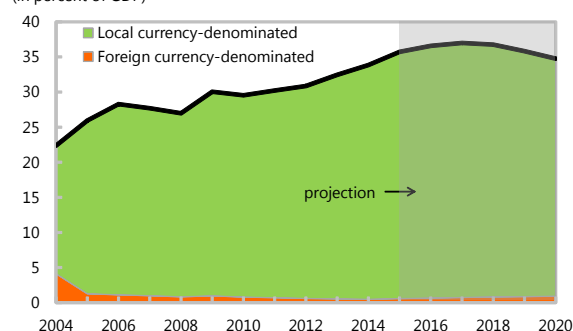
By Maturity

(in percent of GDP)



By Currency

(in percent of GDP)



Alternative Scenarios

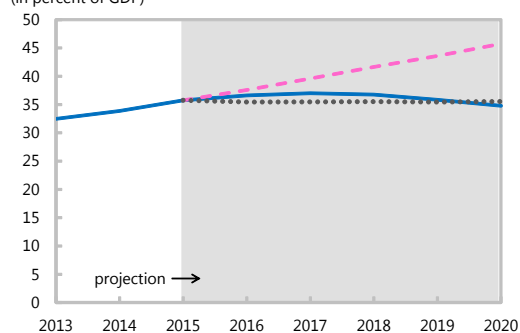
— Baseline

..... Historical

- - - Constant Primary Balance

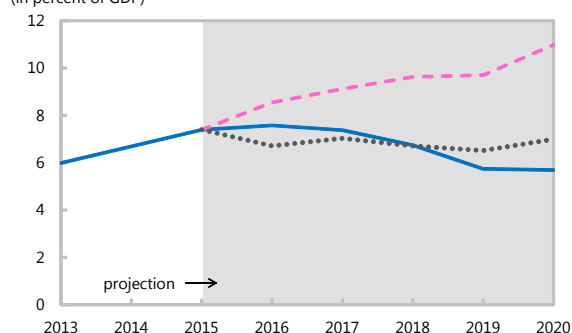
Gross Nominal Public Debt

(in percent of GDP)



Public Gross Financing Needs

(in percent of GDP)

Underlying Assumptions
(in percent)

Baseline Scenario

	2015	2016	2017	2018	2019	2020
Real GDP growth	2.6	2.7	2.9	3.1	3.0	3.0
Inflation	2.2	1.5	1.7	1.7	1.7	1.8
Primary Balance	-2.2	-1.2	-0.5	0.1	0.7	1.0
Effective interest rate	2.8	4.2	5.1	5.1	4.8	5.9

Constant Primary Balance Scenario

	2015	2016	2017	2018	2019	2020
Real GDP growth	2.6	2.7	2.9	3.1	3.0	3.0
Inflation	2.2	1.5	1.7	1.7	1.7	1.8
Primary Balance	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
Effective interest rate	2.8	4.2	5.1	5.0	4.7	5.7

Historical Scenario

	2015	2016	2017	2018	2019	2020
Real GDP growth	2.6	3.7	3.7	3.7	3.7	3.7
Inflation	2.2	1.5	1.7	1.7	1.7	1.8
Primary Balance	-2.2	-0.4	-0.4	-0.4	-0.4	-0.4
Effective interest rate	2.8	4.2	5.1	5.0	4.6	5.7

Source: IMF staff.

	Korea	Overall Assessment
Foreign asset and liability position and trajectory	<p>Background. Korea's net international investment position (NIIP) increased to 14½ percent of GDP in 2015, after turning positive for the first time in 2014. This position is expected to strengthen further to 19½ percent of GDP in 2016 as the current account is in strong surplus. The net external debt position was -23½ percent of GDP in 2015. Banks' short-term external debt remains below pre-crisis levels. The risk of currency mismatch in the non-financial sector is also limited, since the bulk of short-term external debt is in the hands of exporters who hedge using forward contracts.</p> <p>Assessment. The NIIP position and dynamics present little risk to external sustainability.</p>	<p>Overall Assessment: <i>The external position in 2015 was substantially stronger than that implied by medium-term fundamentals and desirable policies.</i></p> <p>Developments as of April 2016 point to a broadly similar external position in 2016. This assessment is subject to uncertainty related to the persistence of the large fall in oil prices—Korea being one of the largest oil importers in the ESR—and the sharp movements of relevant cross rates.</p> <p>Potential policy responses: Building domestic demand growth momentum in the near term could have some impact on reducing imbalances, and the recent monetary, fiscal, and other policy steps to boost domestic demand are steps in the right direction. A more durable reduction will require a steady shift away from Korea's heavy reliance on manufacturing exports for growth—increasing productivity in the non-traded sector, aided by structural reforms (particularly those focused on the labor market), would help. The authorities' more expansionary fiscal policy stance, both this year and over the medium term, could narrow imbalances, all the more so if coupled with an expanded social safety net that reduces the need for precautionary savings. Real exchange rate appreciation over time should also play a role, and the rate should remain market determined with intervention limited to smoothing excessive volatility.</p>
Current account	<p>Background. The current account (CA) in 2015 was around 7¾ percent, 1½ p.p. higher than in 2014 and significantly above the average over the last 5 years. This increase is fully explained by cyclical factors, such as more favorable terms-of-trade (in particular, lower oil prices), and a larger negative output gap, which are expected to revert somewhat in 2016 leading to a slight decline in the CA. The CA is expected to decline moderately over the medium term as the output gap narrows and, especially, as the projected rapid aging of the population sets in.</p> <p>Assessment. The EBA regression model puts the cyclically adjusted CA norm for 2015 at just above 1¼ percent, implying a CA gap of about 6 percentage points of GDP. A small part of this estimated gap could be accounted for by relatively low public social spending in Korea and the fiscal policy gaps of other countries, but there are also important Korea-specific factors not fully captured by the model's variables—these include prospective costs of reunification with North Korea, demographic factors, and certain BOP accounting anomalies—all of which may result in higher-than-expected savings. Accounting for these considerations, staff assess the 2015 current account gap at 1¾ to 4¼ percent of GDP. 1/</p>	
Real exchange rate	<p>Background. The won has been on a gradual appreciating trend on a trade-weighted basis since 2012, having appreciated by 1½ percent in 2015 relative to its 2014 average. (This, however, masks important movements in cross rates—in particular, the won depreciated against both the U.S. dollar and the yen, but strengthened vis-à-vis the euro and most emerging market currencies.) The REER as of April 2016 has depreciated by 2 percent from its 2015 average.</p> <p>Assessment. EBA's REER regressions suggest a wide range of estimated gaps. According to the index model, the won is stronger than fundamentals and desired policies, by 1½ percent, whereas the level model estimates the won to be substantially weaker, by 14¼ percent. The REER for 2015 is assessed to be 4 to 12 percent weaker than the level consistent with fundamentals and desired policies. The assessed range uses as inputs EBA's level model and estimated elasticities (top of the range), as well as staff's estimated elasticity (bottom of the range). 2/</p>	
Capital and financial accounts: flows and policy measures	<p>Background. Net capital outflows increased to 8 percent of GDP in 2015, driven chiefly by a decrease of portfolio investments of non-residents in Korea since 2014. The Korean government launched a plan to promote both residents' overseas investment and to attract inflows from nonresidents in mid-2015.</p> <p>Assessment. Korea has experienced moderate bouts of capital-flow volatility in the past year, but net and gross flows appear sustainable.</p>	
FX intervention and reserves level	<p>Background. Korea has a floating exchange rate. Reserves increased steadily from 2009 through mid-2014 but have since remained stable at around 121 percent of the IMF's composite reserve adequacy metric. In dollar terms, reserves increased by \$4 billion in 2015.</p> <p>Assessment. Intervention should be limited to smoothing excessive volatility. The stock of reserves should be sufficient to buffer against a range of possible external shocks.</p>	
Technical Background Notes	<p>1/ Current Account. EBA estimates that Korea's cyclically adjusted CA remained roughly unchanged from 2014 at 7.1 percent, while the EBA norm stood at 1¼ percent. The resulting EBA gap of 6 percent is, for the most part, unexplained by the EBA model (4½ percent), while the remaining 1½ percent can be attributed to policy gaps. The assessed CA gap range of 1¾ to 4¼ percent of GDP takes into account Korea-specific factors not in EBA, namely it accounts for precautionary savings tied to prospective reunification with North Korea, demographic factors—Korea is undergoing rapid population aging while having a disproportionate share of its population in prime saving ages (see Kwon, Kyooho (2015), "Impact of Demographic Changes on the Current Account," KDI working paper)—and adjustments to the treatment of foreigners' share of retained earnings in BPM6.</p> <p>2/ REER. Staff's assessment of the REER gap is subject to a high degree of uncertainty related to both the difficulty in predicting when and by how much Korea's exports will respond to exchange rate movements, as well as the diversity of estimates produced by the EBA's exchange rate regression models. Staff analysis suggests that Korean export volumes have become highly inelastic to exchange rate movements in the short run, and where the longer term implications of the won's recent real appreciation are particularly difficult to project.</p>	

Risks	Likelihood and Transmission	Potential Impact	Policy Response
Global Risks			
Tighter or more volatile global financial conditions: sharp asset price decline and decompression of credit spreads	Medium A reassessment of global risks, growth prospects in China and elsewhere, and financial fundamentals could cause financial conditions to tighten or become more volatile.	High Rising bond yields and falling equity prices would lead to weaker growth. Also while Korean banks' reliance on wholesale funding has decreased after the GFC, banks would likely face some funding pressures.	Fiscal easing and exchange rate flexibility, coupled with possible FX intervention to handle disorderly conditions. Ease CFMs aimed at curbing inflows.
Tighter or more volatile global financial conditions: surge in the U.S. dollar	High Firms with dollar debt are vulnerable to dollar appreciation.	Low Korean banks have reduced their short-term external debt after the GFC, limiting the impact of currency mismatches. Korea's exports may benefit from the depreciation against the dollar.	Fiscal easing and exchange rate flexibility, coupled with possible FX intervention to handle disorderly conditions. Ease CFMs aimed at curbing inflows.
Hard landing in China	Low/Medium A sharper-than-expected growth slowdown in China will have a large negative impact on Korea's exports.	High China is Korea's main trading partner, accounting for 25 percent of its exports. While most of these are intermediates intended for processing in, and re-export from, China, Korea also produces for Chinese final demand and is thus vulnerable to a slowdown in China. Second-round effects could come into play as a China slowdown would affect the global economy.	Fiscal easing, monetary easing, and exchange rate flexibility, coupled with possible FX intervention to handle disorderly conditions. Ease CFMs aimed at curbing inflows. Continue efforts to diversify export markets and manufacturing base.
Significant slowdown in other large EMs/frontier economies	Medium A significant slowdown in large EMs or frontier economies could trigger capital outflows from EMs. Korea could be bunched with EMs and suffer from capital outflows (although markets may also treat Korea as a safe haven). Korea would also be affected through the trade channel.	Medium If Korea were to experience capital outflows, rising bond yields and falling equity prices would lead to weaker growth. Also, while Korean banks' reliance on wholesale funding has decreased after the GFC, banks would likely face some funding pressures. A significant slowdown in Korea's trading partners would have an adverse impact on Korea's exports.	Fiscal easing, monetary easing, and exchange rate flexibility, coupled with possible FX intervention to handle disorderly conditions. Ease CFMs aimed at curbing inflows.
Structurally weak growth in key advanced and emerging economies	High/Medium Trade (both volume and price) would be the dominant channel.	High A deterioration in external conditions could lead to weakening exports and have an adverse impact on domestic demand. This would result in higher unemployment and weaker corporate profits, and would be reflected in higher credit risks in the corporate and household sectors.	Fiscal easing, monetary easing, and exchange rate flexibility, coupled with possible FX intervention to handle disorderly conditions. Accelerate rebalancing through structural reforms and expansionary fiscal spending.

Domestic Risks			
Rebound in private consumption fails to materialize	Medium The removal of fiscal support, a decline in consumer confidence and a more significant drag from household debt could impede recovery.	Medium Consumption is expected to be a key driver of growth going forward. Any delay in its pick-up may lead to substantial revisions to the outlook.	Fiscal and monetary easing, plus exchange rate flexibility. Fiscal transfers targeted to the poor; safety net reform. Improve consumer confidence by carrying out structural reforms in education, reducing labor market duality and income equality, and increasing labor force participation.
Disorderly corporate restructuring	Medium While a positive for growth and investment in the medium to long term, the process of corporate restructuring could have an immediate adverse impact on individuals and also on banks' balance sheets and their ability to provide credit.	Medium A slowdown in credit growth would have negative implications for investment.	Provide fiscal support, including in the form of unemployment insurance benefits, retraining opportunities, and job-search facilities. Monetary easing. Possible need for fiscal resources for bank recapitalization. Enhance business environment by promoting competition in healthcare, education, and protected professions and by removing regulatory impediments to investment.
Sharp deterioration in the housing market	Low Despite the relatively benign aggregate picture, there are pockets of vulnerabilities in household and corporate balance sheets, which could pose risks to financial stability under extreme shocks to macroeconomic growth.	High A sharp deterioration in the housing market possibly triggered by extreme shocks to the macroeconomy, could also lead to an increase in household credit risks. Corporate sector stress testing indicates that a shock comparable to that faced by an average firm during the 2008 crisis would induce aggregate expected losses comparable to late 2008 levels. The authorities have taken measures to address balance sheet vulnerabilities in household and corporate sectors.	Supportive macro policies plus exchange rate flexibility, while tightening macroprudential policies to curb a rapid rise in household debt. Expand the social safety net, and carry out structural reforms on labor markets, labor participation, education, and deregulation in the service sector. Fiscal transfers targeted to the poor; safety net reform.
Relationship with North Korea	Low An increase in tensions with North Korea could destabilize the economy. On the other hand, a peaceful reunification scenario could also materialize.	High The fallout of a serious escalation would have a vast impact on South Korea and will be multifaceted, entailing considerable fiscal costs and financial market instability. On the other hand, a peaceful reunification scenario, while having immediate and possibly large fiscal costs, could confer long-term benefits related to access to additional labor and investment opportunities.	Appropriate fiscal spending. Supportive macro policies. Exchange rate flexibility coupled with possible intervention to address disorderly conditions.
<p>1/ The Risk Assessment Matrix (RAM) shows events that could materially alter the baseline path (the scenario most likely to materialize in the view of IMF staff). The relative likelihood is the staff's subjective assessment of the risks surrounding the baseline ("low" is meant to indicate a probability below 10 percent, "medium" a probability between 10 and 30 percent, and "high" a probability between 30 and 50 percent). The RAM reflects staff views on the source of risks and overall level of concern as of the time of discussions with the authorities. Non-mutually exclusive risks may interact and materialize jointly. "Short term" and "medium term" are meant to indicate that the risk could materialize within 1 year and 3 years, respectively.</p>			

Annex IV. Main Recommendations from the 2015 Article IV Consultation and Follow Up

1. The 2015 Article IV Consultation was concluded by the Executive Board on May 13, 2015. Executive Directors saw merit in proactive policies to shore up near-term growth momentum, along with structural reforms to sustain growth over the longer term.
2. Directors welcomed the monetary, fiscal, and other policy changes that the authorities implemented to reinvigorate domestic demand. They agreed that there remained room for further monetary easing, if needed, and that Korea's low public indebtedness provided ample room for additional fiscal stimulus and a strengthening of social safety nets.
3. Directors emphasized that Korea's ability to continue growing through a heavy reliance on gaining export market share is increasingly limited. They concurred that achieving a more balanced growth path depends critically on addressing long-standing barriers to higher productivity in the non-traded goods and services sectors.
4. Directors noted that the structure of household debt could be strengthened through additional steps to facilitate the transition of the mortgage market toward more stable, longer-term lending. Directors stressed that maintaining a flexible exchange rate is essential to facilitate Korea's adjustment toward domestic sources of growth, and concurred that official foreign exchange intervention should be limited to preventing disorderly market conditions and not prevent needed exchange rate adjustment.
5. Given the weak conjuncture and downside risks, the authorities have responded proactively and put in place a number of measures to spur economic recovery:
 - In 2015, a supplementary budget introduced stimulus of about 1 percent of GDP, and in 2016, the authorities frontloaded spending within the year, extended tax cuts, and most recently announced a 1¼ percent of GDP stimulus package.
 - The Bank of Korea cut its policy interest rate by 50 basis points over the past year.
 - The authorities implemented a set of household debt management measures including more stringent bank loan application screening, accelerating the loan conversion program, and tighter LTV limits on nonbanks' nonresidential mortgages.
 - The authorities plan to unwind some of the earlier macroprudential measures aimed at curbing capital inflows.
 - The authorities have made progress on corporate restructuring, especially in the shipbuilding and shipping industries.
 - The government issued policy guidance aimed at reducing labor market rigidities.

Annex V. Korea's Challenges—Parallels with Japan¹

This annex draws out the parallels between Korea and Japan, particularly in terms of the aging population but also notes that Korea has stronger corporate and public balance sheets than Japan did. It conducts an econometric analysis that suggests that aging in Korea will exert a downward drag on inflation going forward.

1. **Korea's current environment of rapid aging, slowing growth, and low inflation has sparked comparisons with the Japanese economy.** Indeed, some of the structural issues facing Korea currently and going forward are similar to those already confronted by Japan. It is also important to note upfront, however, that Japan's economic woes since the early 1990s were also the consequence of a series of domestic and external shocks that made Japan's economic developments during those decades rather distinctive.²

A. Structural issues and balance sheets

2. **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.³ Japan's population started to contract in 2010, while Korea's is expected to begin its decline in 2025–35.

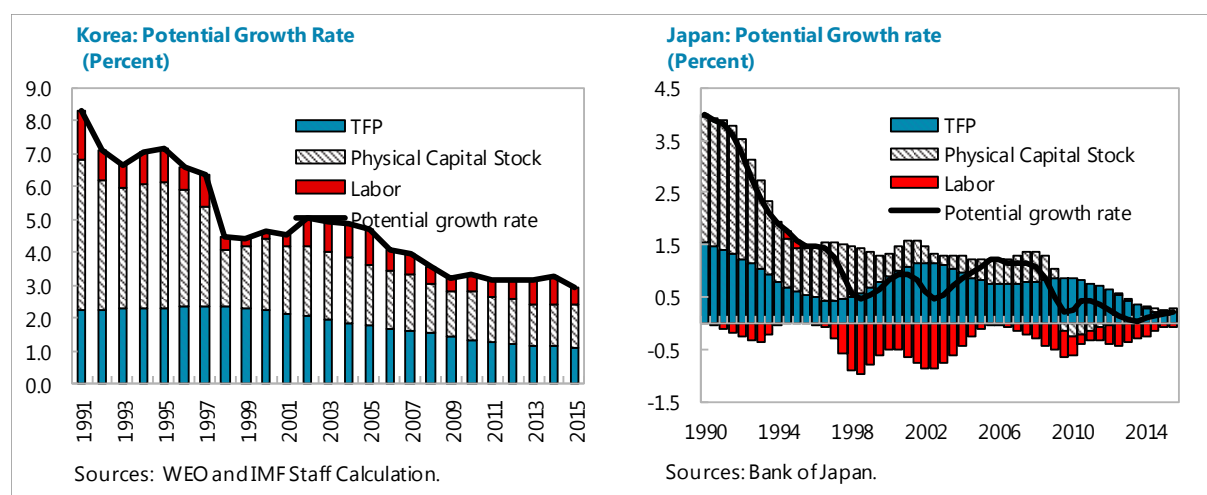
3. **In both countries potential growth has fallen sharply, reflecting similar factors.** Japan's potential growth plunged from an average 4 percent in the late 1980s to less than 1 percent in the 2000s (text chart). In the early 1990s, the decline was primarily the result of deceleration in capital 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 below 3 percent in 2015—reflecting a decline in the contributions from labor, capital inputs, and productivity. Slow restructuring of nonviable firms may

¹ Prepared by Edda Zoli.

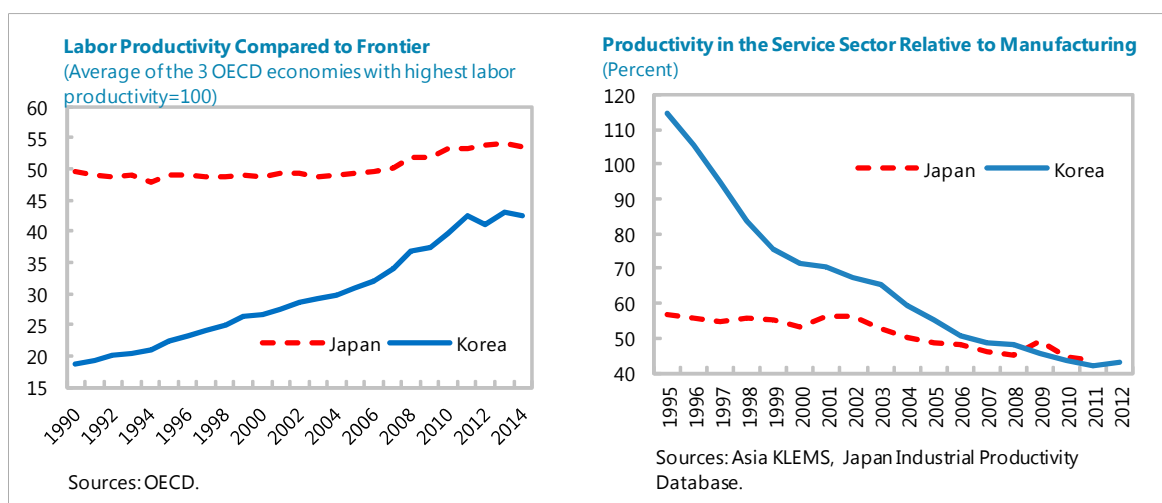
² Japan's initial crisis was sparked by the collapse of bubbles in its stock and real estate markets in the early 1990s. As the economy started to recover in the mid-1990s, the Asia crisis struck in 1997, pushing Japan close to a financial meltdown. When the economy seemed to mend again in 1999–2000, renewed systemic stress was triggered by the collapse of the global information technology bubble in March 2000. Once again a sustained recovery seemed to be underway when the global financial crisis unfolded. And following a short rebound, the economy had to confront the 2011 earthquake (Syed, Kang, and Tokuoka, 2009; Berkmen and Lee, 2014).

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.

have contributed to the productivity slowdown. Going forward, the contribution from labor inputs to potential growth will continue to shrink, based on demographics projections, assuming only a mild increase in participation.



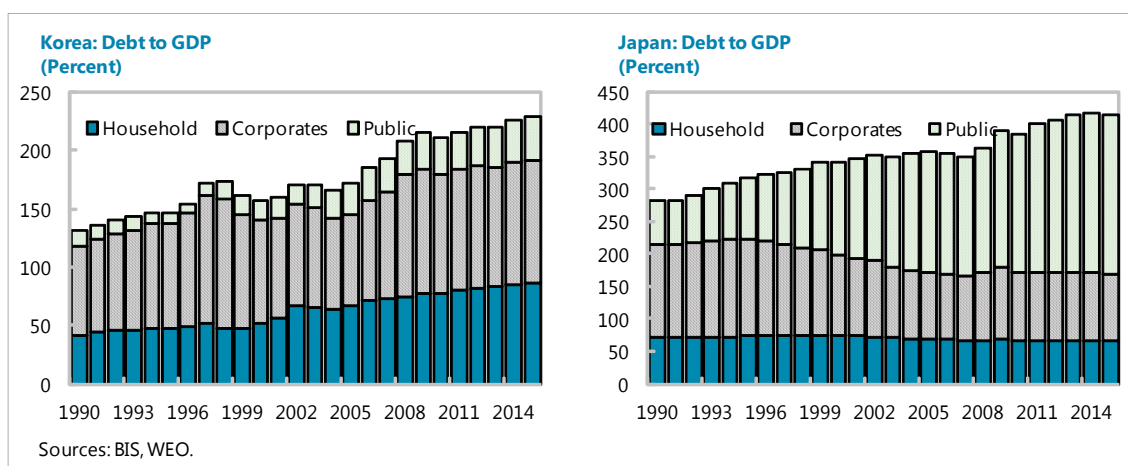
4. **In both countries, productivity growth has been sluggish, especially in the non-manufacturing sector.** In Korea, labor productivity rose at an annual rate of 4.6 percent in 1995-2001, but remains only 40 percent of that of the three most productive OECD countries. In addition, labor productivity in the service sector is only half what it is in manufacturing, and much lower than in peer economies, perhaps partly reflecting regulatory barriers to competition. In Japan, labor productivity is about half that of the frontier OECD economies. In the service sector, it only increased by 25 percent since 1970, while it roughly tripled in the manufacturing sector.



5. **In both economies, productivity has been adversely affected by labor market segmentation.** In Japan the share of non-regular workers grew from 20 percent in the early 1990s to 35 percent (Aoyagi and Ganelli, 2013). In Korea the share of temporary workers—a proxy for non-regular employees—was nearly 22 percent in 2014, double the OECD average. This has taken a toll on productivity, as temporary workers have fewer incentives to excel, and employers do not invest in

their development. At a broader societal level, this situation has created a two-tiered workforce and contributed to inequality.

6. **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. 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 just over 100 percent of GDP in 2015. Korea's current corporate debt to GDP ratio is 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.



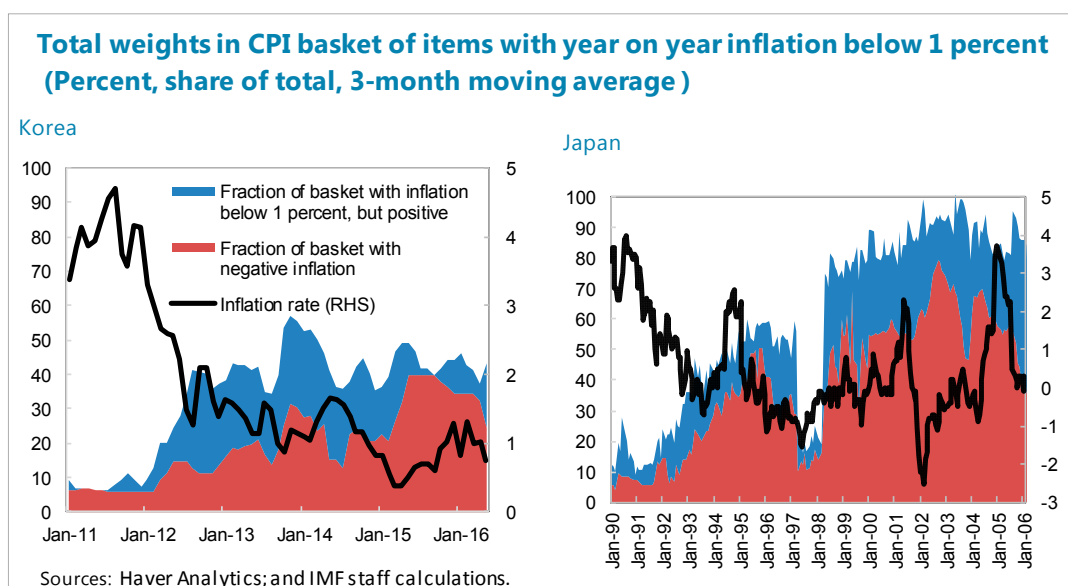
7. **Household debt is higher in Korea than it has ever been in Japan.** In the latter, the household debt to GDP ratio has been fairly steady at 65–70 percent, while in Korea it rose steadily from 40 percent of GDP in the early 1990s to nearly 90 percent of GDP today.

8. **The 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 over 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 percent of GDP by 2060 on account of population aging, or even higher if growth slows, or if fiscal outlays related to possible future reunification are considered. Given its strong public-sector balance sheets, Korea has the space to use fiscal policy to incentivize essential structural reforms and cushion any possible negative effects in the short run.

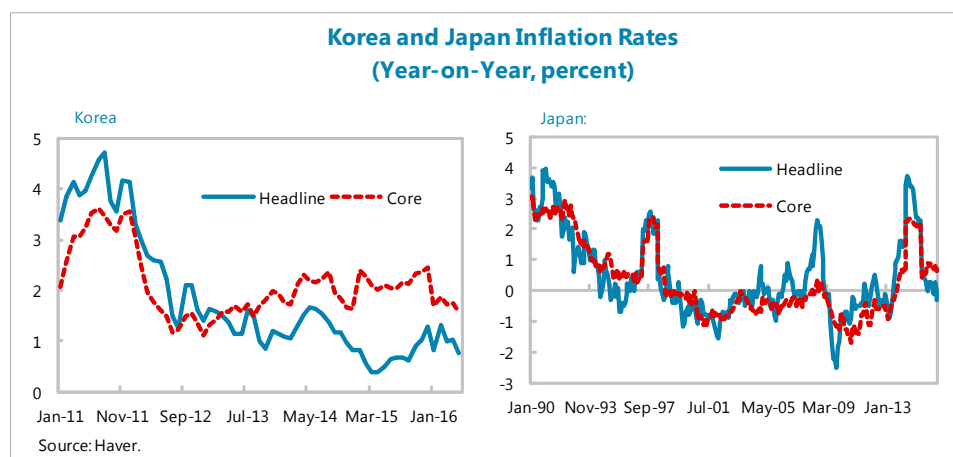
B. Inflation

9. **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 1.3 percent in 2013, remaining at

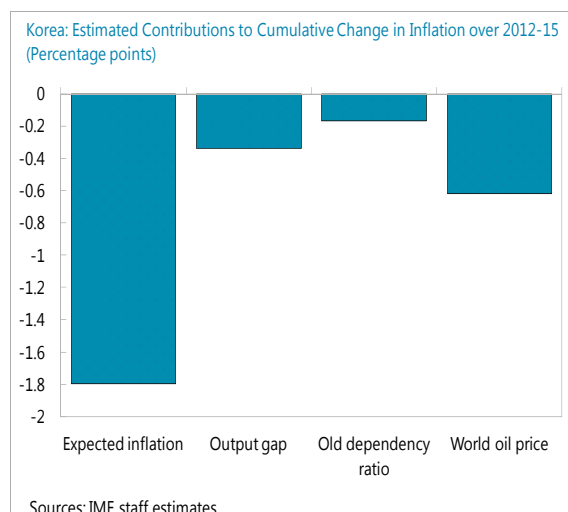
around 1–1.5 percent since then, and below the authorities' target since late 2012. Movements in Korea's headline inflation since January 2011 appear similar to those in Japan in the early 1990s, when inflation slid from nearly 4 percent in early 1991 to 1 percent in 1993, before dipping into negative territory in 1995.



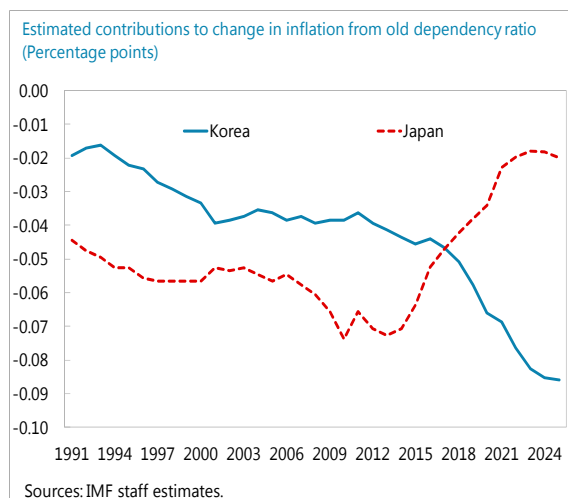
10. **There are, however, some important differences between Korea's inflation now and Japan's inflation in the early 1990s.** Korea's core inflation has remained more robust than headline, at around 2 percent in 2014 and 2015, with some moderation in early 2016. Declining fuel and energy prices explain 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. Besides, in Korea the downward trend in headline inflation seems to have bottomed out in early 2015, when the economy was at its weakest point. Conversely, Japan had a steady transition to deflation from early 1991 to early 1995. Moreover, in Korea the share of consumption items with negative inflation—which rose from less than 20 percent in 2012–13 to nearly 40 percent in mid-2015— includes almost exclusively 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.



11. **Demographics are believed to have affected inflation dynamics in Japan, and this may be the case for Korea, too, especially going forward.** Aging could impact inflation by affecting relative prices, including land—old people typically prefer smaller houses. Aging could 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 (Yoon, Kim, and Lee, 2014). Several studies have empirically assessed the effects of aging on Japan’s inflation (Katagiri, 2012; Shirakawa, 2012; Anderson, Botman and Hunt, 2014).⁴



12. **To investigate the impact of demographics on Korea’s inflation, we estimate a modified Phillips-curve model that includes aging among the explanatory variables.**⁵ Based on the model estimates, the cumulative change in Korea’s 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 (text chart). The increase in the old-age dependency ratio is estimated to have lowered inflation by nearly 0.2 percentage points.



13. **The estimated model also allows a comparison of the contribution of aging to low inflation rates in 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

⁴ Katagiri (2012) found that unexpected shocks to demand structure due to aging produced about 0.3 percentage point deflationary pressure in the Japanese economy.

⁵ The dependent variable is annual average inflation. The regressors include expected inflation, the domestic output gap, world oil price changes, and the old-age dependency ratio as an indicator of aging. Population growth is included in some model specifications. In addition, the explanatory variable set includes different indicators of globalization, to assess whether increased integration has contributed to lower inflation across countries (IMF, 2006; Borio and Filardo, 2007). Most parameters of the model are allowed to vary across countries, but the coefficients on demographic and globalization indicators are assumed to be constant. The sample includes 12 large advanced economies and China. The model is estimated over the period 1990–2015, using Seemingly Unrelated Regressions.

expectations remain well anchored. At the same time, structural reforms aimed at raising the fertility rate could help reduce the deflationary pressure from aging.

C. Conclusion

14. **The speed of population aging, the prospects of a declining population, and lagging productivity due to structural problems are the ways in which Korea resembles Japan most.** 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. 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 labor market duality and promote more competition and productivity gains in the service sector are also crucial to support productivity, which—given the shrinking workforce—becomes more crucial as catalyst for growth.
15. **Korea has low inflation but does not appear to be headed toward deflation.** However, given the possible downward pressure on inflation from aging going forward, the central bank will have to closely monitor inflation expectations, and act decisively should they start to trend down consistently. At the same time, structural reforms to prop up the fertility rate could help reduce the deflationary pressure from the aging population.

References

- Borio, Claudio, and Andrew Filardo, 2007, "Globalization and Inflation: New Cross-Country Evidence on the Global Determinants of Domestic Inflation," BIS Working Papers No 227.
- Botman, Dennis, Derek Anderson, and Ben Hunt, 2014, "Is Aging Deflationary?" IMF Working Paper No. 14/139 (Washington: International Monetary Fund).
- Botman, Dennis, Stephan Danninger, and Jerald A. Schiff, 2015, *Can Abenomics Succeed?* (Washington: International Monetary Fund).
- Ding, Ding, 2014, "Risks of Excessively Low Inflation in Korea."
- IMF, 2006, "How has Globalization Affected Inflation?" in *World Economic Outlook* (Chapter 3).
- Shirakawa, Masaaki, 2012, "The Bank of Japan's Efforts to Overcome Deflation," Speech at the Japan National Press Club in Tokyo.
- Syed, Murtaza, Kenneth Kang, and Kiichi Tokuoka, 2009, "Lost Decade in Translation: What Japan's Crisis Could Portend about Recovery from the Great Recession," IMF Working Paper No. 09/282 (Washington: International Monetary Fund).

Appendix: Econometric Results

Table : Regression results

	(1)			(2)			(3)		
	Korea	Japan	Average other sample countries	Korea	Japan	Average other sample countries	Korea	Japan	Average other sample countries
Constant	-1.21	1.39	-0.26	-2.03	1.37	-0.85	-1.16	1.45	-0.25
<i>P-value</i>	<i>0.01</i>	<i>0.03</i>		<i>0.00</i>	<i>0.02</i>		<i>0.01</i>	<i>0.02</i>	
Expected inflation	1.33	0.89	1.21	1.39	0.88	1.14	1.32	0.93	1.23
<i>P-value</i>	<i>0.00</i>	<i>0.00</i>		<i>0.00</i>	<i>0.00</i>		<i>0.00</i>	<i>0.00</i>	
Output gap	0.15	0.12	0.01	0.17	0.09	0.04	0.13	0.09	0.01
<i>P-value</i>	<i>0.04</i>	<i>0.00</i>		<i>0.02</i>	<i>0.00</i>		<i>0.08</i>	<i>0.23</i>	
Global oil price(-1)	0.02	0.00	0.01	0.02	0.00	0.01	0.02	0.00	0.01
<i>P-value</i>	<i>0.01</i>	<i>0.88</i>		<i>0.01</i>	<i>0.91</i>		<i>0.02</i>	<i>0.86</i>	
Old dependency	-0.10	-0.10	-0.1	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11
<i>P-value</i>	<i>0.03</i>	<i>0.03</i>	<i>0.03</i>	<i>0.02</i>	<i>0.02</i>	<i>0.02</i>	<i>0.02</i>	<i>0.02</i>	<i>0.02</i>
Openness				0.01	0.01	0.01			
<i>P-value</i>				<i>0.11</i>	<i>0.11</i>	<i>0.11</i>			
Global output gap							0.00	0.00	0.00
<i>P-value</i>							<i>0.55</i>	<i>0.55</i>	<i>0.55</i>
Adjusted R-squared	0.8	0.7	0.5	0.8	0.6	0.4	0.8	0.6	0.5

Source: IMF staff estimates.

Annex VI. Korea—Quantifying the Impact of China’s Rebalancing on Korea’s Income and Trade¹

This annex presents a multi-country, multi-sector Ricardian trade model that is used to simulate the impact of China’s rebalancing on Korea. In the model, China’s move up the value chain has the potential to have significant negative consequences for Korea. At the same time, there are effects not captured in the model—for instance, Korean service exports could benefit from rising household income in China.

1. **Developments in China are of key interest for Korea given the close economic ties between the two countries.** Korea’s trade exposure to China is of particular significance, with China accounting for more than 25 and 20 percent, respectively, of Korea’s gross exports and imports. Financial links have also strengthened between the two countries.
2. **The structural rebalancing of the Chinese economy consists of several distinct transformations.** These are captured in four separate scenarios, to permit an analysis of the independent impact of each facet of rebalancing:
 - **Scenario 1 (preference shock):** China consumes more and moves away from investment;
 - **Scenario 2 (move-up-the-value-chain shock):** China moves up the production value-chain, becoming more competitive in higher-tech manufacturing and in the process potentially displacing imports of sophisticated parts from Korea and others; and
 - **Scenario 3 (services-manufacturing rebalancing shock):** China’s services sector outperforms manufacturing.
3. **A Ricardian trade model is used to assess the impact on Korea from rebalancing in the Chinese economy based on the three scenarios listed above.**² Quantifying some of these effects requires having a rich model of linkages across both economies and sectors. The model is calibrated to fit trade flows and the input-output structure of production in 2011 across 40 economies and the rest of the world, with each consisting of 34 traded and nontraded sectors.³
4. **At the same time, like any model, it has limitations,** including the fact that it excludes trade in services, which could grow in importance for Korea as China’s households become richer and consume more, and the fact that it is a one-period model (and thus does not factor in dynamic losses, such as the frictions associated with shifting from one sector to another). Also, policy responses to each scenario are not considered.
5. **This annex complements other work (at the Fund and elsewhere) evaluating the impact of spillovers from China.** This earlier work either empirically estimates spillovers from China

¹ Prepared by Rui C. Mano.

² The model used here is a generalization of Caliendo and Parro (2015) to account for a wider set of counterfactual experiments and follows the tradition of Eaton and Kortum (2002).

³ From the base year of 2011, the model is then solved in changes, following Deckle *et al.* (2012).

on aggregate variables of other countries, most often GDP, or studies impulse responses in dynamic stochastic general equilibrium models.⁴ The Ricardian model used here has a rich set of predictions of trade patterns because it focuses uniquely on that channel, unlike other approaches, and is designed to capture changes in production value-chains.

6. **The model shows that Korea is particularly vulnerable to a move by China up the value chain.**⁵ While the last scenario generates muted spillovers in terms of income and real wages across large countries, the “preference shock” (Scenario 1) and the “move-up-the-value-chain shock” (Scenario 2) are associated with declines in Korea’s income and real wages. A direct comparison of Scenarios 1 and 2 is not appropriate since the former assumes a full shift of China’s final demand to match that of the U.S., something that will likely take years, while Scenario 2 uses an illustrative productivity shock of 1 percent. Scenario 2 generates the most adverse spillovers to Korea as long as the underlying productivity shock is more than 3 percent—a modest movement compared to that assumed in Scenario 1 (see figure showing the sensitivity to the size of shock in Scenario 2).

Considering the three scenarios separately:⁶

- A shift in Chinese preferences towards consumption away from investment (Scenario 1), results in a contraction of 0.25 percent in Korea’s income. Real wages and imports from China also contract, with exports to China remaining broadly unchanged. Under this scenario, Taiwan Province of China, whose income falls by 0.47 percent, is more adversely affected than Korea, while other large countries are relatively less affected. The adverse effects can mostly be attributed to changes in terms of trade (ToT) and not volume of trade (VoT).
- Scenario 2, in which China moves up the value chain, carries the most adverse impact of all scenarios considered. Korea and Taiwan Province of China appear to be the most affected, with real incomes falling by 0.08, but income and real wages are lower across all large countries, except Australia and the U.S. Most of the effects can again be attributed to terms of trade. Comparing the absolute values of spillovers in this scenario relative to those in Scenario 1 is not appropriate, as discussed previously, since the shock here is much smaller. Relatively small changes in China’s position in the value chain have the potential to generate much more adverse spillovers to Korea.
- Scenario 3 affects China disproportionately, and spillovers to other large countries are modest.

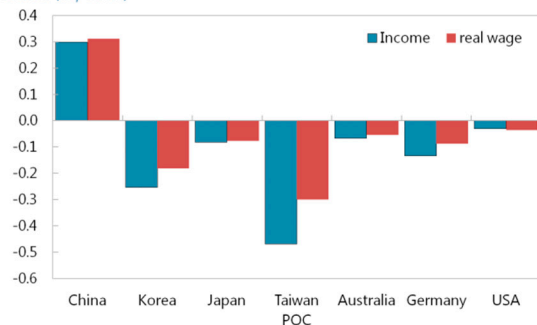
⁴ See IMF’s Spillover reports IMF 2011, 2012 and 2014a, APD Regional Economic Outlook IMF 2014b, 2015, 2016, Cashin and others (2016), Dizioli and others (2016), Andrieu and others (2015), among many others.

⁵ Countries shown in the charts are those with largest trade exposure to China measured as half the sum of exports and imports to/from China.

⁶ A full set of figures and tables comparing real incomes and trade outcomes for each scenario are presented at the end.

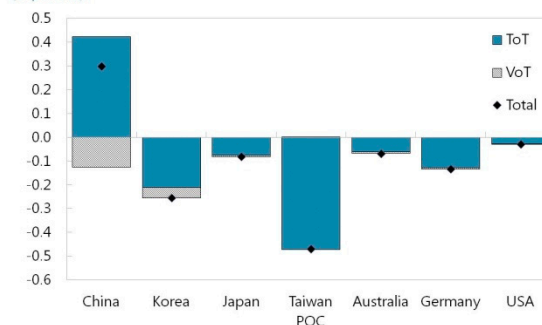
Scenario 1: Preference shock towards consumption in China

Income and Real Wage response to preference shock in China
(in percent)



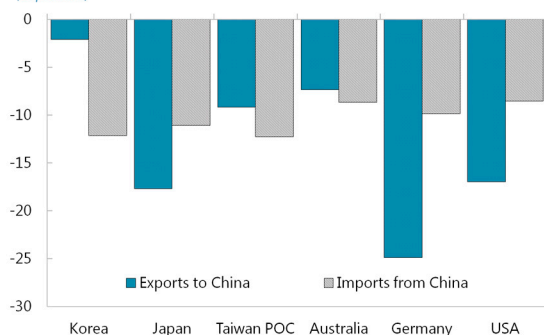
Sources: Staff estimates.

Income response to preference shock in China
(in percent)



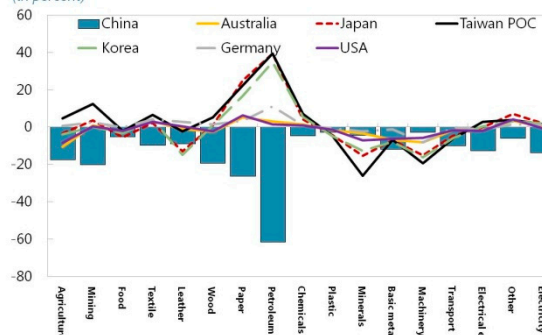
Sources: Staff estimates.

Change in Bilateral Trade with China
(in percent)



Sources: Staff estimates.

Total Export Growth by sector
(in percent)



Sources: Staff estimates.

Scenario 1: Change in key outcomes for all economies

	Total	Income		Direct	Real wage	Total Exports	Exports to China
		ToT	VoT				
Australia	-0.07	-0.06	-0.01	0.00	-0.05	-1.00	-7.33
Austria	-0.04	-0.04	0.00	0.00	-0.04	-0.46	-23.63
Belgium	-0.03	-0.03	0.00	0.00	-0.03	-0.14	-6.86
Bulgaria	0.01	0.01	0.00	0.00	-0.01	-0.42	-17.44
Brazil	-0.06	-0.04	-0.02	0.00	-0.04	-1.46	-13.61
Canada	-0.05	-0.04	-0.01	0.00	-0.04	-0.46	-3.36
China	0.30	0.42	-0.13	0.00	0.31	-9.46	n.a.
Cyprus	0.01	0.02	0.00	0.00	-0.01	-0.49	-12.11
Czech Rep.	-0.12	-0.11	-0.01	0.00	-0.08	-0.61	-26.67
Germany	-0.13	-0.13	-0.01	0.00	-0.09	-1.09	-24.87
Denmark	-0.05	-0.04	0.00	0.00	-0.03	-0.62	-27.09
Spain	-0.02	-0.02	0.00	0.00	-0.02	-0.30	-10.20
Estonia	-0.04	-0.03	-0.01	0.00	-0.03	-0.24	-8.28
Finland	-0.07	-0.06	0.00	0.00	-0.04	-0.75	-16.36
France	-0.03	-0.03	0.00	0.00	-0.03	-0.54	-17.03
UK	-0.03	-0.02	0.00	0.00	-0.03	-0.61	-19.80
Greece	0.01	0.01	0.00	0.00	-0.01	-0.66	-23.08
Hungary	-0.06	-0.05	0.00	0.00	-0.04	-0.39	-22.24
Indonesia	-0.04	-0.04	0.00	0.00	-0.03	-0.58	-4.00
India	-0.06	-0.04	-0.02	0.00	-0.05	-0.39	-0.53
Ireland	-0.07	-0.07	0.00	0.00	0.00	-0.14	-2.93
Italy	-0.04	-0.03	-0.01	0.00	-0.03	-0.72	-27.77
Japan	-0.08	-0.07	-0.01	0.00	-0.08	-2.95	-17.69
Korea	-0.25	-0.21	-0.04	0.00	-0.18	0.46	-2.09
Lithuania	0.01	0.01	0.00	0.00	-0.01	-0.23	-12.29
Luxembourg	0.01	0.01	0.00	0.00	-0.01	-0.44	-19.23
Latvia	0.04	0.04	0.00	0.00	0.04	0.40	34.36
Mexico	-0.03	-0.03	0.00	0.00	-0.03	-0.24	-2.25
Malta	-0.01	-0.01	0.00	0.00	-0.12	-2.79	-17.77
Netherlands	-0.09	-0.09	0.00	0.00	-0.05	-0.36	-11.86
Poland	-0.05	-0.04	-0.01	0.00	-0.04	-0.31	-18.13
Portugal	0.02	0.02	0.00	0.00	0.01	-0.14	-7.71
Romania	0.01	0.01	0.00	0.00	0.00	-0.07	-25.02
Russia	-0.06	-0.05	-0.01	0.00	-0.05	-0.49	-0.16
ROW	-0.06	-0.05	-0.01	0.00	-0.04	-0.73	-6.76
Slovak	-0.07	-0.07	-0.01	0.00	-0.06	-0.55	-21.66
Slovenia	-0.03	-0.02	-0.01	0.00	-0.02	-0.28	-24.85
Sweden	-0.05	-0.04	0.00	0.00	-0.02	-0.35	-15.51
Turkey	-0.05	-0.04	-0.01	0.00	-0.04	-0.51	-10.60
Taiwan POC	-0.47	-0.47	0.00	0.00	-0.30	-0.95	-9.16
USA	-0.03	-0.03	0.00	0.00	-0.04	-1.70	-16.97

Values in percent. Source: author's calculations.

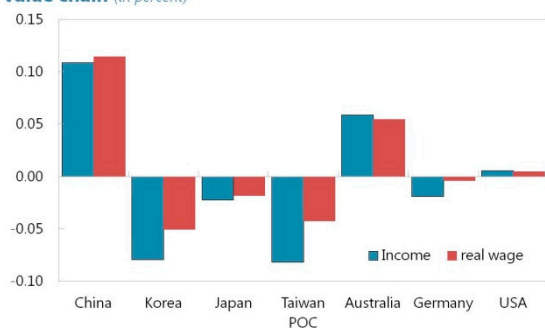
Scenario 1: Change in export share for major countries

sector	China		Korea		Japan		Taiwan POC		Australia		Germany		USA	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Agriculture	0.99	0.90	0.14	0.13	0.12	0.12	1.41	1.49	5.13	4.63	1.05	1.07	4.58	4.27
Mining	0.60	0.53	0.00	0.00	0.46	0.49	0.05	0.05	64.00	65.28	0.53	0.55	2.81	2.87
Food	2.82	2.95	1.23	1.18	0.58	0.56	0.61	0.60	6.96	6.87	5.38	5.43	5.60	5.58
Textile	13.53	13.45	2.24	2.32	0.93	0.98	3.15	3.39	0.53	0.55	2.03	2.13	1.34	1.40
Leather	2.88	2.90	0.20	0.17	0.03	0.03	0.37	0.37	0.14	0.14	0.30	0.31	0.07	0.07
Wood	0.61	0.54	0.01	0.01	0.17	0.18	0.06	0.06	0.31	0.31	0.66	0.68	0.48	0.48
Paper	0.51	0.41	0.61	0.71	0.53	0.68	1.34	1.65	0.57	0.61	3.50	3.66	3.76	4.07
Petroleum	0.80	0.34	10.59	14.21	2.90	4.16	7.03	9.89	1.38	1.44	1.88	2.11	9.28	9.58
Chemicals	6.55	6.88	10.64	11.18	8.78	9.41	12.00	12.98	2.51	2.57	13.15	13.42	12.14	12.46
Plastic	4.00	4.28	2.13	2.01	4.46	4.39	3.34	3.21	0.38	0.38	3.90	3.92	2.31	2.32
Minerals	1.50	1.58	0.32	0.27	1.56	1.36	0.59	0.44	0.15	0.15	1.34	1.33	0.83	0.78
Basic metals	7.21	7.01	10.20	9.36	16.21	15.53	10.58	9.95	11.97	11.26	11.91	11.88	7.30	6.95
Machinery nec	8.04	8.62	7.92	6.60	13.14	11.50	6.65	5.41	2.18	2.03	14.47	13.44	11.29	10.81
Transport	40.34	40.03	30.21	28.29	23.60	23.19	46.77	44.19	1.28	1.28	14.55	14.70	18.39	18.38
Electrical eq.	5.43	5.24	23.04	23.02	25.28	26.03	3.82	3.97	1.76	1.75	22.20	22.16	16.45	16.40
Other	4.09	4.25	0.49	0.50	1.16	1.27	2.24	2.35	0.66	0.69	1.92	1.97	3.32	3.51
Electricity	0.10	0.10	0.02	0.02	0.10	0.11	0.00	0.00	0.06	0.06	1.22	1.25	0.06	0.06
Normalized Herfindahl	0.181	0.180	0.160	0.155	0.149	0.147	0.236	0.217	0.416	0.431	0.104	0.102	0.085	0.084

Values in percentage points. Source: author's calculations.

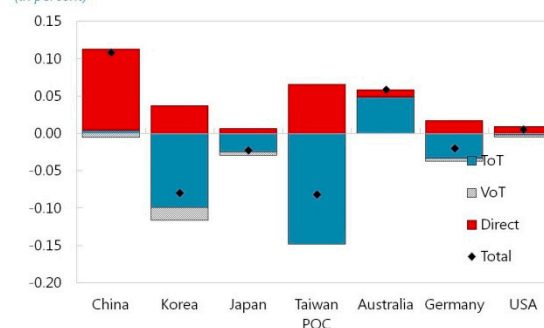
Scenario 2: China moving up the value chain into tech-intensive industries

Income and Real Wage response to China moving up the value chain (in percent)



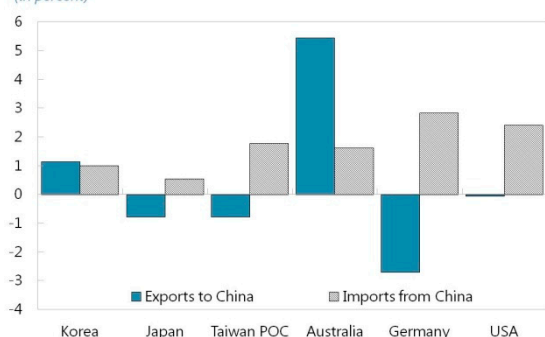
Sources: Staff estimates.

Income response to China moving up the value chain (in percent)



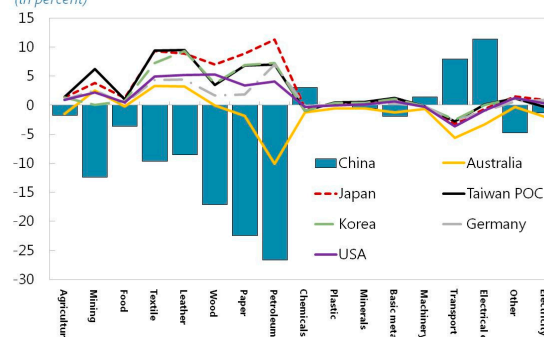
Sources: Staff estimates.

Change in Bilateral Trade with China (in percent)



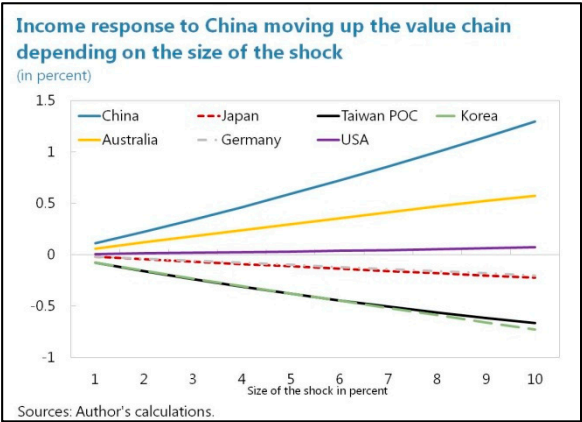
Sources: Staff estimates.

Total Export Growth by sector (in percent)



Sources: Staff estimates.

Scenario 2: Sensitivity to the size of the shock



Scenario 2: Change in key outcomes for all economies

	Total	Income		Direct	Real wage	Total Exports	Exports to China
		ToT	VoT				
Australia	0.06	0.05	0.00	0.01	0.05	1.05	5.45
Austria	-0.01	-0.01	0.00	0.01	0.00	-0.13	-1.24
Belgium	0.01	0.00	0.00	0.01	0.01	0.11	1.14
Bulgaria	0.03	0.02	0.00	0.01	0.03	-0.02	3.98
Brazil	0.03	0.01	0.00	0.01	0.02	0.47	5.57
Canada	0.02	0.01	0.00	0.01	0.02	0.01	6.85
China	0.11	0.00	-0.01	0.11	0.11	1.58	n.a.
Cyprus	0.00	0.00	0.00	0.00	0.01	-0.22	-2.71
Czech Rep.	0.02	-0.05	-0.01	0.07	0.03	-0.13	-1.39
Germany	-0.02	-0.03	0.00	0.02	0.00	-0.24	-2.70
Denmark	0.00	0.00	0.00	0.00	0.00	-0.15	-0.29
Spain	-0.01	-0.01	0.00	0.00	-0.01	-0.22	1.95
Estonia	-0.01	0.00	-0.01	0.00	0.00	-0.13	0.52
Finland	-0.01	-0.01	0.00	0.01	0.00	-0.08	0.58
France	0.00	-0.01	0.00	0.01	0.00	-0.18	-1.15
UK	0.00	0.00	0.00	0.00	0.00	-0.28	-2.43
Greece	0.01	0.01	0.00	0.00	0.01	0.03	1.99
Hungary	0.00	-0.04	0.00	0.04	0.00	-0.41	-4.12
Indonesia	0.04	0.03	0.00	0.01	0.03	0.37	6.12
India	-0.01	0.00	-0.01	0.00	0.00	0.10	2.55
Ireland	-0.05	-0.06	0.00	0.01	-0.01	-0.15	1.96
Italy	0.00	0.00	0.00	0.00	0.01	-0.01	1.31
Japan	-0.02	-0.02	0.00	0.01	-0.02	-0.26	-0.78
Korea	-0.08	-0.10	-0.02	0.04	-0.05	0.24	1.13
Lithuania	0.00	0.00	0.00	0.00	0.00	-0.09	1.50
Luxembourg	0.01	0.01	0.00	0.00	0.01	0.01	4.07
Latvia	0.01	0.01	0.00	0.00	0.01	0.11	4.08
Mexico	0.03	0.00	0.00	0.03	0.03	-0.19	1.71
Malta	-0.02	-0.02	0.00	0.01	-0.06	-1.41	-4.32
Netherlands	-0.01	-0.02	0.00	0.01	0.00	-0.15	0.68
Poland	0.01	0.00	0.00	0.01	0.02	-0.15	2.00
Portugal	0.01	0.01	0.00	0.00	0.02	-0.04	1.37
Romania	0.01	0.01	0.00	0.00	0.01	0.00	1.02
Russia	-0.01	0.00	0.00	-0.01	0.00	0.39	8.45
ROW	0.05	0.03	0.00	0.02	0.05	0.35	3.48
Slovak	-0.02	-0.03	-0.01	0.02	-0.01	-0.40	-6.39
Slovenia	-0.01	-0.01	0.00	0.01	0.00	-0.17	-1.36
Sweden	-0.01	-0.01	0.00	0.00	0.00	-0.12	0.81
Turkey	-0.04	-0.01	-0.01	-0.02	-0.02	-0.05	4.89
Taiwan POC	-0.08	-0.15	0.00	0.07	-0.04	-0.30	-0.79
USA	0.01	0.00	0.00	0.01	0.00	-0.07	-0.06

Values in percent. Source: author's calculations.

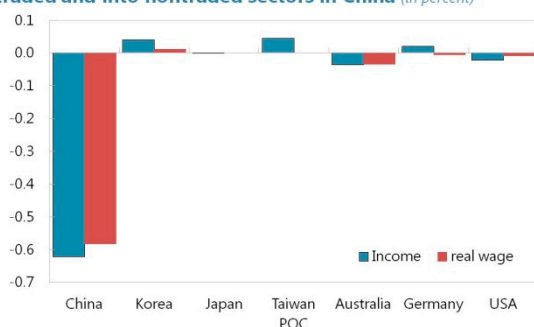
Scenario 2: Change in export share for major countries

sector	China		Korea		Japan		Taiwan POC		Australia		Germany		USA	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Agriculture	0.99	0.96	0.14	0.14	0.12	0.12	1.41	1.43	5.13	5.00	1.05	1.06	4.58	4.62
Mining	0.60	0.52	0.00	0.00	0.46	0.48	0.05	0.05	64.00	64.93	0.53	0.54	2.81	2.87
Food	2.82	2.68	1.23	1.24	0.58	0.59	0.61	0.61	6.96	6.87	5.38	5.41	5.60	5.63
Textile	13.53	12.03	2.24	2.39	0.93	1.02	3.15	3.46	0.53	0.54	2.03	2.12	1.34	1.40
Leather	2.88	2.59	0.20	0.22	0.03	0.04	0.37	0.41	0.14	0.14	0.30	0.32	0.07	0.07
Wood	0.61	0.50	0.01	0.01	0.17	0.18	0.06	0.06	0.31	0.31	0.66	0.67	0.48	0.51
Paper	0.51	0.39	0.61	0.65	0.53	0.58	1.34	1.43	0.57	0.56	3.50	3.58	3.76	3.89
Petroleum	0.80	0.58	10.59	11.33	2.90	3.23	7.03	7.55	1.38	1.23	1.88	2.02	9.28	9.66
Chemicals	6.55	6.64	10.64	10.51	8.78	8.76	12.00	11.92	2.51	2.45	13.15	13.17	12.14	12.11
Plastic	4.00	3.94	2.13	2.13	4.46	4.48	3.34	3.37	0.38	0.38	3.90	3.91	2.31	2.31
Minerals	1.50	1.47	0.32	0.32	1.56	1.57	0.59	0.59	0.15	0.15	1.34	1.35	0.83	0.83
Basic metals	7.21	6.96	10.20	10.29	16.21	16.46	10.58	10.74	11.97	11.70	11.91	11.98	7.30	7.35
Machinery nec	8.04	8.02	7.92	7.89	13.14	13.14	6.65	6.65	2.18	2.15	14.47	14.48	11.29	11.27
Transport	40.34	42.84	30.21	29.37	23.60	22.89	46.77	45.61	1.28	1.20	14.55	14.19	18.39	17.73
Electrical eq.	5.43	5.96	23.04	22.99	25.28	25.19	3.82	3.84	1.76	1.69	22.20	22.04	16.45	16.31
Other	4.09	3.83	0.49	0.50	1.16	1.18	2.24	2.27	0.66	0.65	1.92	1.93	3.32	3.36
Electricity	0.10	0.10	0.02	0.02	0.10	0.10	0.00	0.00	0.06	0.06	1.22	1.23	0.06	0.06
Normalized Herfindahl	0.181	0.199	0.160	0.156	0.149	0.146	0.236	0.226	0.416	0.427	0.104	0.102	0.085	0.083

Values in percentage points. Source: author's calculations.

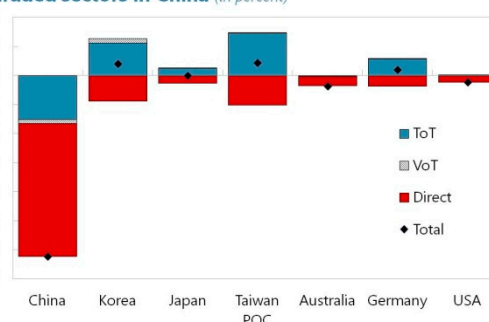
Scenario 3: Increased productivity in nontraded- and decreased in traded-sectors in China

Income and Real Wage response to rebalance away from traded and into nontraded sectors in China (in percent)



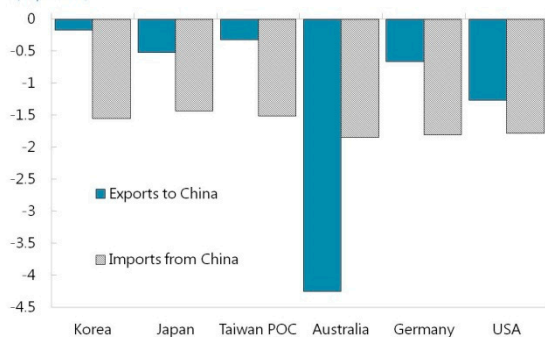
Sources: Staff estimates.

Income response to rebalance away from traded into nontraded sectors in China (in percent)



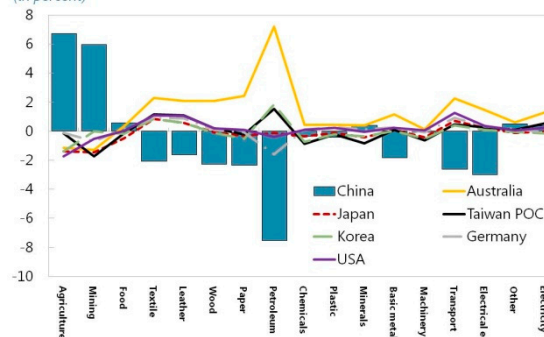
Sources: Staff estimates.

Change in Bilateral Trade with China (in percent)



Sources: Staff estimates.

Total Export Growth by sector (in percent)



Sources: Staff estimates.

Scenario 3: Change in key outcomes for all economies

	Total	Income		Direct	Real wage	Total Exports	Exports to China
		ToT	VoT				
Australia	-0.04	0.00	0.00	-0.03	-0.04	-0.50	-4.19
Austria	-0.01	0.01	0.00	-0.02	0.00	0.29	-0.60
Belgium	-0.01	0.02	0.00	-0.02	-0.01	0.21	-0.55
Bulgaria	-0.04	-0.03	0.00	-0.02	-0.01	0.36	-1.58
Brazil	-0.02	0.00	-0.01	-0.02	-0.02	-0.34	-7.13
Canada	-0.01	0.02	0.00	-0.03	-0.02	0.18	-3.64
China	-0.62	-0.15	-0.01	-0.46	-0.58	-1.67	n.a.
Cyprus	-0.06	-0.04	0.00	-0.01	-0.02	0.56	-0.64
Czech Rep.	0.01	0.10	0.00	-0.09	-0.01	0.25	-0.89
Germany	0.02	0.06	0.00	-0.04	-0.01	0.26	-0.41
Denmark	0.00	0.01	0.00	-0.01	-0.01	0.19	-4.82
Spain	-0.01	0.01	0.00	-0.02	0.00	0.36	-1.19
Estonia	-0.01	0.02	0.00	-0.03	-0.01	0.34	0.07
Finland	0.01	0.03	0.00	-0.01	0.00	0.22	-1.18
France	-0.01	0.01	0.00	-0.02	-0.01	0.30	-0.72
UK	-0.02	0.00	0.00	-0.02	-0.01	0.35	-0.20
Greece	-0.05	-0.04	0.00	-0.01	-0.01	0.57	-7.42
Hungary	0.01	0.05	0.00	-0.04	0.00	0.37	-0.12
Indonesia	-0.01	0.03	0.00	-0.04	-0.02	0.06	-3.55
India	-0.02	0.02	0.00	-0.04	-0.01	0.17	-3.86
Ireland	0.13	0.15	0.00	-0.02	0.00	0.20	-0.88
Italy	0.00	0.02	0.00	-0.02	0.00	0.28	-0.98
Japan	0.00	0.02	0.00	-0.03	0.00	0.19	-0.24
Korea	0.04	0.11	0.01	-0.09	0.01	0.33	0.34
Lithuania	-0.03	-0.02	0.00	-0.01	0.00	0.39	-2.16
Luxembourg	-0.02	-0.02	0.00	0.00	0.00	0.40	-0.76
Latvia	-0.04	-0.03	0.00	-0.01	-0.01	0.37	-2.04
Mexico	-0.02	0.02	0.00	-0.04	-0.01	0.29	-2.23
Malta	-0.06	-0.05	0.00	-0.02	-0.01	0.66	0.52
Netherlands	0.03	0.06	0.00	-0.03	0.00	0.25	-1.38
Poland	-0.01	0.02	0.00	-0.03	-0.01	0.33	-0.97
Portugal	-0.03	-0.02	0.00	-0.01	0.00	0.44	-0.50
Romania	-0.04	-0.02	0.00	-0.01	-0.01	0.46	-1.41
Russia	-0.03	0.01	0.00	-0.04	-0.02	0.04	-4.04
ROW	-0.02	0.03	0.00	-0.04	-0.02	-0.01	-2.90
Slovak	0.00	0.04	0.00	-0.04	0.00	0.36	0.45
Slovenia	-0.01	0.02	0.00	-0.02	0.00	0.34	-0.77
Sweden	0.02	0.03	0.00	-0.01	0.00	0.24	-0.82
Turkey	-0.03	0.01	0.00	-0.04	-0.01	0.34	-3.09
Taiwan POC	0.04	0.15	0.00	-0.10	0.00	0.29	-0.07
USA	-0.02	0.00	0.00	-0.02	-0.01	0.18	-1.86

Values in percent. Source: author's calculations.

Scenario 3: Change in export share for major countries

sector	China		Korea		Japan		Taiwan POC		Australia		Germany		USA	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Agriculture	0.99	1.19	0.14	0.13	0.12	0.12	1.41	1.39	5.13	4.96	1.05	1.04	4.58	4.40
Mining	0.60	0.64	0.00	0.00	0.46	0.45	0.05	0.04	64.00	63.65	0.53	0.52	2.81	2.79
Food	2.82	2.92	1.23	1.22	0.58	0.57	0.61	0.60	6.96	7.01	5.38	5.38	5.60	5.58
Textile	13.53	13.56	2.24	2.24	0.93	0.93	3.15	3.16	0.53	0.55	2.03	2.04	1.34	1.35
Leather	2.88	2.91	0.20	0.20	0.03	0.03	0.37	0.37	0.14	0.14	0.30	0.30	0.07	0.07
Wood	0.61	0.62	0.01	0.01	0.17	0.17	0.06	0.06	0.31	0.32	0.66	0.66	0.48	0.48
Paper	0.51	0.51	0.61	0.60	0.53	0.53	1.34	1.33	0.57	0.59	3.50	3.49	3.76	3.76
Petroleum	0.80	0.72	10.59	10.84	2.90	2.90	7.03	7.14	1.38	1.49	1.88	1.84	9.28	9.23
Chemicals	6.55	6.64	10.64	10.53	8.78	8.74	12.00	11.87	2.51	2.53	13.15	13.13	12.14	12.13
Plastic	4.00	4.05	2.13	2.12	4.46	4.44	3.34	3.33	0.38	0.39	3.90	3.90	2.31	2.32
Minerals	1.50	1.53	0.32	0.31	1.56	1.55	0.59	0.58	0.15	0.16	1.34	1.34	0.83	0.83
Basic metals	7.21	7.16	10.20	10.17	16.21	16.21	10.58	10.56	11.97	12.18	11.91	11.92	7.30	7.31
Machinery nec	8.04	8.16	7.92	7.86	13.14	13.06	6.65	6.59	2.18	2.20	14.47	14.42	11.29	11.28
Transport	40.34	39.80	30.21	30.27	23.60	23.76	46.77	46.91	1.28	1.32	14.55	14.67	18.39	18.62
Electrical eq.	5.43	5.33	23.04	22.98	25.28	25.29	3.82	3.82	1.76	1.80	22.20	22.22	16.45	16.49
Other	4.09	4.18	0.49	0.49	1.16	1.15	2.24	2.23	0.66	0.67	1.92	1.92	3.32	3.32
Electricity	0.10	0.10	0.02	0.02	0.10	0.10	0.00	0.00	0.06	0.06	1.22	1.21	0.06	0.06
Normalized Herfindahl	0.181	0.177	0.160	0.160	0.149	0.150	0.236	0.237	0.416	0.412	0.104	0.104	0.085	0.085

Values in percentage points. Source: author's calculations.

References

- Andrle, Michal, and others, 2015, "The Flexible System of Global Models – FSGM," IMF Working Paper No. 15/64 (Washington: International Monetary Fund).
- Caliendo, Lorenzo, and Fernando Parro, 2015, "Estimates of the Trade and Welfare Effects of NAFTA," *Review of Economic Studies*, Vol. 82(1), pp. 1–44.
- Caliendo, Lorenzo, Fernando Parro, Esteban Rossi-Hansberg, and Pierre-Daniel Sarte, 2014, "The Impact of Regional and Sectoral Productivity Changes on the U.S. Economy," NBER Working Papers 20168, National Bureau of Economic Research, Inc.
- Cashin, Paul, Kamiar Mohaddes, and Mehdi Raissi, 2016, "China's Slowdown and Global Financial Market Volatility: Is World Growth Losing Out?" IMF Working Paper No. 16/63 (Washington: International Monetary Fund).
- Dizioli, Allan, and others, 2016, "Spillovers from China's Growth Slowdown and Rebalancing to the ASEAN-5 Economies," Forthcoming IMF Working Paper.
- Eaton, Jonathan, Robert Dekle, and Samuel Kortum, 2007, "Unbalanced Trade," *American Economic Review*, American Economic Association, Vol. 97(2), pp. 351–355, May.
- Eaton, Jonathan and Samuel Kortum, 2002, "Technology, Geography, and Trade," *Econometrica*, Vol. 70(5), pp. 1741–1779, September.
- International Monetary Fund, 2011, "People's Republic of China: Spillover Report for the 2011 Article IV Consultation and Selected Issues," IMF Country Report 11/193 (Washington).
- , 2012, *2012 Spillover Report* (Washington, July).
- , 2014a, *IMF Multilateral Policy Issues Report: 2014 Spillover Report* (Washington, June).
- , 2014b, *Regional Economic Outlook: Asia and the Pacific* (Washington, April).
- , 2015, *Regional Economic Outlook: Asia and the Pacific* (Washington, May).
- , 2016, *Regional Economic Outlook: Asia and the Pacific* (Washington, May).

Annex VII. Corporate Debt: A Firm-Level Investigation¹

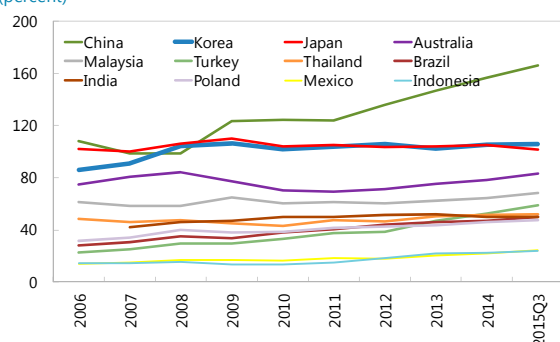
This annex assesses corporate debt vulnerabilities in Korea. It stress-tests the Korean corporate sector's earnings with respect to macro shocks and estimates the benefits and costs of corporate debt restructuring. Preliminary estimates suggest that resolving the corporate debt overhang may cost around 6 percent of GDP (partly already provisioned for by the banks). At the same time, corporate restructuring would "pay off" from society's perspective in the medium term as it may increase investment by $\frac{1}{2}$ to $\frac{3}{4}$ percent of GDP and stimulate hiring of 45,000 people per year.

A. Corporate debt vulnerability

1. **Corporate debt in Korea has been consistently high at about 100 percent of GDP over the last decade.** This is similar to Japan and less than in China, but more than in most comparable economies. An offsetting factor to the risks of high corporate debt in Korea is that most of it is denominated in domestic currency.

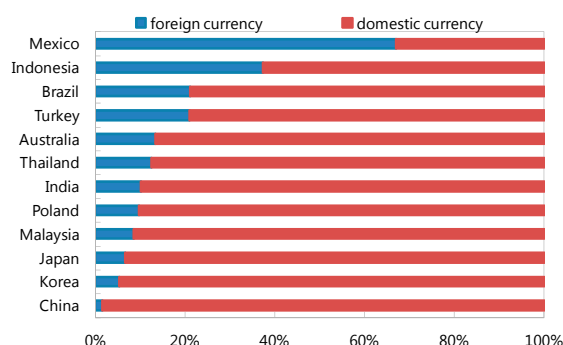
Corporate debt in selected countries

Panel A-Corporate Debt as a Share of GDP
(percent)



Sources: BIS; IMF staff calculations.

Panel B-Currency Composition of Corporate Debt



Sources: BIS; IMF staff calculations.

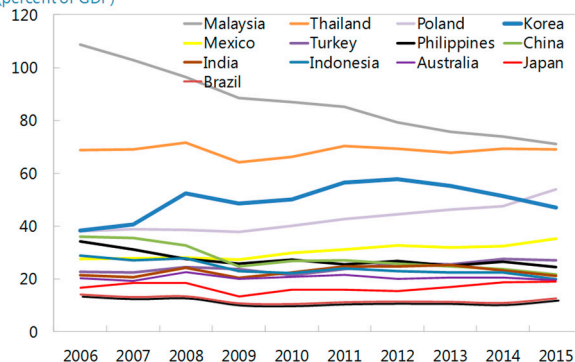
2. **As a consequence of the global growth slowdown, earnings of Korean manufacturing firms have been sluggish or declining since 2011.** Korea is an export-oriented economy. The share of export in GDP is about 50 percent, higher than in most comparable economies. Accordingly, export revenue comprises a significant share of revenue in many industries: about 50 percent on average across manufacturing, but on average 65 percent in export-oriented industries such as shipbuilding, petroleum, electronics, automobiles, and steel. Earnings in export-oriented manufacturing held up until 2013, but took a dive in 2014. We expect to see a further deterioration in the earnings once 2015 data comes in.

¹ Prepared by Jae Chung and Lev Ratnovski (RES).

Export in Korean economy

Panel A-Export in Korean Economy

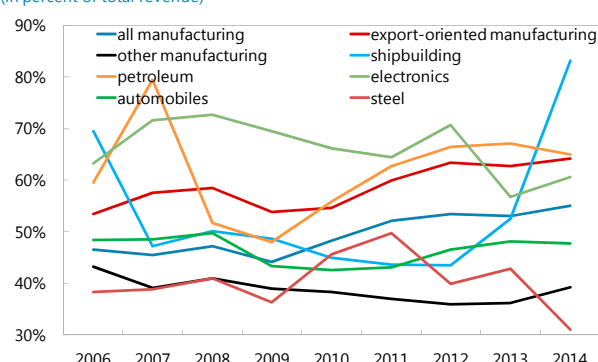
(percent of GDP)



Sources: World Economic Outlook, IMF; Orbis; IMF staff calculations.

Panel B-Total Export Revenue

(in percent of total revenue)



Sources: World Economic Outlook, IMF; Orbis; IMF staff calculations.

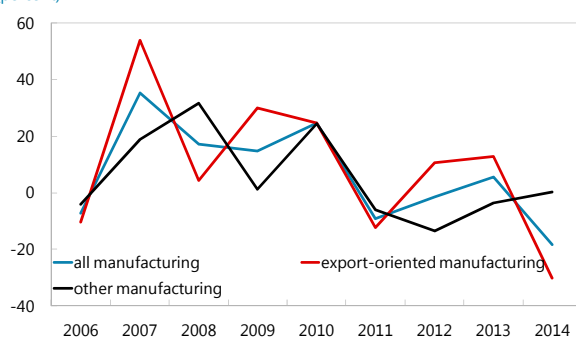
3. **The share of firms in vulnerable financial conditions—those with the interest coverage ratio (ICR) of less than 1.5—has been relatively stable, if high, since the GFC.** Export-oriented manufacturers had historically been healthier than the rest of the industry, but their financial conditions were severely affected by the earnings decline in 2014.

4. **The impact of declining earnings on firms' debt service capacity was ameliorated by accommodative monetary policy, which reduced debt service costs.** Dashed lines in the chart below show that the share of vulnerable firms would have been higher in recent years if the Bank of Korea have not had loosened its monetary policy stance.²

Earnings and debt vulnerability in manufacturing

Panel A-EBIT Growth in Manufacturing

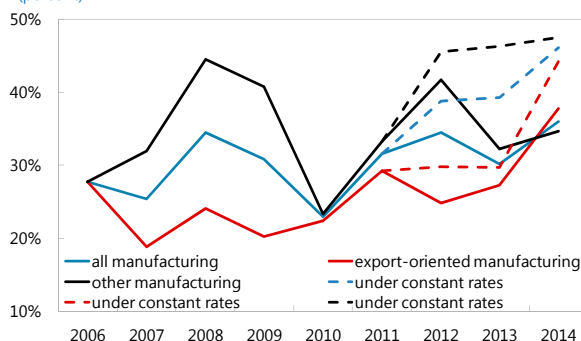
(percent)



Sources: Orbis; IMF staff calculations.

Panel B-Share of Firms with ICR<1.5

(percent)



Sources: Orbis; IMF staff calculations.

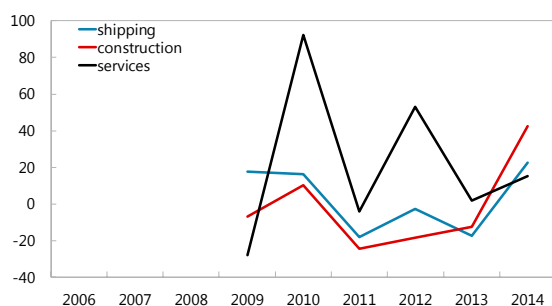
5. **Outside the manufacturing sector, construction, shipping, and services have also suffered deteriorating profitability and high corporate debt vulnerabilities.** This trend was partly reversed for construction in 2014 on the back of more active housing market, and for shipping as growth resumed from a low base. Note that since construction and shipping are debt-

² The counterfactual assumes that the BOK did not cut the policy interest rate from 3¼ percent in 2012 to 2 percent in 2014, corresponding to 60 percent higher interest costs, which would be fully passed on to the firms.

intensive industries (inherently have high leverage and low profit margins), we use an $ICR < 1$ definition of debt vulnerability for these industries.

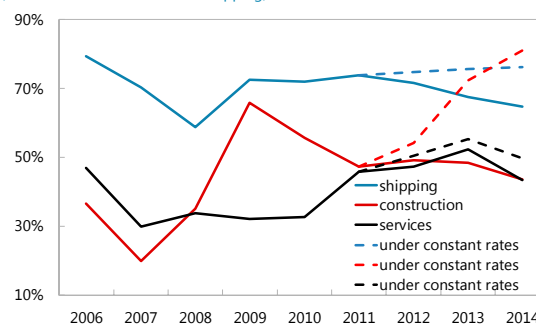
Earnings and debt vulnerability in shipping, construction, and services

Panel A-EBIT Growth in Shipping, Construction and Services
(percent)



Sources: World Economic Outlook, IMF; Orbis; EBIT data for 2006-2009 is insufficient to be representative.

Panel B-Share of Firms with $ICR < 1.5$
(or $ICR < 1$ for construction and shipping)



Sources: World Economic Outlook, IMF; Orbis; EBIT data for 2006-2009 is insufficient to be representative.

6. **The total estimated debt-at-risk and employment-at-risk in the Korean economy are shown in the figure below.** Based on the aggregation of the Orbis data, as of end-2014, total debt in vulnerable firms (with $ICR < 1.5$, or $ICR < 1$ in construction and shipping) was KRW 400 trillion, or 28 percent of GDP. Total employment in those firms was 1.8 million, or 6.5 percent of the labor force.

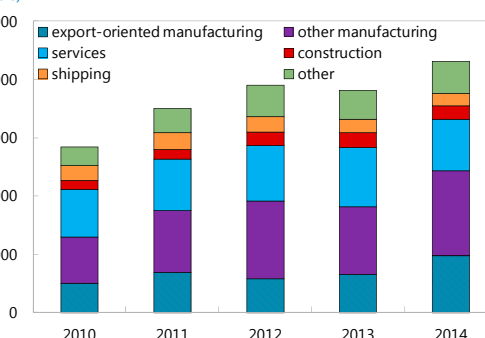
Volumes of debt and employment in low-ICR firms

Panel A-Debt-at-Risk
(in billions of Korean Won)



Sources: Orbis, IMF staff calculations.

Panel B-Employment-at-Risk
(Individuals)



Sources: Orbis, IMF staff calculations.

B. Stress-testing corporate debt

7. **Given anticipated slow medium-term global growth, corporate debt vulnerabilities are subject to downside risks.** To assess these risks, we consider the relationship between a set of global economic conditions variables and the earnings of Korean manufacturing firms. The specifications with the best explanatory power (as captured by R^2) link EBIT growth in Korean manufacturing with the change in the growth rate of global GDP, global trade, and China imports. The interpretation of this specification is that, in recent years, the EBIT of Korean firms tended to grow when global growth accelerated, and to decline when global growth decelerated. The regressions are time-series OLS for 2006–14, include a dummy for the 2006-10 period of high EBIT growth (not reported), and use yearly data on the aggregate EBIT of Korean firms.

8. **We find that since 2011, the EBIT of Korean manufacturing firms has on average declined by about 3.5 – 4.5 percent annually.** However, EBIT growth increased by 1.4 percent when global GDP growth accelerated by 1 percentage point (column 1), by 0.37 percent when global trade growth accelerated by 1 percentage point (column 2), and by 0.45 percent when China imports growth accelerated by 1 percentage point (column 3).

Explaining EBIT growth of Korean manufacturing firms

	(1)	(2)	(3)
Dependent variable: EBIT growth rate			
Change in the growth rate of global GDP	1.428 (1.469)		
Change in the growth rate of global trade		0.366 (0.409)	
Change in the growth rate of China imports			0.451 (0.488)
Constant	-4.917 (5.571)	-4.631 (5.686)	-3.799 (5.863)
Observations	8	8	8
R-squared	0.778	0.773	0.775
Standard errors in parentheses			

Source: WEO, Orbis, and staff calculations.

9. **We use these estimates to formulate medium-term stress-test scenarios for the earnings of Korean firms.** Note two caveats. First, the specification is not intended to capture steady-state relationships (for example, it predicts a permanently declining EBIT). In the long-term, the factors explaining the EBIT of Korean firms may change, for example, as the firms engage in corporate restructuring to respond to the challenges posed by persistently low global growth. Second, we focus on the central projections obtained in the regressions. Although statistical significance is low given a small number of observations, we believe that this does not undermine the usefulness of the results as a means to obtain first-order economic relationships and establish meaningful stress-test scenarios.

10. **We can now formulate two stress-test scenarios:**

- A mild/baseline scenario is based on WEO projections of modestly accelerating global growth. WEO (2016) projects that, between 2015 and 2018, global GDP growth will accelerate by 0.2 percentage points annually (from 2.4 to 3.0 percent), global trade growth will accelerate by 0.43 percentage points annually (from 2.0 to 4.1 percent), and China imports growth will accelerate by 0.38 percentage points annually (from 2.0 to 3.15 percent). If the past relationships established in the table above continue to hold, the WEO numbers imply that over the next three years, the EBIT of Korean firms may decline by about 10–15 percent (depending on the global factor considered). Note that, while this scenario corresponds to the central projections based on the regressions, actual EBIT realizations may be better, for example, in case Korean firms engage in debt and wider corporate restructuring.
- A severe stress-test scenario is one where WEO projections of modestly accelerating global growth are offset by a downturn in global conditions, similar to that which occurred in 2007–

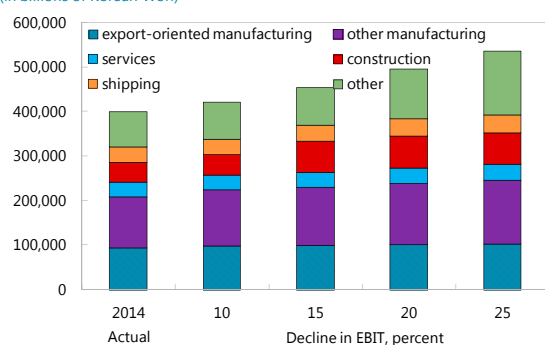
2009. Back then, global GDP growth decelerated by 5.9 percentage points (from 3.9 to negative 2.0 percent), global trade growth decelerated by 18.4 percentage points (from 8.0 to negative 10.4 percent), and China imports growth decelerated by 12.6 percentage points (from 14.8 to 2.2 percent). These shocks would imply an additional contraction of EBIT of 9.5 to 13.4 percent (depending on the global factor considered), and together with the baseline contraction of 10–15 percent would imply a total contraction of EBIT by about 20–25 percent.

11. **We find that, under a mild/baseline stress-test scenario, debt-at-risk can increase by 15 percent and employment-at-risk by 10 percent from 2014 levels.** Under a severe stress-test scenario, debt-at-risk would increase by 30 percent and employment-at-risk increase by 15 percent from 2014 levels. While these are meaningful increases, they do not appear dramatic. A concern, however, might be that the implications of corporate debt overhang for firm investment and employment decisions might become more acute in crisis times, should credit conditions tighten and the perceptions of the economic outlook become more pessimistic. The charts below illustrate the consequences of a contraction in EBIT by 10 and 15 percent (corresponding to the mild/baseline scenario range) and by 20 and 25 percent (corresponding to the severe stress-test scenario range) for debt-at-risk and employment-at-risk.

Stress-test results

Panel A-Debt-at-Risk

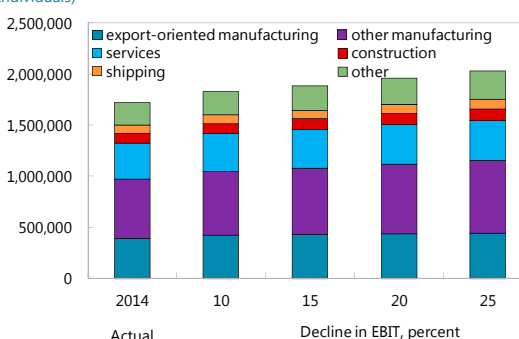
(in billions of Korean Won)



Sources: World Economic Outlook, IMF; Orbis.

Panel B-Employment-at-Risk

(Individuals)



Sources: World Economic Outlook, IMF; IMF staff calculations.

C. Benefits and costs of corporate debt restructuring

12. **To assess the economic benefits of corporate debt restructuring, we study the impact of corporate debt overhang on firms' investment and employment decisions.** The regressions consider how a low interest coverage ratio ($ICR < 1.5$) affects firms' fixed assets and employment growth rates. The firm-level panel regressions over 2006–2014 control for past revenue and EBIT growth (one or two lags, to capture firm-level business opportunities, similar to Tobin's Q), and year and industry fixed effects. We have also examined regressions that use ICR level rather than the $ICR < 1.5$ dummy to assess corporate debt vulnerability (not reported), and found that ICR level is economically insignificant in explaining investment and employment growth in all specification. This confirms our focus on $ICR < 1.5$ as a measure of corporate debt vulnerability. The results are shown below. The results are highly consistent across specifications, and for the full sample versus manufacturing firms only.

Debt overhang, investment, and employment

	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)
Dependent variable: fixed assets growth rate					Dependent variable: employment growth rate				
ICR<1.5	-0.0285*** (0.000691)	-0.0293*** (0.000853)	-0.0246*** (0.00102)	-0.0256*** (0.00123)	ICR<1.5	-0.0459*** (0.00117)	-0.0486*** (0.00138)	-0.0467*** (0.00170)	-0.0498*** (0.00196)
Sales growth	8.75e-08 (3.74e-07)	-1.58e-07 (3.80e-07)	4.88e-05*** (1.00e-05)	0.000532*** (9.15e-05)	Sales growth	-2.41e-07 (4.94e-07)	2.87e-08 (5.35e-07)	8.83e-05*** (2.00e-05)	0.000505*** (0.000142)
L.Sales growth		4.01e-05*** (1.29e-05)		8.33e-05*** (2.50e-05)	L.Sales growth		3.92e-05** (1.73e-05)		1.31e-05 (3.70e-05)
L2.Sales growth		1.03e-06 (7.12e-07)		1.40e-07 (6.47e-06)	L2.Sales growth		8.62e-07 (1.52e-06)		1.50e-05 (9.96e-06)
EBIT growth	1.04e-05*** (2.66e-06)	-7.57e-07 (6.75e-06)	1.16e-05*** (4.05e-06)	3.24e-05 (3.09e-05)	EBIT growth	8.08e-06** (3.94e-06)	2.34e-05 (1.72e-05)	1.51e-05*** (5.57e-06)	3.16e-05 (4.34e-05)
L.EBIT growth		6.18e-06* (3.70e-06)		7.18e-06* (3.94e-06)	L.EBIT growth		-5.12e-07 (4.02e-06)		-6.85e-07 (5.47e-06)
L2.EBIT growth		2.16e-06 (2.37e-06)		1.00e-06 (3.16e-06)	L2.EBIT growth		2.22e-06 (3.89e-06)		1.98e-06 (5.34e-06)
Constant	0.113*** (0.00115)	0.102*** (0.00122)	0.137*** (0.00360)	0.112*** (0.00423)	Constant	0.0965*** (0.00202)	0.0691*** (0.00192)	0.121*** (0.00594)	0.0935*** (0.00667)
Manufacturing only	N	N	Y	Y	Manufacturing only	N	N	Y	Y
Observations	528,584	326,815	226,808	143,079	Observations	363,385	247,603	155,815	106,576
R-squared	0.005	0.005	0.006	0.007	R-squared	0.006	0.006	0.006	0.008
Standard errors in parentheses					Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1					*** p<0.01, ** p<0.05, * p<0.1				

13. **We find that firms with ICR<1.5 have lower growth rates for both fixed assets and employment (by 2.5-3 and 4.5-5 percentage points, respectively).** These elasticities enable us to assess the positive impact of corporate debt restructuring:

- At end-2014, fixed assets in at-risk firms were KRW 670 trillion, or 47.5 percent of GDP. Assuming that half of the firms undergo debt restructuring that removes the debt overhang, investment by those firms may increase by 0.6–0.7 percent of GDP.
- Similarly, employment in at-risk firms was 1.8 million. Assuming that half of the firms undergo debt restructuring that removes the debt overhang, hiring by those firms may increase by 45,000 per year, effecting an annual reduction in the unemployment rate of 0.15-0.17 percentage points.

14. **To assess the costs of corporate debt restructuring, we calculate the costs of resolving vulnerable firms.** We assume that half of the vulnerable firms will need to be restructured,³ and that a restructuring entails a 40 percent loss given default for the firm's creditors (consistent with a low end of the range for loss-given-default estimates for loan recoveries in the U.S.—see Shibut and Singer, 2015). We find that the total cost of corporate debt restructuring may be about 6 percent GDP in the baseline, and up to 8 percent GDP in the severe scenario. (Note that this does *not* imply the fiscal cost, as part of the costs of restructuring can be absorbed in bank capital and provisions, as well as by the existing bondholders.)

³ This assumption is consistent with our calculation (not reported) that about half of such firms had a low ICR for three consecutive years—thus, their vulnerability is persistent, indicating a low likelihood that these firms will be able to grow independently or restructure themselves out of a low ICR. A lower scale of corporate restructuring will decrease the costs and the benefits of corporate debt restructuring in the same proportion.

Cost of Corporate Debt Restructuring by Industry

(in billions of Korean Won)



Sources: World Economic Outlook, IMF; Orbis.

15. **The key qualitative result of the exercise is that corporate debt restructuring “pays off” in the medium-term, from society’s perspective.** The quantitative estimates hinge on a set of assumptions that, although being reasonable first approximations, can be refined to better reflect the specific circumstances and industry conditions. But the key qualitative result will remain—viz., when the social benefits and costs of debt restructuring are considered jointly, it becomes apparent that the economic costs of debt restructuring are fully offset in the medium term by more rapid output growth and higher hiring.⁴ In short, corporate restructurings pay off.

References

Chivakul, Mali and W. Raphael Lam, 2015, “Assessing China’s Corporate Sector Vulnerabilities,” IMF Working Paper 15/72 (Washington: International Monetary Fund).

International Monetary Fund, 2016, *World Economic Outlook, April 2016* (Washington).

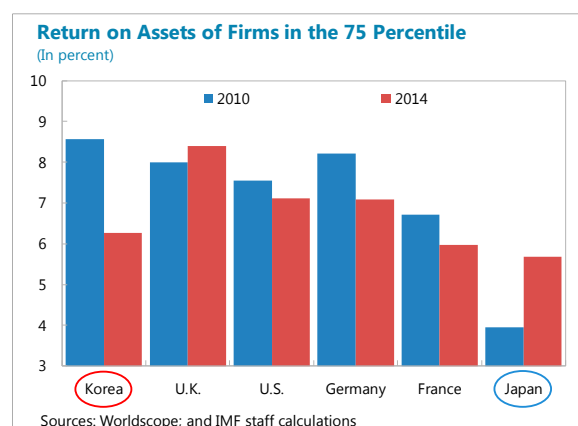
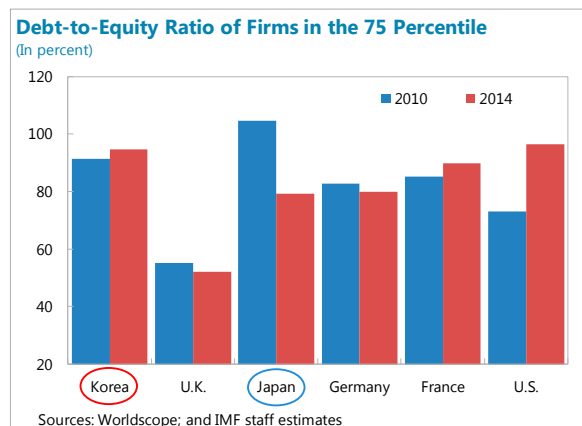
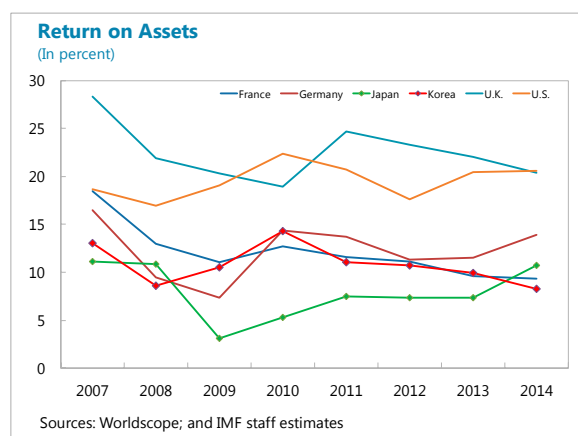
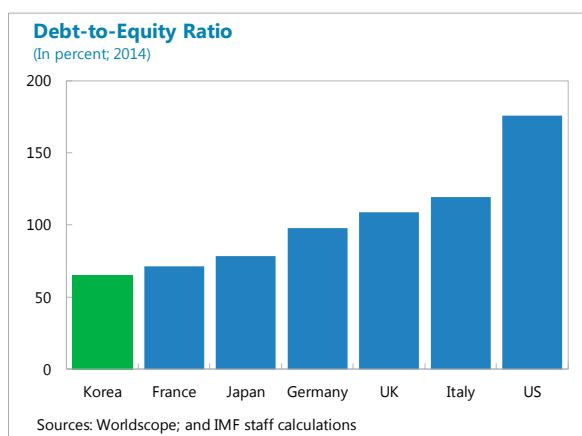
Shibut, Lynn, and Ryan Singer, 2015, “Loss Given Default for Commercial Loans at Failed Banks,” FDIC CFR Working Paper 2015–06.

⁴ These social benefits, however, may not be internalized by creditors or corporates.

Annex VIII. Corporate Restructuring and its Macro Effects¹

This annex highlights issues in Korea's corporate sector, the need for restructuring, and the authorities' initiatives and challenges. It then identifies lessons from other countries' experience and conducts an econometric analysis based on cross-country aggregate data that establishes that restructuring episodes, while sometimes challenging in the short run, have typically been associated with more rapid economic growth afterward.

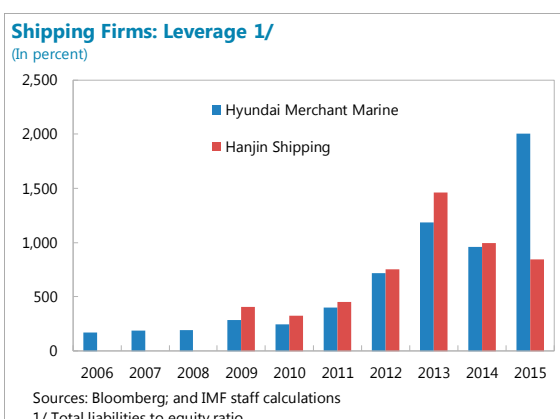
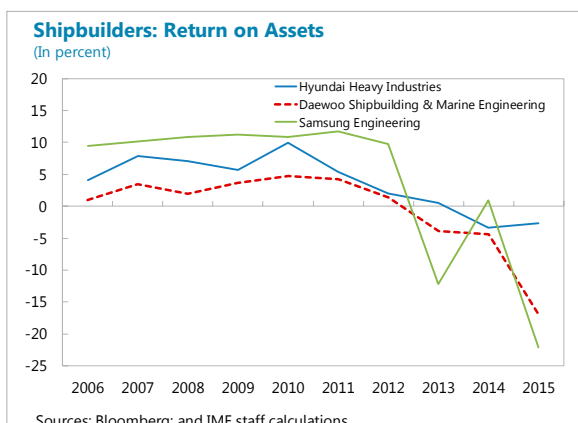
1. The corporate sector in aggregate appears to be healthy, but pockets of vulnerabilities have arisen. Overall corporate leverage remains relatively low. Profitability, however, has fallen since 2010, in contrast with other advanced economies where profitability remains stable or has improved. Rising vulnerability has been more pronounced in weaker segments of corporates. Weaker firms have become more leveraged, while their profits have declined sharply. This is in contrast with Japanese firms, which saw a recovery in profitability and a reduction in leverage since 2010.



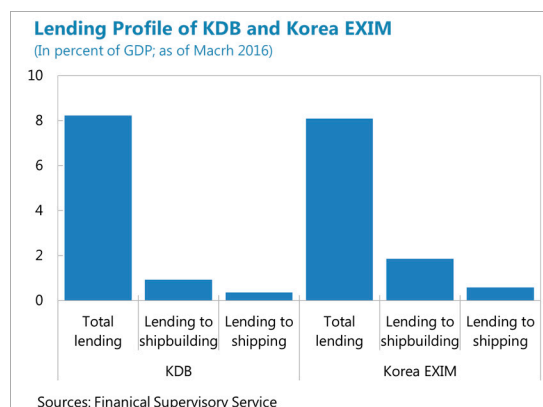
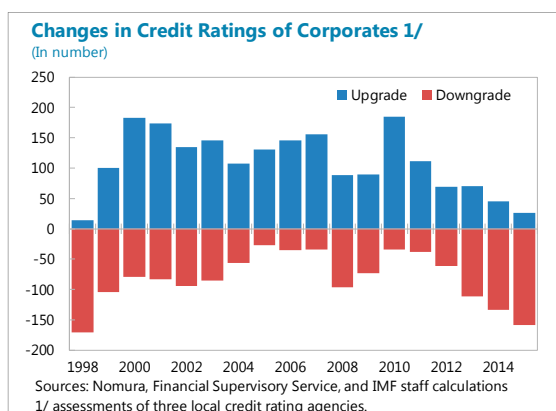
2. Corporate performance has been under particular pressure in a few industries. The shipbuilding, shipping, petrochemical, steel, and construction industries have been severely affected by slowing global trade, competition from Chinese firms, and global overcapacity. Some of the

¹ Prepared by Jongsoon Shin.

largest corporates in the shipbuilding and shipping sectors have recently posted their worst performances, with record losses, plummeting revenues, elevated leverage, and a liquidity squeeze.



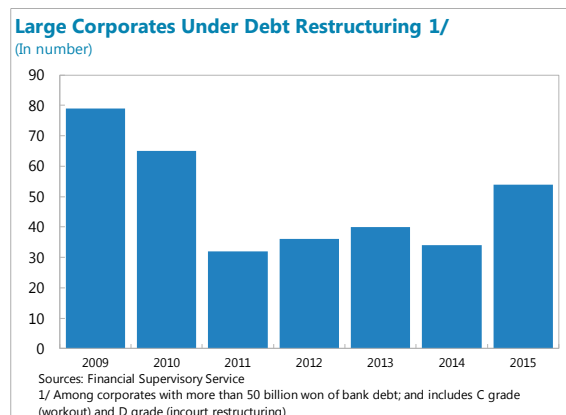
3. **While credit risks have risen, policy banks have large exposure to the vulnerable sectors.** Against the backdrop of weakening performance, most of the firms' credit ratings have been downgraded, suggesting a rising credit risk to the banking sector. Banks' credit exposure to shipbuilding and shipping firms is large. The policy banks Korea EXIM and KDB, in particular, have, as of March 2016, lent KRW 38 trillion (2¼ percent of GDP) and KRW 20 trillion (1¼ percent of GDP), respectively, to these sectors. They are now facing potential loan losses, which could affect their capital position and policy lending capacity. As described in the main text, the authorities have made arrangements for policy bank recapitalization.



4. **At the same time, the government has formed a 3-track restructuring strategy, based on urgency and risk, aiming to focus on key risks and facilitate industry-wide restructuring.**

- **Track 1** is to deliver industry-wide restructuring in cyclically sensitive industries—the shipbuilding and shipping industries. As the policy banks are the main creditors, the public sector is naturally closely involved in Track 1 restructuring. The main creditor banks have encouraged debt-distressed firms to come up with a comprehensive revitalization plan. The three major shipbuilding firms, as a result, revealed revitalization plans, including the sale of non-core assets, business reorganization, and downsizing, amounting to KRW 10.3 trillion (0.7 percent of GDP). The major shipping firms have also reached a debt reduction agreement with creditors or negotiated charter fees.

- **Track 2** is to restructure individual weak firms, rather than an industry itself, through banks' regular credit assessment under supervision of financial supervisors. Based on the Corporate Restructuring Act, banks assess credit risk and reach an agreement with vulnerable debtors on financial restructuring, possibly through workout or rehabilitation programs. Against this backdrop, the number of corporates under debt restructuring rose to 229 as of end-2015 (including 54 large corporations), from 159 firms in 2014.

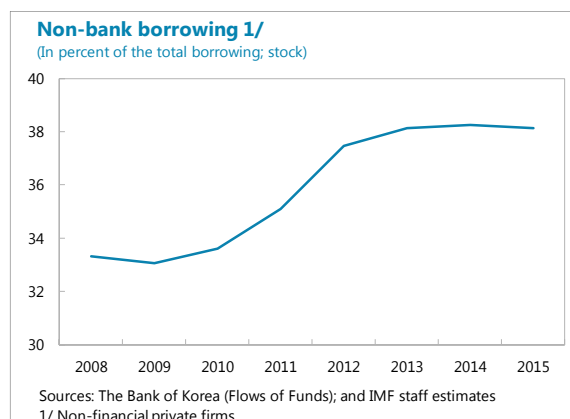
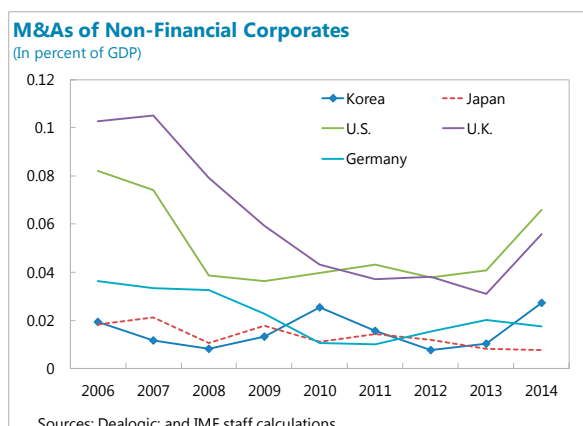


- **Track 3** is to pursue preemptive industry restructuring through mergers and acquisitions (M&A), downsizing, or business line exchanges, to address overcapacity problems, such as in the petrochemical or steel industries. This will be led by the industry itself, especially industry associations. The Corporate Vitality Enhancement Act (also known as the "One-Shot Law"), effective August 2016, should facilitate M&A and restructuring through streamlined legal procedures for M&A, spinoffs, and equity transfers, as well as tax incentives (e.g., deferral of capital gains tax from equity transfers, and installment payments of transfer gains tax).

5. **While Korea is well placed to address corporate vulnerabilities thanks to a strong institutional environment, progress has been slower than desired.** Korea has a good track record of corporate restructuring in the past and has further improved its restructuring framework. Despite worsening corporate conditions since 2011, however, restructuring efforts have started to take place only rather recently. Changing global market conditions have raised questions about the prospects for certain sectors and Korea's appropriate positioning in them, and against that background, corporate restructuring has been extremely difficult. Banks tended to delay loan restructuring on account of the highly uncertain industry outlook and fear of substantial loss realization. There has been a concern as to the negative effect on employment and regional economies as well as potential difficulties for major firms. Notwithstanding the progress already made in the corporate restructuring framework, some further areas for institutional improvements—drawing on the international experience—include:

- **A larger role for capital markets in normal times.** In many countries, restructuring tends to be delayed in normal times until the realization of debt distress and heavily relies on legal, institutional arrangements. This often requires large-scale government intervention and tax payers' money, resulting in larger costs. The role of private equity funds is limited, as their small size is insufficient to take over large firms. M&A activity has been traditionally low, despite a recent pickup, and the non-performing-loans market remains underdeveloped.
- **Strengthening the out-of-court restructuring framework.** While firms have growingly tapped into market funding such as bonds and commercial paper, the out-of-court restructuring framework hinges on the role of the main creditor banks. Uncertainty arises, therefore, regarding a loss sharing between bank creditors and non-bank creditors, as banks have less incentive to initiate debt restructuring and bear the brunt of restructuring (Cho, 2013). In this sense, Korea's revised Corporate Restructuring Promotion Act, which came into

effect in March 2016, will help address some of these problems, by extending the coverage of creditors to all the creditors including bond creditors and offshore financial institutions, and strengthening the role of the main creditor banks through a right to request other creditors to freeze the exercise of creditor rights.



6. Building on the recent progress in the corporate restructuring framework, Korea could also benefit from international experience with corporate restructuring, including:

- **Swift, timely restructuring** is crucial to reduce uncertainty (Japan): The financial supervisory authorities should play an important role to encourage banks to carry out loan restructuring, including through debt-equity swaps (Inoue, 2008).
- **Clear guidelines** (U.K.): Clear guidelines that facilitate a collective process for workouts (e.g., the so-called London Approach) could be extended to non-financial creditors.
- **Market infrastructure** (U.S.): To facilitate corporate restructuring in normal times, the important factors are the role of transparent, reliable disclosure of firms' business and financial conditions, and deepening of the financial markets (i.e., M&A, or buyout funds).

7. Empirical analysis suggests some positive impacts of corporate restructuring on growth:

- **Model specification:** Panel fixed effects models for 33 advanced economies from 1992–2012 were run. The model estimates effects of a reduction in debt-to-equity (D/E), and corporate restructuring period (DUM_{CDR}) on growth. The corporate restructuring dummy (DUM_{CDR}) is defined as a more than 12 percent decline (y/y) in D/E of 75th percentile firms in a given year, which is in line with corporate restructuring episodes in the countries in the panel. Financial channel effects are estimated via an interaction term (DUM_{CDR} × FID (Financial Institution Depth)). The model also estimates effects of M&A on growth. The model is as follows:

$$Y_{i,t} - Y_{i,t-1} = \beta_1 + \beta_2 Y_{i,t-1} + \beta_3 D/E_{i,t-1} + \gamma_1 DUM_{BCi,t-1} + \gamma_2 DUM_{CDRi,t-1} + \gamma_3 DUM_{CDRi,t-1} \times FID_{i,t-1} + \delta_t M\&A/GDP_{i,t-1} + \varepsilon_1 X_{i,t-1} + \varepsilon_t + \theta_i + \mu_{i,t}$$

where t denotes a year; i denotes a country; Y denotes the logarithm of purchasing-power-parity (PPP) per capita GDP; DUM_{BC} denotes a banking crisis dummy (Laeven and others, 2008); FID denotes financial institution development indicators (Svirydzenka, 2016); $X_{i,t-1}$ is a

vector of fiscal factors such as government debt and the fiscal deficit; ϵ_t is the time-specific fixed effect; θ_i is the country-specific fixed effect; and $\mu_{i,t}$ is an unobservable error term.

- **The main results suggest the following:**
 - Corporate debt restructuring could have some positive effects on growth with a lag of one year (Panel 1). The main channel is likely through a rise in investment and capital productivity, given their positive correlation with the corporate debt restructuring dummy.
 - However, negative spillovers via financial channels could partly offset the positive impact of debt restructuring (the interaction term). This is possibly because tighter lending conditions and a rise in NPLs could cause deleveraging of banks.
 - M&A could have a positive effect on growth with a lag of two years (Panel 2). The lagged time effect is likely because the synergy of M&A takes time to be realized given integration tasks of different organizations, people, and culture.

Impacts of corporate restructuring		
	Panel 1: Per capita real GDP growth _t	Panel 2: Per capita real GDP growth _{t+1}
Lagged initial PPP per capita GDP	-0.08*** (0.000)	-0.08*** (0.000)
Lagged banking crisis dummy	-0.013*** (0.000)	-0.011*** (0.001)
Lagged Debt-to-equity	-0.005*** (0.002)	-0.0002 (0.909)
Lagged Corporate restructuring dummy	0.02*** (0.002)	0.0009 (0.716)
Lagged corporate restructuring dummy*financial institutions development	-0.025** (0.01)	
Lagged government gross debt	-0.007 (0.375)	-0.006 (0.508)
Lagged government fiscal balance	-0.03 (0.400)	-0.042 (0.262)
Lagged M&A to GDP 1/		0.004*** (0.008)
Constant	0.858*** (0.000)	0.856*** (0.000)
Sample size	551	452
R-sq	0.60	0.66

Note: Unbalanced country panel fixed effects models for 33 advance economies, with robust standard errors clustered by country in parentheses.

Significance at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

1/ Data exist from 1995

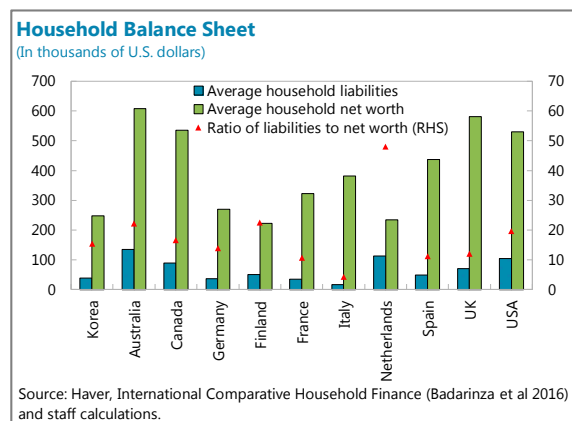
References

- Cho, Hangrae, and Sangjin Park, 2013, *"Giupgujojochung jedo hyunhyung mit gaesun banghyang."* Woori Finance Research Institute.
- Huang, Jiang-Chuan, and Chin-Sheng Huang, 2011, "The Effects of Bank Relationships on Firm Private Debt Restructuring: Evidence from an Emerging Market," *Research in International Business and Finance*.
- Inoue, Kotaro, Hideaki K. Kato, and Marc Bremer, 2008, "Corporate Restructuring in Japan: Who Monitors the Monitor?" *Journal of Banking & Finance*.
- Korea Institute of Finance and Ehwa Women's University Bankruptcy Law Center, 2014, *"Giupgujojochungchokjinbup Sangsibupjeihwa bangan."*
- Kumar, Manmohan S. and Jaejoon Woo, 2010, "Public Debt and Growth," IMF Working Paper No. 10/174 (Washington: International Monetary Fund).
- Laeven, Luc and Fabian Valencia, 2008, "Systemic Banking Crises: A New Database," IMF Working Paper No. 08/224 (Washington: International Monetary Fund).
- Laryea, Thomas, 2010, "Approaches to Corporate Debt Restructuring in the Wake of Financial Crises," IMF Staff Position Note SPN/10/02.
- Stone, Mark R., 2002, *Corporate Sector Restructuring: The Role of Government in Times of Crisis*, IMF Economic Issues No. 31 (Washington: International Monetary Fund).
- Svirydzenka, Katsiaryna, 2016, "Introducing a New Broad-based Index of Financial Developments," IMF Working Paper No. 16/5 (Washington: International Monetary Fund).
- The Korean Government, June 2016, *"Sanup, Giup Gujojojung chujingyeheok mit gukchaekunhang jabonwhakchung dung bowanbangan."*

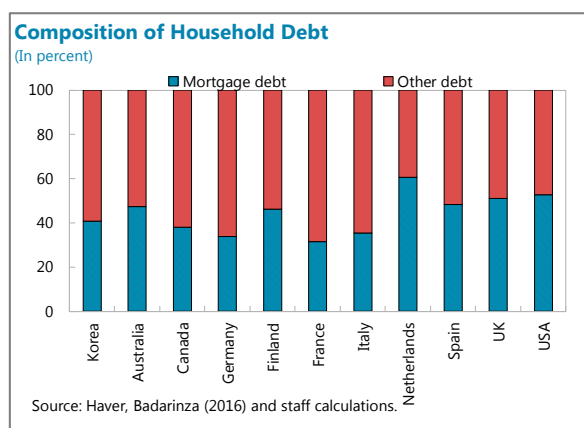
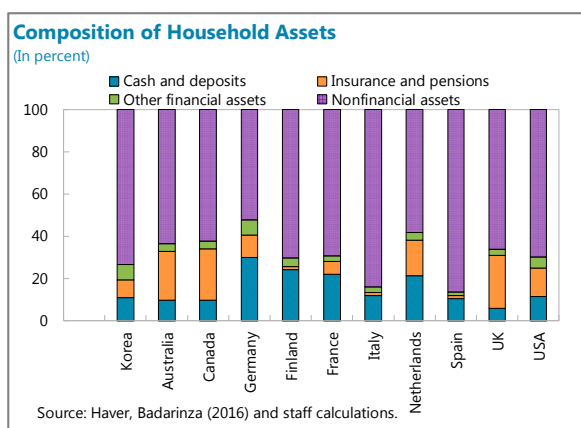
Annex IX. Household Debt¹

This annex examines the rise of household debt in Korea and shows that the principal drivers have been structural factors—e.g., demographics, the unique chonsegi rental system, the structure of the mortgage market, and the large nonbank financial sector—rather than increased borrowing for consumption. The annex also presents an econometric analysis showing that a 1 percentage point increase in household debt leads to lower consumption by 6 basis points (without any threshold effects).

1. **Household debt in Korea is high and has kept rising for many years.** For much of the last decade, rising debt was a natural result of rising house prices. Unlike in many other advanced economies where sharply deflated house prices in the aftermath of the global financial crisis left households with heavy debt burdens, highlighting the need to deleverage, Korea's relatively contained housing cycle had limited impact on household net worth. As Korea's current house prices do not appear to be overvalued by the standard affordability measures, the risks of a sharp real estate price correction (and a subsequent household balance sheet recession) should be small.



2. **Household survey data indicate that household leverage (measured as debt to net worth ratio) in Korea is around 15 percent, comparable to other OECD countries (chart).** The distribution of household assets and liabilities by product in Korea is also comparable to those in other advanced economies. On the asset side of the household balance sheet, nonfinancial assets account for 74 percent of total household assets in Korea, compared to 68 percent of the average of the countries included in chart 2. On liabilities, mortgage debt accounts for 41 percent of Korea's total household liabilities, slightly below the average of 45 percent of the comparator countries (chart).

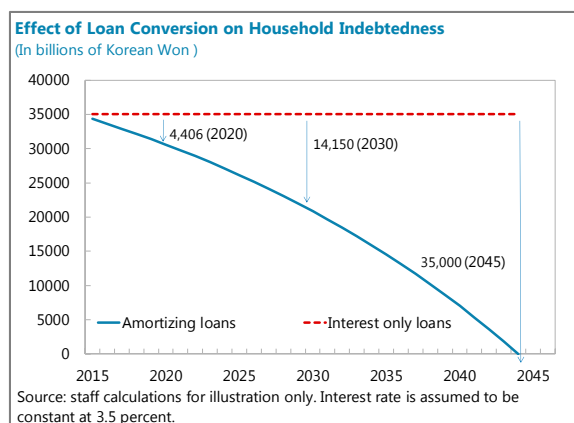


¹ Prepared by Ding Ding.

3. **Besides rising house prices, several structural factors unique to Korea also contribute to the accumulation of household debt.** Demographic changes are one driver—the large baby-boom generation (born between 1955 and 1963) is retiring. Household survey data indicate that the average Korean household starts to reduce debt after the age of 58 (BOK 2015), whereas in the United States, average household debt peaks in the 31–40 age cohort (Garriga 2014). This is related to the fact that retirees in Korea often take loans to purchase small businesses to compensate for the relatively low pension income. To the extent that this borrowing is largely for income-generating investments, this may be viewed as an increase in debt, but not an increase in leverage. However, the elderly as a group have a high relative poverty rate of nearly 50 percent (versus 16 percent nationwide), a high concentration of debt in bullet loans and nonbank loans, and a disproportionately high share of assets in real estate, making them particularly vulnerable to shocks.
4. **A second driver of rising household debt is the fact that the prices of Korea's *chonsei* rentals has been increasing.** (The *chonsei* rental allows the tenant to loan the deposit—a large share of the property's value, often borrowed from a bank—interest free to the landlord and lives rent-free.) The ratio of the *chonsei* lease price to house sales price rose from 52 percent in 2009 to 74 percent in November 2015, the highest since these statistics was compiled (BOK 2015).² It is estimated that total rental deposits reached 530 trillion won as of June 2014, including 90 trillion regular monthly rental deposits (53 percent of the tenants) and 440 trillion *chonsei* deposits (47 percent of the tenants), with the latter as large as 40 percent of total household financial liabilities. Although the *chonsei* deposits (liabilities incurred by landlords to tenants) are treated as transactions among households and excluded from the official household financial liabilities data, it is possible that the rising *chonsei* prices have contributed to higher borrowing by tenants to pay for the deposits.
5. **A third driver is Korea's unique mortgage market.** Reflecting Korea's relatively young mortgage market, a large share of houses are financed by short-term interest-only loans, allowing households to accumulate equity in other types of assets instead of paying down mortgage principal. Cross-country experience suggests that an increasing share of interest-only loans in mortgage markets may contribute to rising household debt and house prices; households tend to accumulate equity more slowly with interest-only mortgages while present-biased mortgage borrowers are more likely to extract home equity when they refinance mortgages (Campbell 2012 and Scanlon et al. 2010). The share of variable-rate loans in Korea's mortgage market is also high in international comparison (Lea 2010). Although variable rate loans have the advantage that lowering interest rates can reduce defaults when house price declines prevent mortgage borrowers from refinancing, they could also make households more susceptible to positive interest rate shocks.
6. **Recognizing the risks associated with the structure of the mortgage market, the authorities recently implemented a loan conversion program,** aiming to increase the share of fixed-rate, amortizing loans from less than 25 percent in 2014 to 42.5–50 percent by 2017. The average remaining maturity of bank home mortgage loans has lengthened rapidly, from 11.6 years at the end of 2010 to 17.5 years as of September 2015. Although the program is a welcome step toward a more stable, long term structure of the mortgage market, it has also encouraged the shift

² Rising *chonsei* prices may be a result of landlords' expectations of diminished capital gains on housing.

from chonseil rentals to outright housing purchases and bolstered demand for mortgage refinancing. On the other hand, an increase in the share of amortizing loans from 35 percent in 2015 to 50 percent in 2017 should increase amortizing mortgage by about 47 trillion won. Although the initial impact on household debt is small, as households build up equity through amortization, their debt will decline more substantially over time (chart).



7. **A fourth driver is the sharp increase in the household borrowing via the non-banking financial institutions (NBFIs).** Korea's macroprudential measures, adopted in the first half of the 2000s, have helped mitigate risks to the banking sector; however, they have also contributed to an increase of lending via the non-banking financial institutions. Growth in household loans via NBFIs has outstripped that of the banking sector for much of the time since 2011. As of 2015, NBFIs accounted for about half of household lending. The risks of non-bank lending are related to the less regulated nature of these institutions, and their tendency to tap less creditworthy borrowers unable to access bank funding due to tighter regulatory requirements. From a cross-country perspective, NBFIs lending is also high in Korea compared to that in Japan, Euro area and the United Kingdom (IMF 2014a).

8. **Finally, macroprudential policies are relatively loose in Korea.** Both the loan-to-value ratio (LTV, currently at 70 percent) and the debt-to-income ratio (DTI, currently at 60 percent) are relatively high by international standards (IMF 2014b). Moreover, the DTI ratio only applies to mortgage debt, unlike in countries such as the United Arab Emirates and Canada where caps on DSI ratios were imposed on a borrower's total outstanding household debt rather than on mortgage loans only.

9. **In addition to these unique structural factors, the increase in household debt also reflects household expectations of future income, asset prices, etc.** Although it is not straightforward to find the optimal nexus of consumption and household leverage, empirical studies such as Cecchetti et al (2011) suggest that for the OECD countries, household debt can become a drag on growth. A similar exercise by staff also found a negative correlation between household debt and private consumption. The model is specified as follows:

$$\Delta C_{it} = \alpha + \beta_1 \Delta HD_{it-1} + \beta_2 g_{it-1} + \beta_3 \Delta C_{it-1} + \beta_4 r_{it-1} + \beta_5 hp_{it-1} + \beta_6 sp_{it-1} + \varepsilon_{it}$$

10. **The dependent variable C_{it} is the final consumption as a percent of GDP of country i at time t . The debt variable HD_{it-1} is proxied by household debt as a percent of GDP.** The control variables also include the lagged real GDP growth and the lagged long-term real interest rate to capture the overall economic activities that could translate to the change in disposable income as well as the terms of borrowing. The lagged indices for house price (hp_{it-1}) and stock price (sp_{it-1}) are included as additional control variables as proxies of household assets values, which will affect household's consumption via the wealth effect and the borrowing capacity. Finally, first differencing consumption and household debt removes the trend.

11. **The GMM two-step system dynamic panel model is used for estimation.** The empirical results confirm the negative sensitivity of household consumption to household debt. *The cross-country regressions reveal that a 1 percentage point increase in household debt as a share of GDP in the previous period would translate into a 6 basis points reduction in household consumption as a share of GDP in the next period.* This is comparable to other estimates in the literature—Calomiris *et al.* (2012), for instance, find a housing wealth effect on consumption of between 5 and 8 cents on the dollar. The regressions do not show significant threshold effects of household debt on private consumption (as opposed to some BOK findings, using micro-level data, which suggested that debt would dampen consumption only once it exceeded a certain level).³

	No Asset Prices	With Asset Prices
Lagged change in consumption to GDP	0.11 (0.07)	0.18*** (0.04)
Lagged change in household debt to GDP	-0.06*** (0.02)	-0.06** (0.03)
Lagged real GDP growth	0.001 (0.03)	0.05*** (0.02)
Lagged real long term interest rate	-0.06*** (0.02)	-0.06** (0.03)
Lagged house price		0.01*** (0.002)
Lagged stock price		-0.0004 (0.0004)
Constant	0.34*** (0.07)	-0.25 (0.28)
Obs.	746	516
Countries	34	29
AR(1)	-3.06**	-2.58**
AR(2)	-1.26	-0.86
Hansen test	32.55	23.78

³ Cecchetti *et al.* (2011) also did not find precise threshold effects for household debt on growth, although such thresholds were found for government debt (about 85 percent of GDP) and corporate debt (about 90 percent).

References

- Bank of Korea, 2015, Financial Stability Report, December 2015.
- Badarinza, Cristian, John Campbell, and Tarun Ramadorai, 2016, "International Comparative Household Finance," NBER Working Paper 22066.
- Campbell, John, 2012, "Mortgage Market Design," *Review of Finance* 2012, 17: 1–33.
- Calomiris, Charles W., Stanley D. Longhofer, and William Miles, 2012, "The Housing Wealth Effect: The Crucial Roles of Demographics, Wealth Distribution, and Wealth Shares," NBER Working Paper #17740.
- Cecchetti, Stephen, M. S. Mohanty, and Fabrizio Zampolli, 2011, "The Real Effects of Debt," BIS Working Paper No. 352.
- Garriga, Carlos, Bryan Noeth, and Don Schlagenhauf, 2014, "Household Debt in America: A Look Across Generations Over Time," Federal Reserve Bank of St. Louis.
- IMF 2014a, "Global Financial Stability Report," October 2014.
- IMF 2014b, "Staff Guidance Note on Macroprudential Policy."
- Lea, Michael, 2010, "International Comparison of Mortgage Product Offerings," Research Institute of Housing America.
- Scanlon, Kathleen, Jens Lunde, and Christine Whitehead, 2010, "Mortgage Product Innovation in Advanced Economies: More Choice, More Risk," LSE Research Online: December 2010.



REPUBLIC OF KOREA

STAFF REPORT FOR THE 2016 ARTICLE IV CONSULTATION—INFORMATIONAL ANNEX

July 14, 2016

Prepared By

Asia and Pacific Department

CONTENTS

FUND RELATIONS	2
STATISTICAL ISSUES	5

FUND RELATIONS

(As of May 31, 2016)

Membership Status: Joined August 26, 1955; Article VIII

General Resources Account

	SDR Million	Percent Quota
Quota	8,582.70	100.00
Fund holdings of currency (exchange rate)	7,889.21	91.92
Reserve tranche position	693.49	8.08
Lending to the Fund		
New arrangements to borrow	591.45	

SDR Department

	SDR Million	Percent Allocation
Net cumulative allocation	2,404.45	100.00
Holdings	1,815.99	75.53

Outstanding Purchases and Loans

None

Financial Arrangements (In SDR Million)

Type	Arrangement	Date of Expiration Date	Amount Approved	Amount Drawn
Stand-by	Dec. 04, 1997	Dec. 03, 2000	15,500.00	14,412.50
Of which SRF	Dec. 18, 1997	Dec. 17, 1998	9,950.00	9,950.00
Stand-by	Jul. 12, 1985	Mar. 10, 1987	280.00	160.00
Stand-by	Jul. 08, 1983	Mar. 31, 1985	575.78	575.78

Projected Obligations to Fund¹

(SDR Million; based on existing use of resources and present holdings of SDRs)

	Forthcoming				
	2016	2017	2018	2019	2020
Principal	0.0	0.0	0.0	0.0	0.0
Charges/interest	0.15	0.38	0.38	0.38	0.38
Total	0.15	0.38	0.38	0.38	0.38

Exchange Rate Arrangement:

¹ When a number has overdue financial obligations outstanding for more than three months, the amount of arrears will be shown in this section.

Korea's exchange rate system has been classified as "floating" since 2009. Over 1997–2008, the exchange rate was classified as "free floating" ("independently floating" under the older classification system). Korea maintains exchange restrictions for security reasons, in accordance with UN Security Council Resolutions, which have been notified to the Fund under the procedures set forth in Executive Board Decision 144 (52/51).

FSAP and ROSC Participation:

An FSAP update, requested by the authorities, was conducted in April and July 2013. The missions included an assessment of various financial sector standards; the soundness of the financial sector, including vulnerability to macroeconomic shocks; and the crisis preparedness and management framework of Korea. The Financial System Stability Assessment (FSSA) report for the 2013 assessment has been published (Country Report No. 14/126) and is available on the web at: <http://www.imf.org/external/pubs/cat/longres.aspx?sk=41569.0>

FAD: Discussions on fiscal transparency were held in Seoul during June 2000, and a report was drafted and finalized in November 2000, with input from APD staff. The report has been published and is available on the web through the following link: <http://www.imf.org/external/np/rosc/kor/fiscal.htm>.

STA: Discussions on Korea's data dissemination practices against the IMF's Special Data Dissemination Standard (SDDS) were held in Seoul during December 2009, and a Report on the Observance of Standards and Codes (ROSC) was drafted and finalized in July 2010. The report has been published and is available on the web through the link: <http://www.imf.org/external/pubs/ft/scr/2010/cr10229.pdf>

Technical Assistance:

FAD: A technical assistance mission on government finance statistics took place in Seoul during the period November 8–19, 2010. A mission visited Seoul during August 31–September 16, 2005 to provide technical assistance on the reform of tax policy and administration. A technical assistance mission visited Seoul during January 8–19, 2001 to evaluate current practices in budgeting and public expenditure management and to provide advice on setting up a medium-term fiscal framework.

MCM: Technical assistance missions visited Seoul to provide advice on financial holding company supervision and derivatives regulation during December 8–17, 2008, on measures to deepen the money market during December 4–14, 2007, on strengthening the debt management function and further development of the government securities market during September 20–October 2, 2006, on the reform and development of the foreign exchange market during March 30–April 13, 2006, and on macroprudential and derivatives supervision during October 27–November 7, 2005.

STA: Technical assistance missions visited Seoul during March 29–April 12, 2000 to provide advice on balance of payments and external debt statistics, with a view toward improving the recording of financial derivatives and developing an international investment position statement, and during November 28–December 11, 2007 on the GFSM 2001 framework. Two missions to support reforms related to government finance statistics visited Korea during November 28–December 11, 2007 and November 8–19, 2010, respectively.

Resident Representative:

The resident representative office in Seoul was opened in March 1998 and was closed in September 2008.

STATISTICAL ISSUES

As of June 17, 2016

I. Assessment of Data Adequacy for Surveillance
<p>General: Data provision is adequate for surveillance.</p>
<p>National Accounts: The overall structure of the national accounts follows the recommendations of the 2008 <i>System of National Accounts</i>. Chain-linked (reference year 2010) and nominal GDP estimates are compiled using the production and expenditure approaches; nominal GDP estimates are also compiled using the income approach. The estimation method for expenditure components, which had used the commodity flow method before the revision to reference year 2005, adopted the direct estimation method, in which each expenditure component is measured directly. The size of the informal sector has not been measured.</p>
<p>Consumer Price Index: The Consumer Price Index (CPI) covers 92.9 percent of total households of Korea; it excludes farming and fishing households. The geographical coverage, which includes 37 urban areas, should be extended to rural areas. The consumption basket is updated every five years with a plan to move to a three-year update cycle; currently, expenditure weights are derived from the 2010 <i>Household Income and Expenditure Survey</i>. The new CPI index adopts both geometric means and the ratio of arithmetic means. The geometrics means should be used for all unweighted aggregation. The missing prices of products, except for the seasonal items, are imputed by the price movements of similar products of the same item in the same geographic area. However, the CPI could be improved further by imputing missing prices of the seasonal items rather than carrying forward the last reported prices.</p>
<p>Producer Price Index: The Producer Price Index (PPI) covers all domestic industrial activities and a large segment of service activity. It excludes exported products, however, because the Export Price Indexes are compiled separately in Korea. The rebased PPI (2010 = 100) employs 2008 SNA concepts and definitions for the record and valuation of the prices and weights. The PPI could be improved by making more use of imputing missing prices using the prices of similar commodities, rather than carrying forward the last reported price. Mostly, the simple geometric average and the weighted geometric average are employed in the elementary level index compilation. But in some, the indices are computed by the weighted arithmetic average. Nevertheless, the headline PPI should be changed to the one based on a geometric mean at the elementary level. The PPI classification by activity conforms to the KSIC, which is itself based on the International Standard Industrial Classification (ISIC)—with slight modifications only to reflect local considerations. The Korean commodity classification used for the PPI does not conform to the Central Product Classification (CPC) and one based on the CPC should be adopted as soon as possible.</p>
<p>Government Finance Statistics: Two sets of government finance statistics (GFS) are compiled for the central government, one using national definitions and the other using internationally recognized standards based on <i>GFSM 2001</i>. The Korean authorities resumed reporting consolidated GFS data on the general government for publication in the 2015 <i>Government Finance Statistics Yearbook (GFSY)</i> which include general government operations and a full balance sheet. The general government data</p>

are compiled with significant lags (the latest available data are for 2014), mainly due to the lack in timely source data for the local governments. While high frequency data for central government operations are disseminated under the SDDS, these data are not yet reported for inclusion in the *International Financial Statistics (IFS)*.

Financial Sector Data: Monetary and financial statistics (MFS) compiled by the Bank of Korea (BOK) broadly follow the IMF's *Monetary and Financial Statistical Manual*. Both liabilities and assets in foreign currencies are converted into Korean Won at the previous business day's trading volume weighted average rate prevailing on the balance sheet date. The data are revalued monthly with the exception of monetary gold, which is revalued on a semi-annual basis. The BOK reports monetary data for the central bank and other depository corporations using the standardized report forms (SRFs) The BOK does not report data for other financial corporations.

Korea regularly reported *Financial Soundness Indicators (FSIs)* to the IMF for dissemination on its website. Quarterly FSI data and metadata are available to the public through the IMF's website at: <http://fsi/FSIHome.aspx#Country>. Despite repeated requests to reestablish regular reporting, the latest available data are for 2014Q2.

External Sector Statistics: The BOK currently compiles the BOP and IIP statistics consistent with the Balance of Payment and International Investment Position Manual, sixth Edition (BPM6) analytical framework (see <http://ecos.bok.or.kr/>). The BOK adopted the BPM6 in March 2014.

The quality of the quarterly external debt statistics, including periodicity and timeliness, have been improving since 2006. In early 2007, the BOK switched from annual to quarterly reporting of the International Investment Position. Data dissemination on international reserves and foreign currency liquidity meets the SDDS specifications. Since April 2006, the authorities have disseminated foreign reserves data on a monthly basis rather than twice a month, as had been done since 1997. However, some BOP and IIP data lack consistency.

Korea reports balance of payments and IIP data for the *IFS* (quarterly data) and the *Balance of Payments Statistics Yearbook* (annual data) publications.

II. Data Standards and Quality

Korea has subscribed to the Fund's Special Data Dissemination Standard (SDDS) since September 1996, and it uses SDDS flexibility options for the timeliness of general government operations, central government operations, and analytical accounts of the banking sector data. Korea is also availing itself of a relevant flexibility option for the coverage of exchange rates.

A Data ROSC reassessment was published in July 2010.

Korea—Table of Common Indicators Required for Surveillance
(As of June 17, 2016)

	Date of Latest Observation	Date Received	Frequency of Data ⁷	Frequency of Reporting ⁷	Frequency of Publication ⁷	Memo Items:	
						Data Quality – Methodological Soundness ⁸	Data Quality – Accuracy and Reliability ⁹
Exchange Rates	06/17/2016	06/17/2016	D	D	D		
International Reserve Assets and Reserve Liabilities of the Monetary Authorities ¹	Mar. 2016	Jun. 2016	M	M	M		
Reserve/Base Money	Mar. 2016	Jun. 2016	M	M	M	O, O, O, LO	O, O, O, O, O
Broad Money	Apr. 2016	Jun. 2016	M	M	M		
Central Bank Balance Sheet	Apr. 2016	Jun. 2016	M	M	M		
Consolidated Balance Sheet of the Banking System	Apr. 2016	Jun. 2016	M	M	M		
Interest Rates ²	06/17/2016	06/17/2016	D	D	D		
Consumer Price Index	May. 2016	Jun. 2016	M	M	M	O, O, O, O	O, O, LO, O, O
Revenue, Expenditure, Balance and Composition of Financing ³ – General Government ⁴	NA	NA	NA	NA	NA	O, O, O, O	O, O, N/A, O, NA
Revenue, Expenditure, Balance and Composition of Financing ³ – Central Government	Apr. 2016	Jun. 2016	M	M	M		
Stocks of Central Government and Central Government-Guaranteed Debt ⁵	Apr. 2016	Jun. 2016	M	M	M		
External Current Account Balance	May. 2016	Jun. 2016	M	M	M	O, LO, LO, LO	O, O, O, O, O
Exports and Imports of Goods and Services	Apr. 2016	Jun. 2016	M	M	M		
GDP/GNP	Q1 2016	Apr. 2016	Q	Q	Q	O, O, O, O	O, O, LO, O, LO
Gross External Debt	Apr. 2016	Jun. 2016	Q	Q	Q		
International Investment Position ⁶	Q1 2016	Jun. 2016	Q	Q	Q		

¹ Any reserve assets that are pledged or otherwise encumbered should be specified separately. Also, data should comprise short-term liabilities linked to a foreign currency but settled by other means as well as the notional values of financial derivatives to pay and to receive foreign currency, including those linked to a foreign currency but settled by other means.

² Both market-based and officially determined, including discount rates, money market rates, rates on treasury bills, notes and bonds.

³ Foreign, domestic bank, and domestic nonbank financing.

⁴ The general government consists of the central government (budgetary funds, extra budgetary funds, and social security funds) and state and local governments.

⁵ Including currency and maturity composition.

⁶ Includes external gross financial assets and liability positions vis-à-vis nonresidents.

⁷ Daily (D); weekly (W); monthly (M); quarterly (Q); annually (A); irregular (I); and not available (NA).

⁸ Reflects the assessment provided in the data ROSC or the Substantive Update (published in July 2010, and based on the findings of the mission that took place during December 09–22, 2009) for the dataset corresponding to the variable in each row. The assessment indicates whether international standards concerning concepts and definitions, scope, classification/sectorization, and basis for recording are fully observed (O); largely observed (LO); largely not observed (LNO); not observed (NO); and not available (NA).

⁹ Same as footnote 8, except referring to international standards concerning source data, statistical techniques, assessment and validation of source data, and revision studies.

**Statement by KwangHae Choi, Alternate Executive Director for the Republic of Korea,
Il Young Park, Senior Advisor to Executive Director,
and Hyunjoon Lim, Advisor to Executive Director
July 29, 2016**

Our Korean authorities thank staff for their well-documented report, which properly reflects the candid and productive policy dialogue under the 2016 Article IV consultation. Staff rightly points out the fundamental challenges facing Korea, and explores future policy directions to move ahead with concrete actions. We welcome that the Article IV discussions focus on structural issues to boost growth in the short- and medium-term. We particularly support staff's attention on Korea's efforts to strengthen the service sector and to develop the "creative economy," given that the Korean authorities consider them as a key strategy to raise its potential growth. The IMF team and the authorities broadly agree with overall economic development, outlook, and policy priorities. That said, we are of the view that some important issues could be further discussed with more detailed information, and we would like to make the following comments.

Recent Developments and Outlook

We acknowledge that as indicated in the staff report, the economic growth has been lackluster and a bit disappointing compared to the rapid growth era. Nevertheless, given growing external and domestic risks including from China's rebalancing and planned corporate restructuring, we are encouraged by the recent economic performance which is deemed satisfactory.

As already noted in the staff report, Korean authorities announced the fiscal package on June 28. Our intention is that the National Assembly will pass the related supplementary budget, preferably in August this year and be executed as quickly as possible to maximize the expected effects of supporting recovery. In addition, we will make every effort to speed up the corporate restructuring to minimize its possible adverse effect on growth and employment.

We expect that the pace of recovery will likely accelerate more sharply than staff projection as the effects of the recently announced fiscal stimulus and cut on the policy rate in June will be at play.

More recent economic indicators show that domestic demands including consumption appear to be improving, and the declining trend of exports is decelerating. On the employment front, as the number of persons employed has increased, the employment-to-population ratio (aged between 15 and 64) continued to rise to a record high of 66.5 percent over the past 37 months and the unemployment rate remained flat at as low as 3.6 percent in June this year. Inflation rates appear to be stabilizing. Although headline inflation remained at around 1 percent, mainly driven by low commodity prices, declines in agricultural product prices and weak demands, low inflation will not remain at a level which raises concern about deflationary pressure as core inflation has been close to 2 percent and expected inflation hovers around 2.4 percent. In the financial market, the benchmark Korea Composite Stock Price (KOSPI) index recovered some ground to 2,012.22 points as of July 21 after a sharp plunge to 1,925.24 points by 3.1 percent on 24 June in the wake of the UK referendum to exit the EU. The Korean won also was restored to pre-Brexit level, KW 1140.2 as of July 22 after plummeting 2.8 percent to KW 1183.3 vis-à-vis US dollars. As such, the impact of the Brexit on the financial market appears to be less pronounced than initially anticipated.

While acknowledging staff's view that growth potential has declined since the early 1990s (according to recent analyses by the authorities), the potential growth rates in recent periods are estimated to stand at 3 to 3.2 percent, which are higher than the staff estimate. We note that the negative output gap is likely to close faster than envisaged by staff as the supportive policy stances take effects and external headwinds dissipate. Furthermore, we also believe that potential output will be lifted as ongoing corporate restructuring and labor reforms improve efficiency in resource allocation.

We again emphasize our firm commitment to maintaining supportive policy stance until the economy is evaluated to be on a solid growth path.

Fiscal Policy in the Short- and Long-term

We share staff's view that Korea's fiscal position remains healthy relative to other advanced countries with sufficient current account balance and strong buffers. We also recognize the need for continued support to promote consumption and investment at the current juncture. A supplementary budget plan would also intend to preemptively address increasing vulnerabilities from a weaker economic activity.

Nevertheless, we should be mindful that the fiscal policy could be more effective in a balanced approach between economic circumstances and fiscal conditions amid maintaining fiscal sustainability in the medium- and long-term.

In this regard, we take positive note of staff's view that fiscal support should cushion the adverse impact of structural reforms and to incentivize such reforms, including well-targeted subsidies for vulnerable groups, promoting labor force participation, and promoting R&D activities. In a similar vein, a supplementary budget would focus on creating jobs and supporting on-going restructuring.

We note the importance of establishing fiscal rule as a long-term anchor. A rule-based fiscal framework could help preserve fiscal sustainability, while ensuring appropriate spending. We emphasize that this rule needs careful consideration of possible future challenges, such as demographic changes, reunification, and other internal and external volatility, and it is critical to improve its credibility and stability. Discussion on this issue is currently underway, and a detailed proposal will be announced in the near future. We welcome the Fund's close engagement and valuable contributions.

Social Expenditure and Revenue Mobilization

Further, we agree with staff's recommendation that a carefully targeted expansion of social spending over the medium-term could produce multiple benefits, including promoting a more inclusive growth, boosting labor productivity, and rebalancing external sector. We also agree that more attention should be paid to address relative poverty among vulnerable groups, particularly the elderly, given its higher level of relative poverty rates compared to OECD countries.

However, we are of the view that a cautious stance should be maintained to implement social spending expansion and accompanying tax increase.

A priority should be given to establishing a national consensus to advance this initiative. While revenue mobilization should be eventually considered to response increasing social spending, recent political debate and public opinion shows some reservation for expanding social expenditure by tax increase. According to survey with regards to revenue mobilization for social spending, a majority (80.6 percent) gave their preference for strengthening the efforts to improve the efficiency of

expenditure by changing its composition and rationalization to bonds issuance (9.9 percent) or taxation (9.5 percent). Furthermore, nearly two-thirds of all respondents (69.3 percent) responded that they were reluctant to expand social spending if they needed to pay more tax to finance it. Accordingly, we need to take enough time to address this issue, also noting staff's view that increasing revenue is not necessary in the near future.

While the current level of social spending is relatively low, it is expected to rapidly increase even under the existing system without introducing new measures. Korea has built a comprehensive social safety net, including 4 major social insurances, public assistance, and social welfare services, but its coverage and level is not sufficient mainly due to its immaturity from a short history. However, estimates by the Korean authorities indicate that social spending in Korea is projected to catch up with other advanced countries given the rapid population aging and developed welfare system.

A unique cultural characteristic of Korea should be also considered in assessing their social safety net. Korea has a long tradition of a large family system. Based on strong ethical grounds, the young and the elderly live together with mutual dependence; the young provide financial support, and the elderly help with childcare and housework. This tradition has been maintained until now to some extent, though, admittedly, it has adjusted overtime. We note that Korea's elderly dependency ratio is significantly higher than other countries, and thus, private transfer between individuals and family plays a key role in supporting welfare for elderly. Recent study on the income sources of the elderly also support this phenomenon, indicating that private income transfer is largely higher than social welfare services, including pension and other public benefits. Against this backdrop, a careful analysis on Korea's social safety net is needed to ensure clearer policy implications.

Macroprudential Policy

The authorities have attempted to establish the macroprudential frameworks to better safeguard the financial and macroeconomic stability since the global financial crisis in 2008. The LTV and DTI regulations which were introduced in 2002 and 2005, respectively as efforts to stabilize housing prices and thus mitigate the risks from the household debt, have been strengthened since the GFC. Indeed, the details of the regulations such as ceilings, target group, loan type, and applied regions, have been flexibly adjusted and well geared to the market development. In addition, these regulations have also been implemented in combination with a variety of microprudential measures including the tax rates for real estate ownership, the administrative procedures, and the taxation on real estate development profits.

Staff recommended that the DTI cap needs to be tightened toward 30 to 50 percent and extended to apply to other types of household debt. The DTI cap is currently set to 60 percent, and LTV cap is 70 percent across the financial sectors. Indeed, we acknowledge that management of the DTI ratio such as confirmation of borrower's declared income has been relatively loose since the regulation on the housing market and household debt has centered on the LTV ratio thus far.

In this context, the Financial Services Commission (FSC) introduced "the Guidelines on banks' mortgage loan screening" on February, according to which lenders should require new borrowers to prove their income and repayment ability, moving away from the existing practice that puts more weight on collateral. We expect that these new guidelines can normalize a function of the DTI restriction and alter market expectations and speculative incentives, thus helping contain growing potential systemic risk at current juncture.

Beyond that, we plan to implement the measures to call for lenders to strengthen monitoring of the debt-service ratio to check a borrower's credit risk, as noted by staff. We note that this indicator can provide more comprehensive information for gauging a borrower's cash available after servicing his or her total debt obligations including banking, car financing, credit card, and other financial institutions than the DTI ratio.

We continue to closely monitor the effects of the newly introduced measures at the current juncture, and will undertake additional measures as recommended by staff where necessary, going forward.