



REPUBLIC OF KOREA

SELECTED ISSUES

February 2018

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December 27, 2017

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Asia and Pacific Department

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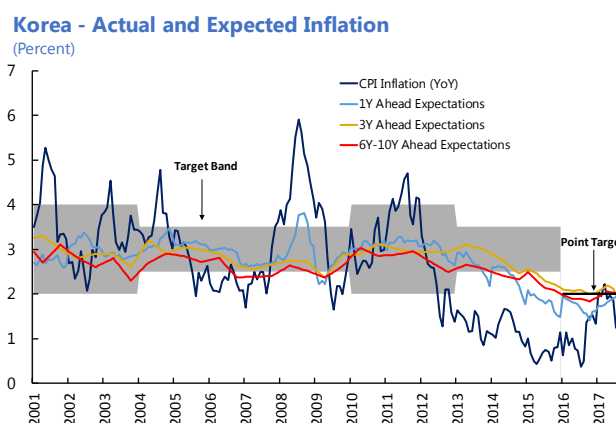
ENHANCING THE MONETARY POLICY FRAMEWORK IN KOREA¹

Inflation targeting from 1998 led to low and stable inflation, but since the global financial crisis Korea had faced more challenging conditions. As inflation expectations fell below the inflation target in 2012, the target was reduced by a percentage point to 2 percent in 2016. This weakened the credibility of the nominal anchor provided by the target, which monetary policy can help rebuild. This Selected Issues chapter outlines a strategy to facilitate this and navigate the more challenging monetary environment, involving enhanced communication of policy interest rate intentions and inflation-forecast targeting.

A. Experience with Inflation Targeting in Korea

1. The adoption of inflation targeting (IT) in 1998 contributed to low and more stable inflation in line with the target.

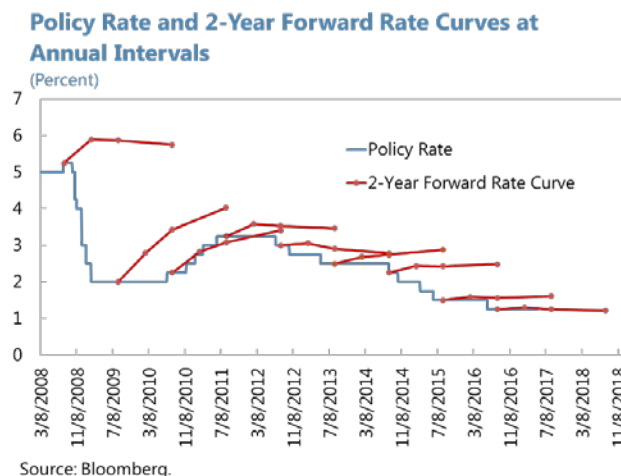
This success partly reflected the benign global environment, associated with “the great moderation;” but, then, the more challenging environment after the global financial crisis (GFC) put inflation targeting to a sterner test. Inflation and inflation expectations fell below the bottom of the 2.5–3.5 percent inflation target range after 2012, as activity slowed. In 2016, the target range was replaced by a level inflation target of 2 percent, a reduction of a percentage point relative to the mid-point of the target range.



2. The reduction in the inflation target in 2016 created monetary policy challenges. The change was made as part of the Bank of Korea’s (BOK) regular triennial review of the monetary policy framework and aligns the target with that in most advanced economies. It was based on a reassessment of the optimal inflation target, which has declined owing to structural changes in the inflation process stemming from factors such as rapid population aging. While the adjustment of the target down for these reasons may be appropriate, the appearance that this was done to match the lower inflation rate (rather than ease aggressively to push inflation back to the higher target) could undermine monetary policy credibility. With inflation now close to the lower, revised target, the credibility of this new anchor should recover gradually over time. Monetary policy can accelerate the establishment of the new target as a fully credible nominal anchor by enhancing communication of how policy will achieve this target.

¹ By R. Sean Craig (APD) and Hou Wang (RES), based on the forthcoming IMF Working Paper “Enhancing the Monetary Policy Framework in Korea” (2018), by Kevin Clinton, R. Sean Craig, Douglas Laxton, and Hou Wang.

3. One measure of the effectiveness of inflation targeting is how well the path of the policy rate is reflected in forward interest rate curves. When this is the case, policy rate moves are passed through more fully into longer-term market interest rates, implying stronger monetary transmission. In the aftermath of the global financial crisis this appeared to be the case in Korea. The slope of these forward curves correctly anticipated that the policy rate would be raised, as reflected in the steep upward slope, following the very sharp rate cuts at the peak of the crisis. In contrast, in the second cycle of rate cuts starting in 2012, forward curves were downward sloping after the first rate cut; but, after that, reverted to an upward sloping or flat path, which shifted down with each policy rate cut. This suggests that after each rate cut, market participants were not expecting additional cuts, which tends to weaken the transmission of monetary policy.



B. Strengthening the Credibility of the Inflation Target

4. Inflation targeting became more challenging after the GFC. The larger shocks to inflation and output resulted in more persistent output gaps and deviations of inflation from target, making it harder to keep inflation expectations well anchored. Monetary conditions became harder to gauge owing to greater uncertainty about the size of the output gap and level of the equilibrium real interest rate, greater capital flows and currency volatility, and heightened risks to financial stability. This increased the scope for conflicts among policy objectives that can undermine monetary policy credibility by increasing incentives to deviate from the inflation target objective.

5. The more challenging environment revealed areas where the inflation targeting framework could be strengthened. The goal is to more firmly anchor inflation expectations to the target. This is necessary in an environment where inflation deviates from target for prolonged periods, as it is more difficult to verify if the central bank is acting to achieve its target. It requires that central banks convincingly explain how inflation is being brought back to target.

6. Enhanced communication of policy rate intentions can play a key role in strengthening credibility. BOK monetary policy decision making transparency is high with, for example, publication of MPC members' views on economic conditions and how policy should respond, which are summarized in a statement by the Governor. Communication could be further enhanced through more forward-looking communication of how the inflation target is to be achieved. This involves characterizing the central bank "policy reaction function" by explaining how the BOK proposes to adjust policy rates in the future as circumstances change.

7. More effective communication can strengthen monetary transmission. As a short-term money market rate, the policy rate has little direct impact on economic activity. Rather, it works by

moving longer-term rates—the rates at which households and firms borrow and lend—in the direction of the policy rate change. This requires that current changes in the policy rate affects expectations of the future path of the policy rate; which, in turn, influences the slope of the yield curve and, hence, longer-term rates. Key to achieving this is effective communication of monetary policy intentions so that markets will correctly anticipate the future policy rate changes.

8. Credibility can be strengthened by providing an inflation forecast and explaining how the policy rate will be adjusted so inflation converges to the target over the medium term.

This approach of inflation forecast-targeting (IFT) does not require that the central bank systematically achieve its target, which is generally not feasible as large, unanticipated shocks hitting the economy cause realized future inflation to deviate from the forecast. Rather, credibility can be strengthened by communicating how the policy rate will be adjusted to return inflation to target and close the output gap over the medium term. This reveals how the central bank intends to navigate the short-run trade-off between inflation and output to achieve its target.

9. IFT is applied by central banks differently depending on the features of their financial system. Their communication of policy rate intentions to achieve the inflation target should evolve with experience and the sophistication with which markets and the public understand policy. It need not involve a numerical path for the policy rate; but, rather, a qualitative discussion of how the central bank is likely to respond to shocks impacting the inflation forecast. BOK communication already includes elements of IFT, which it can build upon. Evidence from the experience of central banks practicing IFT suggests that it strengthens the nominal anchor provided by the inflation target.²

C. Challenges Facing Korean Monetary Policy

10. Monetary policy challenges stem from the more uncertain environment. Four key sources of uncertainty are the size of the output gap, the level of the equilibrium real interest rate, capital flow and FX volatility, and the stability of the financial system, as outlined below. A risk-management approach can help policy navigate this more uncertain environment. It involves responding more strongly to larger shocks than to small ones, particularly large negative shocks where there is a risk that interest rates will hit the Effective Lower Bound (ELB). In this situation, more aggressive rate cuts lead to a sharper depreciation of the exchange rate and rise in expected inflation and, hence, a larger fall in the real interest rate, which magnifies the stimulatory effect.

- **The output gap.** The output gap, a key gauge of inflationary pressure, has become more difficult to estimate owing to uncertainty about the extent of slowdown in potential growth. For example, a recent estimate is that potential growth had declined from a range of 3.0-3.4 percent during 2011-15, to 2.8-2.9 percent in 2016-20.³ When the output gap is thought to be small,

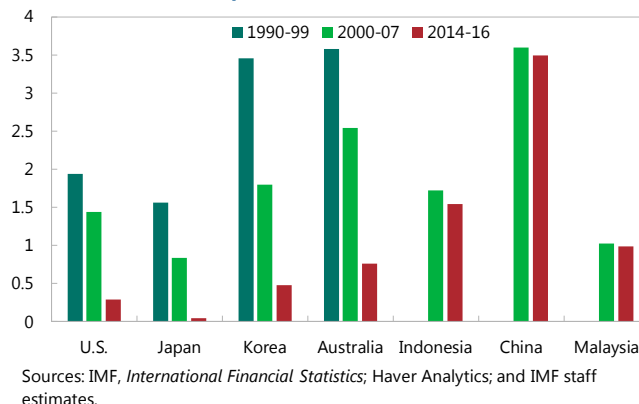
² Evidence is provided in the 2017 Korea Article IV Staff Report, Box 2, titled “Central Bank Experiences with Inflation-Forecast Targeting.”

³ Reported in “Estimation of Korean Economy’s Potential Growth Rate,” Bank of Korea Monthly Bulletin, August 2017. The estimates represent the views of the authors of the article and do not necessarily reflect the official view of the Bank of Korea.

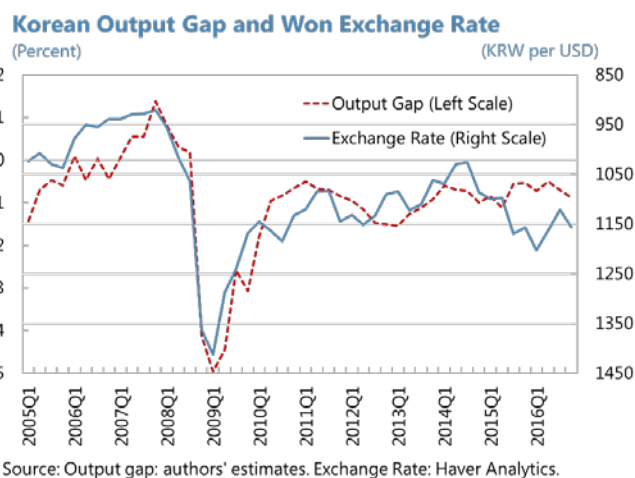
high uncertainty means that its hard to know whether the gap is closed, negative, or positive. In this situation, a cautious approach can help protect monetary policy credibility from policy mistakes. This entails holding the policy rate steady for an extended period until incoming data or a new shock create a compelling case for a change. In contrast, when there is a large shock that widens the output gap significantly, the risk of policy mistakes owing to uncertainty about the gap is minimal and a forceful policy rate response would be appropriate.

- The equilibrium real interest rate.** The difficulty estimating the extent of decline in the equilibrium real interest rate—the rate that stabilizes the economy at full employment normalizes monetary conditions—is a source of uncertainty. When the policy rate is thought to be close to this level, there is a risk that monetary tightening could push the real interest rate above its equilibrium level, implying that the central bank needs to exercise more caution in raising policy rate.

Estimated Declines in the Equilibrium Real Interest Rate in Korea Compared to Other Economies (Percent)



- High capital flow and currency volatility.** Communication of the role of the exchange rate in monetary policy becomes more challenging in an environment of high currency volatility. When this is the case, explaining the key role that the flexible exchange rate plays in monetary policy transmission and as a shock absorber becomes more difficult. It requires a clearer, more explicit commitment to flexibility that involves resisting pressures to dampen FX volatility. This involves making a convincing case for a fully flexible exchange rate by clarifying how it helps insulate domestic monetary conditions from foreign monetary shocks by, for example, limiting the pass-through of U.S. rate hikes into domestic interest rates. This role is illustrated by the strong correlation of the won and the output gap over a relatively long time horizon (Figure). The communication challenge is that at short horizons this role of the exchange rate may be obscured by its high frequency volatility. Signaling a strong commitment to exchange rate flexibility strengthens credibility by reassuring markets that monetary policy will not be diverted from the inflation objective to dampen FX volatility.



- **Financial stability.** When price stability and financial stability objectives come into conflict, communication plays an essential role in clarifying that policy rate decisions will be guided by the former rather than the latter. This challenge arises because the BOK is accountable for both objectives, which gives it a responsibility to clarify how it will achieve them when they come into conflict. For example, when the policy rate needs to be low in response to weak demand but the financial system is vulnerable, the central bank has incentive to raise rates to counter excessive risk taking, which can undermine monetary policy credibility. In this situation, the central bank needs to clarify how macroprudential policy can be used more effectively to target financial stability and that this allows monetary policy to focus exclusively on achieving price stability.

D. Integrating Model-based Policy Analysis into Monetary Policy Decisions

11. Inflation-forecast targeting central banks typically rely on a model-based forecasting and policy analysis. They adopt a forecasting and policy analysis system (FPAS) that provides a more forward-looking approach that recognizes, and takes into account, the limitations of models. It allows a more rigorous decision-making process that avoids the short-term bias that can result from a less-structured, data-driven approach. This is achieved by designing and parameterizing a model to broadly reflect the MPC's view of the economy and reliably track its performance. The main elements of FPAS are: (i) a model-based macroeconomic forecast with an endogenous future path for the short-term interest rate; (ii) incorporation of uncertainty into policy decision making; and (iii) an assessment of risks to monetary policy based on alternative scenarios, as well as other factors not captured by the model.

12. Monetary policy using FPAS can be illustrated with a model calibrated for Korea. This model is a new-Keynesian, Dynamic Stochastic General Equilibrium with model consistent expectations, which is used in some form by most IFT central banks. At its core are equations for the output gap, core inflation, the policy interest rate, and the exchange rate. The output gap is a function of its own lead and lag, foreign activity, and the deviation from their equilibrium level of the real longer-term interest rate and the real exchange rate. Core inflation is determined by an expectations-augmented Phillips curve in which the output gap drives short-term changes in the inflation rate. The exchange rate is linked to the interest rate through an uncovered interest rate parity condition. Additional equations define headline inflation; trade and financial linkages with the rest of the world; and the yield curve. Equations are linear except for the Phillips Curve, where the non-linearity captures the feature that the Philips Curve becomes quite flat when the negative output gap is large.

13. The model policy reaction function ensures that inflation eventually converges to the inflation target. It uses two alternative policy reaction functions. The first is a linear Taylor rule in which the policy interest rate responds to the deviation between the model forecast of inflation three-quarters ahead and the inflation target, and to the output gap. The second is a quadratic-loss policy reaction function that responds more strongly to larger shocks. It incorporates interest rate smoothing to make the adjustment in the policy rate more gradual.

14. The model serves two purposes. First, it provides a forecast from initial conditions, where there is an output gap and inflation differ from target, and illustrates how inflation converge back to target under alternative macro policies and monetary reaction functions. Second, it assesses macroeconomic risks by implementing scenarios in which shocks widen the output gap and cause deviation of inflation from target.

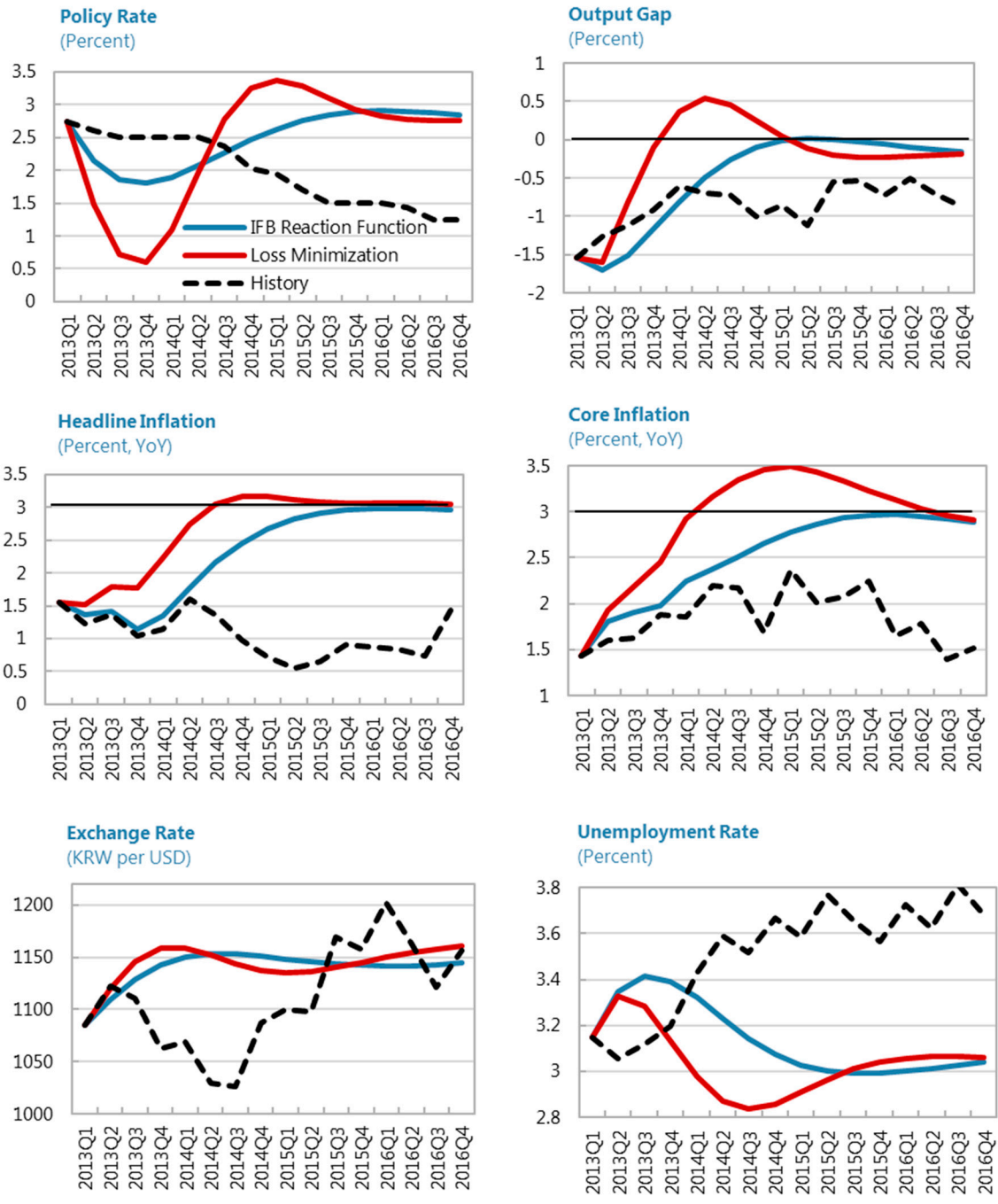
E. Illustrative Simulation of Alternative Monetary Policy Scenarios

15. The benefits of the FPAS approach can be illustrated by applying this model to the conditions that existed in 2013 when the recent easing cycle began. A comparison of the paths for the policy rate and the macro variables projected by the model to actual outcomes starting from 2013, indicates how monetary policy would have been different under FPAS. The Figure compares the historical evolution of the main variables and actual policy rate, including eight policy rate cuts totaling 200 basis points over three years, over this period, to the model's projections. This is done for two policy reaction functions—the linear, inflation-forecast-based (IFB) reaction function and the non-linear loss-minimization approach (Figure 1).

16. This comparison between actual and model outcomes can be made more realistic by incorporating shocks hitting the economy over this period. The model scenario starts in 2013 and assumes no new shocks; whereas, in reality, shocks hit the economy after 2013 on an ongoing basis and are reflected in the actual outcomes in the chart. To reflect this, the model can incorporate into the simulation the sequence of actual historical shocks that hit the Korean economy after 2013. With the post-2013 shocks added, the economy is much weaker than in the previous scenario and, in contrast to the previous scenario, convergence to the inflation target is not achieved until much later (and beyond the time scale shown in Figure 2). As a result, the model's projected paths for the policy rate is lower where, after an initial series of rate cuts, the policy rate continues to be reduced gradually (in line with what actually occurred). Overall, the addition of these historical shocks to the simulation leads to a larger cumulative rate cut and exchange rate depreciation (that shown for the quadratic loss reaction function only). Of course, the final policy rate decision will take into account factors not reflected in the model.

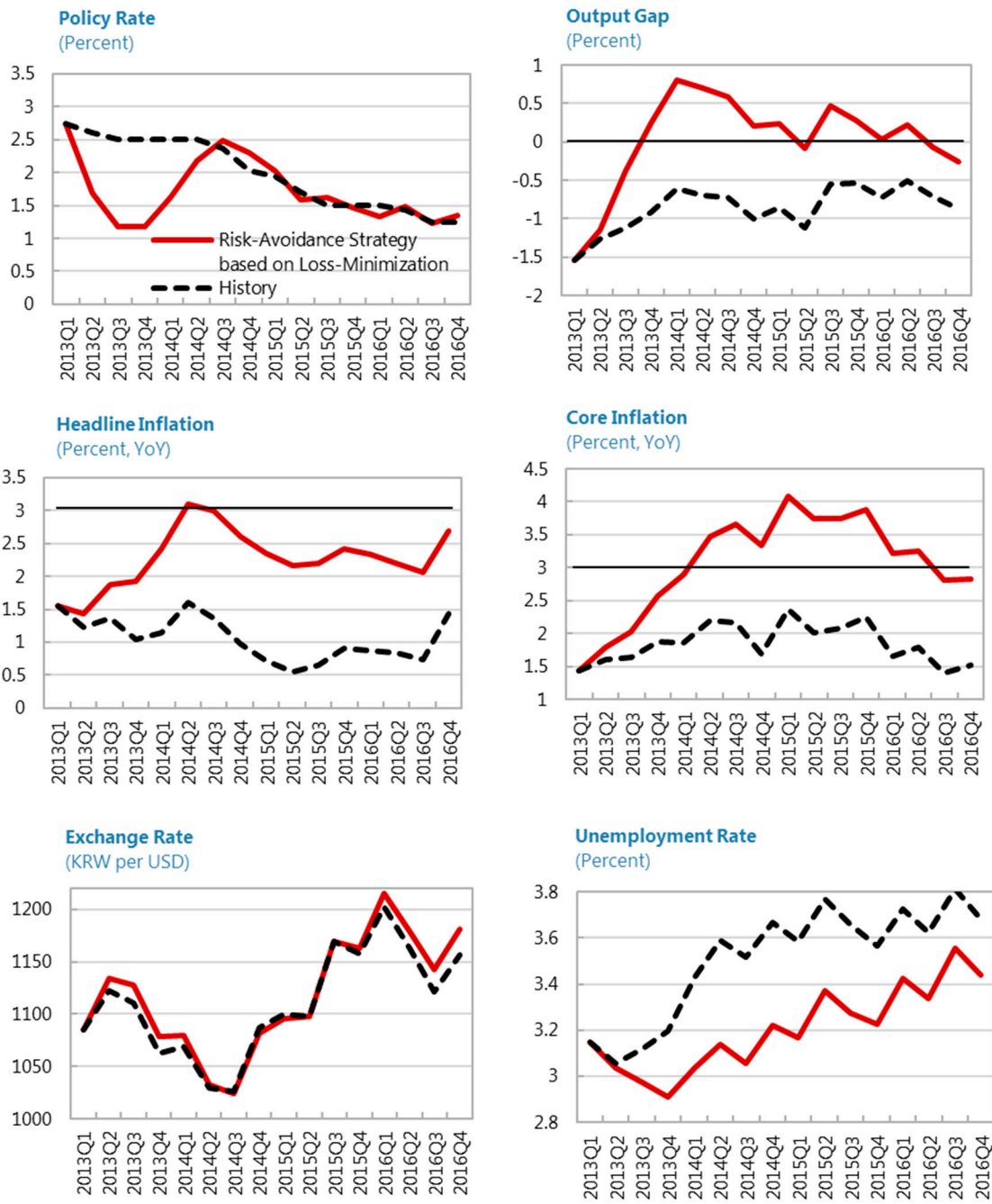
17. In a downside scenario, coordination of monetary and fiscal policy can produce better outcomes. A more expansionary fiscal policy allows a more moderate monetary easing and reduces the probability that monetary policy will be constrained by the ELB. This downside scenario shock is assumed to start in mid-2017 with a widening of the output gap by 1 percentage point, and a 0.5 percentage points decline in inflation (Figure 3). The shock was chosen to be large enough for the interest rates to hit the ELB when monetary policy alone is used. However, when combined with a fiscal expansion the central bank does not need to cut the policy rate to the ELB, and the period of low interest rates is shorter. This positive effect of fiscal policy is magnified by the fact that when the interest rate falls to the ELB, the fiscal multiplier is larger in the model as there is little or no crowding out effect from the fiscal expansion (which normally pushes up the interest rate).

Figure 1. Model Projections from 2013 for Two Reaction Functions Compared to History



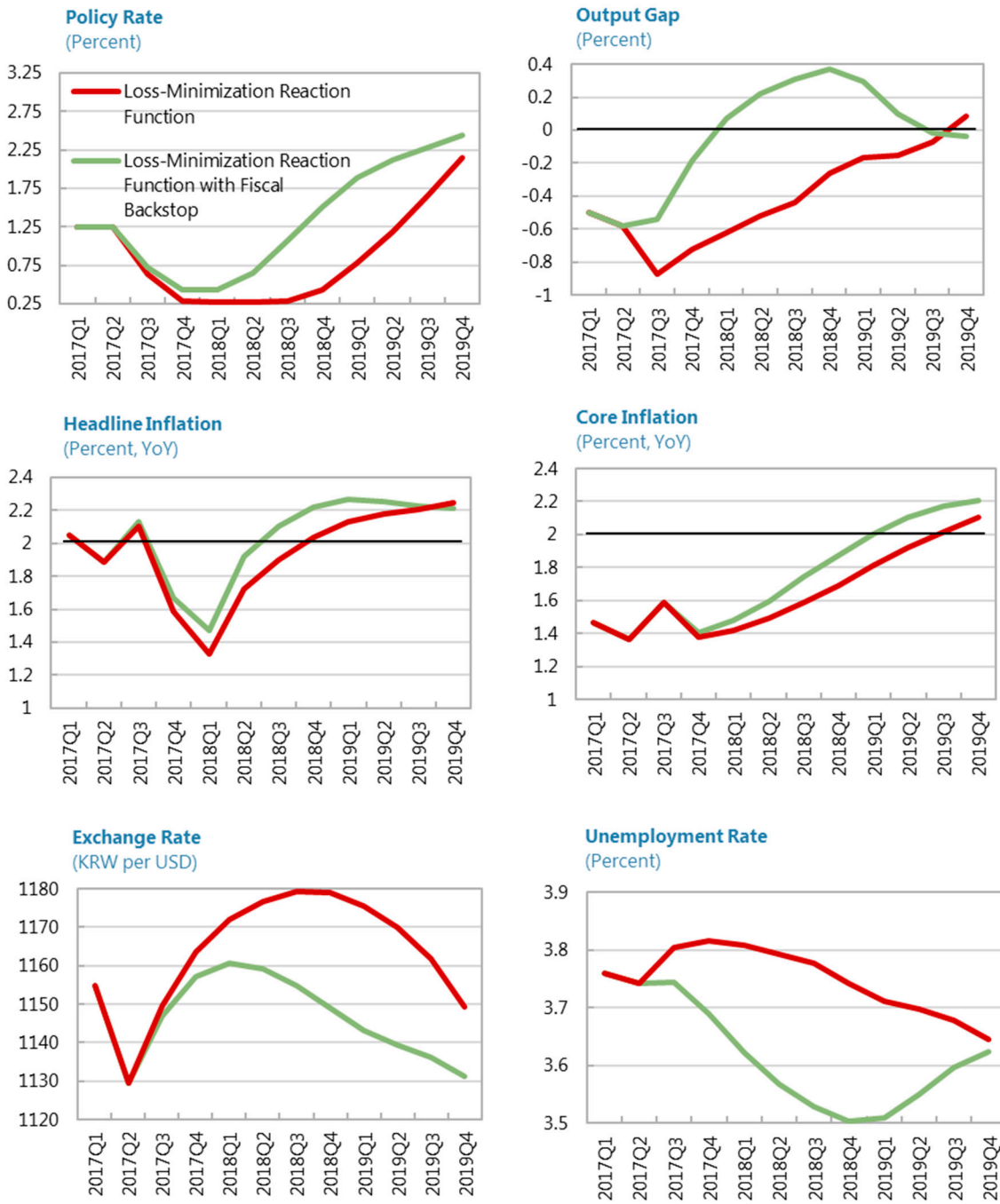
Source: Authors' calculations.

Figure 2. Actual and Model Outcomes with Historical Shocks Added to the Scenario



Source: Authors' calculations.

Figure 3. Downside Scenario with Fiscal Backstop



Source: Authors' calculations.

F. Conclusions

18. The reduction in the inflation target by a percentage point to 2 percent in January 2016 weakened the nominal anchor. Monetary policy can play a role rebuilding the credibility of the anchor more rapidly through the adoption of inflation-forecast targeting. This involves greater reliance on model-based forecasting and policy analysis to strengthen the management of expectations and as an input into overall policy decision. This can enhance the credibility of the official inflation target and, ultimately, monetary policy transmission. It involves providing greater forward guidance to shape inflationary expectations and foster private sector behavior that enhances the effectiveness of monetary policy.

19. This strengthening of the monetary policy framework involves enhancing communications. IFT involves providing a macroeconomic forecast of inflation and effectively communicating the central bank's reaction function – how it would react to shocks to achieve its inflation target. This also entails clarifying how policy will manage uncertainty related to the output gap, the equilibrium real interest rate, capital flow volatility and financial stability, and resolve any conflicts among objectives.

20. An effective, credible monetary policy cannot address all macroeconomic challenges facing Korea. Rather, it can foster robust growth with low inflation, providing a stable and predictable environment that allows other policies to work more effectively. These other policies play a complementary role (Gaspar et. al., 2016). Fiscal policy can reinforce the effectiveness of monetary policy, as illustrated by model scenarios. Structural policies can also support monetary policy by, for example, boosting potential growth. Macroprudential policies that ensure financial stability and limit the buildup of risks by preventing excessive credit growth to households, allow monetary policy to focus solely on the inflation target and remove incentive to deviate from this objective to address financial stability concerns.

References

- Berg, A., P. Karam, and D. Laxton, 2006, "A Practical Model-Based Approach to Monetary Policy Analysis—Overview," IMF Working Paper No. 06/80.
- Ball, L., 2014, "The Case for a Long-Run Inflation Target of Four Percent," IMF Working Paper No. 14/92.
- Blanchard, O., 2014, "Where Danger Lurks," *Finance & Development*, September 2014, Vol. 51, No. 3.
- Bank of Korea, 2016, "Monetary Policy Direction for 2017," December.
- Clinton, K., C. Freedman, M. Juillard, O. Kamenik, D. Laxton, H. Wang, 2015, "Inflation-Forecast Targeting: Applying the Principle of Transparency," IMF Working Paper No. 15/132.
- , T. Hlédik, T. Holub, D. Laxton, and H. Wang, 2017, "Czech Magic: Implementing Inflation-Forecast Targeting at the CNB," IMF Working Paper No. 17/21.
- Coenen, G., C. Erceg, C. Freedman, D. Furceri, M. Kumhof, R. Lalonde, J. Linde, A. Mourougane, D. Muir, S. Mursula, J. Roberts, W. Roeger, C. de Resende, S. Smudden, M. Trabandt, J. in 't Veld, 2010, "Effects of Fiscal Stimulus in Structural Models," IMF Working Paper 10/73.
- Dooley, M., R. Dornbusch, and Y.C. Park, 2002, "A Framework for Exchange Rate Policy in Korea," Korea Institute for International Economic Policy, Working Paper 02-02.
- Freedman, C. and D. Laxton, 2009, "Inflation Targeting Pillars: Transparency and Accountability," IMF Working Paper No. 09/262.
- , M. Kumhof, D. Laxton, and J. Lee, 2009a, "The Case for Global Fiscal Stimulus," IMF Staff Position Paper No. 09/04.
- , M. Kumhof, D. Laxton, D. Muir and S. Mursula, 2009b, "Fiscal Stimulus to the Rescue? Short-Run Benefits and Potential Long-Term Costs of Fiscal Deficits," IMF Working Paper No. 09/255.
- , M. Kumhof, D. Laxton, D. Muir, and S. Mursula, 2010, "Global Effects of Fiscal Stimulus During the Crisis," *Journal of Monetary Economics*, Vol. 57 (June), pp. 506-526.
- Gaspar, V., M. Obstfeld, R. Sahay, D. Laxton, D. Botman, K. Clinton, R. Duval, K. Ishi, Z. Jakab, L. J. Mayor, C. L. Ngouana, T. M. Griffoli, J. Mongardini, S. Mursula, E. Nier, Y. Ustyugova, H. Wang, and O. Wuensch, 2016, "Macroeconomic Management When Policy Space Is Constrained: A Comprehensive, Consistent and Coordinated Approach to Economic Policy," IMF Staff Discussion Note No. 16/09.

Kim, M., ed., 2012, *Monetary Policy in Korea*, Bank of Korea.

Laxton, D., D. Rose, and A. Scott, 2009, "Developing a Structured Forecasting and Policy Analysis System to Support Inflation-Forecast Targeting (IFT)," Bank of Canada WP/09/65.

Obstfeld, M., K. Clinton, O. Kamenik, D. Laxton, Y. Ustyugova, and H. Wang, 2016, "How to Improve Inflation Targeting in Canada", IMF Working Paper No. 16/192.

Park, Y.C., and C. Wyplosz, 2009, "Inflation Targeting in Korea: Success, Good Luck or Bad Luck?" in Karasulu and Yang, 2009.

Woodford, M., 2003, "Optimal Interest-Rate Smoothing," *The Review of Economic Studies*, Vol. 70, No. 4, October.

A NEW STRATEGY FOR KOREA'S FISCAL POLICY IN A LOW-GROWTH ENVIRONMENT¹

A. Introduction

1. Korea has an impressive track record of fiscal prudence that has been a key contributor to macroeconomic stability. With a government debt below 40 percent and an average fiscal surplus of the consolidated central government of 1.2 percent of GDP since 2010, Korea has one of the soundest fiscal positions among advanced economies. Korea also has a flexible inflation targeting framework, which has been effective in sustaining low and stable inflation.

2. Rapid population aging will have an adverse impact on the fiscal and growth outlook. With the old-age dependency ratio expected to rise by 50 percentage points in the next 50 years, pension and health related public spending will increase by 10-16 percent of GDP by 2060. Moreover, because of the decline in labor force growth, potential growth will slow down, thus worsening the dynamics of public debt to GDP in the long term.

3. Other structural headwinds impinge on long-term growth. Productivity is lagging, especially in services, and there are several labor and product market distortions. Because of all these structural issues, Korea faces the risk of settling into a “new mediocre” of more subdued growth.

4. Moreover, the prospect of longevity, coupled with insufficient social protection, is pushing up private savings, contributing to external imbalances. Public social spending is less than half the OECD average, and benefits to the most vulnerable as well as pensions are less generous than in many other OECD economies (OECD, 2016). Inadequate safety nets result in old age poverty, boost private-sector precautionary savings, depress consumption and growth and contribute to the large current account surplus. Indeed, the personal saving rate has increased by 8 percentage points since the early 2000s, while the share of private consumption to GDP has fallen by 6 percentage points.

5. Against this background, can fiscal policy preserve the sustainability of public finances in the face of rising age related spending, while supporting higher, inclusive and more balanced long-term growth? This paper analyses the policy strategies needed to deal with these challenges. The main results are as follows: even taking account the projected increase in health and pension spending, and assuming constant revenues, Korea's debt is expected to remain below 40 percent for at least 15 years. Age-related spending will increase very significantly, by 10-16 percentage points of GDP by 2060. Hence, a policy that attempted to keep total revenue fixed as a share of GDP would result in explosive debt dynamics; sizable increases in the revenues will be needed to stabilize debt. Given Korea's low public debt and the low global interest rate environment, rising age-related spending can be financed through a combination of higher

¹ The authors of this Selected Issues are Edda Zoli (APD), Douglas Laxton, Susanna Mursula, Hou Wang, and Jiaxiong Yao (all RES).

revenues—obtained partly by broadening the tax base—and additional borrowing. When comparing alternative combinations of deficit and revenue financing that ensure debt sustainability, small revenue changes can have a quite a large impact on the debt dynamics. Overall, Korea can stabilize the debt to GDP ratio to levels well below what is considered a “dangerous” level, leaving enough fiscal space to implement policies to boost potential growth and social protection. These include higher targeted transfers to the most vulnerable and fiscal measures to support female labor force participation and employment, accompanied by comprehensive product and labor market reforms.

6. The structure of the paper is as follows: Section B provides an assessment of Korea’s long-run potential growth using a novel multivariate filter approach. Section C and D present the elements of a new strategy for Korea’s fiscal policy in a low-growth environment, using illustrative model simulations. Section E concludes.

B. Assessing Korea’s Potential Output with an Extended Multivariate Filter

7. The long-term fiscal outlook depends critically on growth prospects. Estimates of potential output are important inputs into the fiscal—as well as monetary— policy formulation. Such estimates are used for aggregate demand management, as well as assessing the sustainable levels of taxes, expenditures and debt dynamics. Potential output is typically defined as the maximum level of output that an economy can sustain without generating inflationary pressure (Okun, 1962).

8. The standard multivariate filter augmented with a production function is used to assess both the level and the growth rate of potential output.² Compared to previous work with multivariate filters (e.g., Alich and others, 2015, 2017), this new approach is based on specifying a Cobb-Douglas production function as part of a multivariate system and then augmenting the list of observable variables to include data on employment, the capital stock, and total-factor productivity (TFP). TFP, which is calculated as the residual from the production function, provides a measure of how efficiently and intensively the factors of production are utilized. By assuming a certain path of Korea’s productivity catch-up *vis-à-vis* the United States, one can project the equilibrium TFP. Equilibrium employment is estimated based on assumptions about future population growth (from the United Nations projections), the equilibrium participation rate, and the NAIRU. Combining equilibrium estimates of TFP and employment with estimates of the capital stock, one can obtain estimates of potential output.

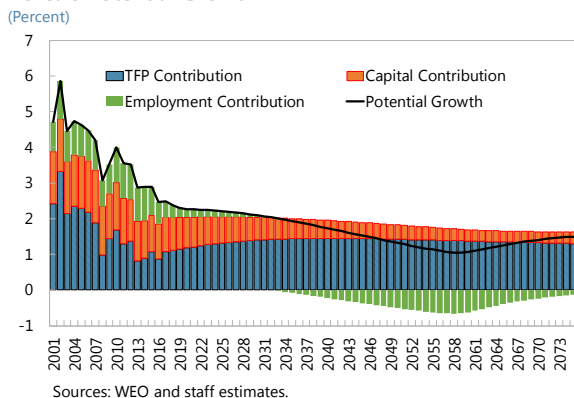
9. This novel approach is in stark contrast to the standard production-function approach used in many policymaking institutions. In that traditional framework TFP and employment trends are separately estimated using the HP filter—the HP filter, being a univariate filter, ignores the links between economic variables and suffers from serious end-of-sample problems (Laxton and Tetlow, 1992). Estimates based on univariate filters like the HP filter are not only inconsistent with the

² See Laxton, Wang, and Yao (2017, *forthcoming*) for the documentation of the methodology. Previous empirical estimates of Korea’s potential growth are Jain-Chandra and Zhang (2014), IMF (2015a), and Zoli (2016).

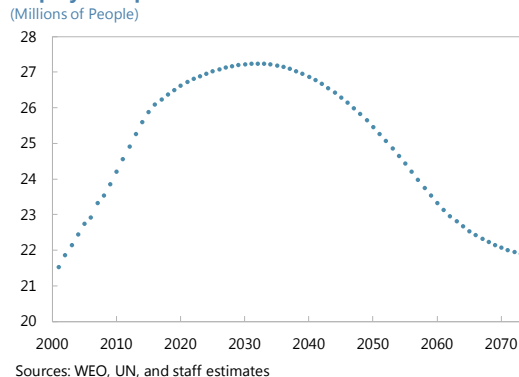
definition of potential output, but also suffer from significant uncertainty when the estimates are computed in real time (Alichi and others, 2017).

10. Korea’s potential growth is projected to steadily fall until 2058. Declining employment growth (and levels after 2030), driven by a shrinking labor force population, explains most of this downward trend.³ The contribution from capital to potential growth is expected to fall over time to reach a constant capital-output ratio in the long run, after a period of a rapid rise in the capital-output ratio, partly explained by capital deepening in the Korean economy.

Korea’s Potential Growth

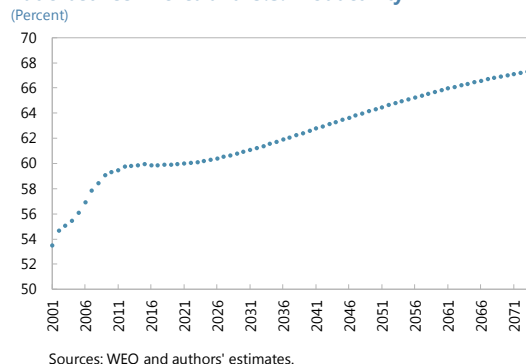


Employed Population



11. The projections assume that productivity growth will pick up in about a decade, eventually resulting in a partial closing of the productivity gap vis-a-vis the U.S. in the long run. In the early 2000s Korea’s productivity grew rapidly. Since the global financial crisis, a combination of domestic and global factors—both structural and cyclical—have resulted in a slow productivity growth in Korea as well as other Asian economies (IMF, 2017). Such weakness is assumed to persist for some time. Currently, Korea’s total factor productivity is around 60 percent that of the U.S. (IMF, 2017). The long-run steady-state for the Korea-U.S. productivity ratio is projected at 68 percent, based on the assumptions that (i) Korea continues to converge to the technological frontier; and (ii) the speed of convergence is somewhat slower than the historical average of the past two decades.

Ratio between Korea and U.S. Productivity



³ Employment (N) can be decomposed into the labor force population (M), the participation rate (P), and the unemployment rate (u): $N = MP(1 - u)$. The projection for employment is based on the following assumptions. For the labor force population, the projected population growth rate from the United Nations is used until 2060, and afterwards it is assumed that the growth rate converges gradually towards zero. The participation rate is assumed to stay at the current level of 63 percent. The unemployment rate is assumed to gradually return to 3.5 percent in the long run. These assumptions are in line with the range of historical values and based on current trends.

12. With these assumptions, potential growth will gradually slow down to 1.2 percent. Our potential growth estimates are lower than those presented in the 2015 Ministry of Strategy and Finance (MOF) report for the period 2020-2030, but very similar afterwards (Table 1). It is important to emphasize that there is significant uncertainty in these estimates. For example, reliable and timely capital stock data can be hard to obtain, and the convergence of productivity across countries can be subject to structural shocks.

| | 2020-30 | 2030-40 | 2040-50 | 2050-60 |
|--|---------|---------|---------|---------|
| Authors' estimates based on extended multivariate filter | 2.2 | 1.9 | 1.5 | 1.2 |
| MOF (2015) | 2.6 | 1.9 | 1.4 | 1.1 |

Source: IMF estimates, and KDI.

13. Potential growth is not policy invariant and certainly not a constant. Korea's potential growth could be raised through structural reforms to boost productivity and labor force participation. A comprehensive package of measures, supported by fiscal policy, is needed to boost growth on a sustainable basis.

C. The Fiscal Impact of Aging: Implications for Debt Sustainability

14. Public spending for pension and healthcare is expected to increase by about 10–16 percent of GDP by 2060 (Table 2). According to the projections of the MOF and other Korean institutions, pension spending is set to rise by about 6-7.5 percent. Healthcare spending is expected to grow by about 5 to 9 percent, based on OECD⁴ and IMF recent estimates.

| | 2015 or 2016 | 2030 | 2040 | 2050 | 2060 | Change 2015/16 to 2060 |
|--|--------------|------|------|------|----------|------------------------|
| Pension | | | | | | |
| MOSF (2015) | 3.0 | 5.2 | 7.2 | - | 10.6 | 7.5 |
| National Pension Research Institute (2013) | 1.2 | 2.5 | 4.1 | 5.7 | 6.9 | 5.7 |
| NABO (2012) ^{1/} | 2.4 | 4.3 | 5.8 | 7.7 | 8.9 | 6.5 |
| Health | | | | | | |
| MOSF (2015) ^{2/} | 0.6 | 0.9 | 0.9 | - | 0.8 | 0.2 |
| OECD (2015) ^{3/} | 4.0 | - | - | - | 8.6-13.2 | 4.6-9.2 |
| IMF (2016) ^{3/} | 4.4 | 6.1 | 7.6 | 9.0 | 10.0 | 5.6 |

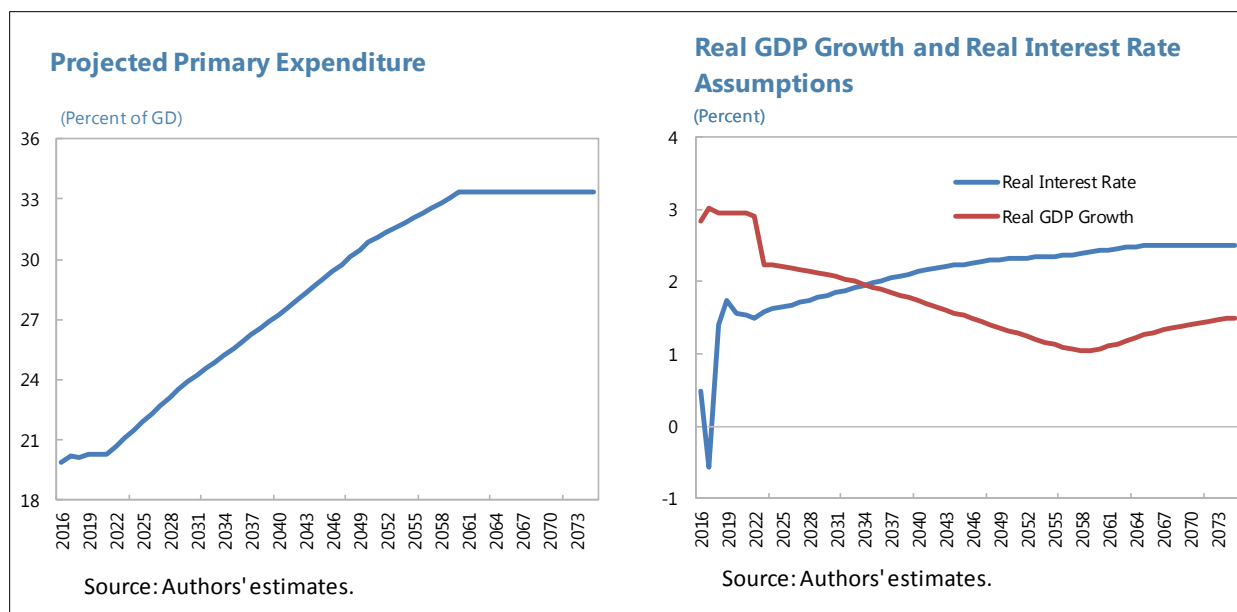
^{1/} Estimated based on 2012 level and 2020 projection reported in NABO (2012).
^{2/} Health insurance spending, including long-term care insurance.
^{3/} Health-care and long-term care.

15. This section presents scenarios for the long-term public debt outlook, taking into account the projected increase in age-related spending. In the scenarios, the projections of GDP growth are consistent with the October 2017 WEO forecast until 2022. From 2023 onwards output grows at its potential, as estimated in Section B. Annual primary expenditure as a share of GDP is assumed to increase by about 0.3 percentage point per year on average from 2023 through 2060, implying a cumulative increase

⁴ The OECD estimates are presented in De la Maisonneuve and Martins (2015). The projections range refer to future public healthcare and long-term care spending under two scenarios of cost containment (with implicit policy actions) and cost-pressure (without policy actions).

of around 13 percentage points by 2060, the mid-point of the projected increase on pension and health-care spending.

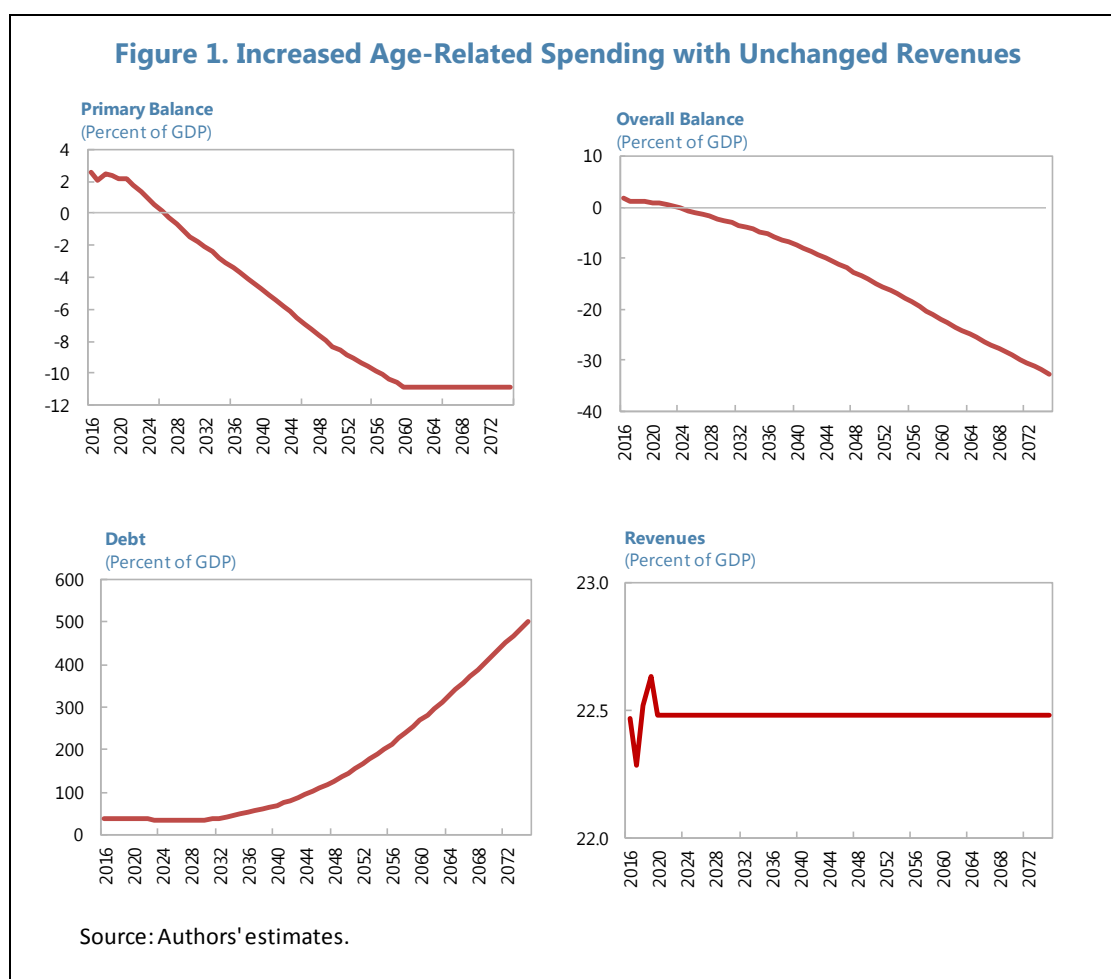
16. The nominal interest rate on government debt is assumed to be rising over time, as the global economy gradually exits a period of high world saving rates and exceptionally low interest rates. Demographic factors, such as aging, also put upward pressures on the domestic nominal interest rate, which is assumed to increase gradually to 4.5 percent in 2060, at which point the old-dependency ratio is projected to peak. The 4.5 percent long-run interest rate on government debt embodies an approximately 50 bps country-risk premium relative to the United States, similar to the level we observed in recent years. Assuming the inflation rate at the 2 percent target, the real interest rate on government bonds increases above real GDP growth since 2035. The assumption that the real interest rate is greater than the real growth rate of the economy is usually referred to as a no-ponzi-game condition. It is a standard assumption for prudent longer-term fiscal policy projections. If the world real interest rate were less than the growth rate of the economy, it would be in the interest of governments to increase debt to finance current expenditures. Effectively, there would be no cost to containing explosive levels of debt as new debt could always be issued to pay off old debt that is maturing. Other advanced economies have experienced periods of positive differential between the real interest rate and growth.⁵ The dynamics of the relationship between growth and the real interest rate is clearly subject to uncertainty. Growth-friendly fiscal policies, especially in a period of extremely low long-term interest rates, would help raise potential growth in a more sustainable way, to prepare for an eventual return of higher long-term interest rates.



⁵ For example, in the case of Japan, the real interest rate-real GDP growth differential has been unfavorable from the early 1990s to 2013. Only in the last few years we observe that Japan's real interest rate has stayed persistently below the real GDP growth, mainly due to ultra-loose domestic monetary policy.

Impact of Increased Age-Related Spending with Unchanged Revenues

17. With the growing fiscal needs from age-related spending, a policy that attempted to keep total revenue fixed as a share of GDP would clearly result in explosive debt dynamics (Figure 1).⁶ In this scenario, the consolidated fiscal balance would turn negative in 2024 and reach a deficit of about 14 percent of GDP in 2050. The large and increasing deficits would result in a debt level over 100 percent of GDP by 2050, at which time age-related spending would continue to put upward pressure on deficits. Similarly, the National Assembly Budget Office (NABO, 2016) projects a deficit of the consolidated central government of about 8 percent of GDP and a debt to GDP ratio of 111 percent in 2050, assuming no change in policies. This upward pressure on primary deficits combined with an assumption that the real interest is greater than the real growth rate of the economy would result in explosive debt dynamics.



⁶ With unchanged policies, future revenues-to-GDP ratio could even decline somewhat. According to NABO's (2016) projections, revenues to GDP ratio will drop by about 3 percentage points by 2060 as social security contributions decrease due the shrinking working age population, and the National Pension Fund returns fall as the fund starts depleting. The 2015 MOSF report projects revenues to GDP ratio to remain fairly stable between 2016 and 2060.

Increased Age-Related Spending Financed by Debt and Higher Revenue

18. A number of policy options can be considered to ensure long-term debt sustainability given the projected increases in age-related spending. They include:

- Contain long-term pension spending pressures by increasing the retirement ages in both the private and public sectors.⁷
- Increase revenues by broadening the tax base with both efficiency and equity gains (NABO, 2012; IMF, 2014a).⁸
- Increase payroll contribution rates that are currently very low, at 9 percent, compared to a 20 percent average in advanced economies.
- Increasing selected tax rates, for example the VAT rate, which is currently at only 10 percent.

19. Given Korea's low public debt and the low global interest rate environment, rising age related spending could also be financed through borrowing. With government debt expected to remain below 40 percent of GDP for at least 15 years, Korea certainly has room to increase its debt-to-GDP ratio over the long term.

20. Korea can safely sustain public debt levels above 40 percent of GDP. Different approaches can be used to estimate the maximum debt for a given country, defined as the ceiling beyond which debt dynamics spiral out of control. IMF (2013) identifies such limit using the signal approach developed by Kaminsky and others (1998) as the level of the public debt that best predicts the occurrence of a debt distress event. Such benchmark is estimated to be 85 percent of GDP for advanced economies.

21. There are multiple paths that can ensure that Korea's public debt remains well below this debt threshold as aging-related spending increases. For instance, the debt to GDP ratio could be allowed to reach 45 percent of GDP in the long run, leaving enough space for policies to enhance social protection and support long-term growth. Figure 2 presents two illustrative paths involving different combinations of deficit and revenues financing. In both scenarios revenues are kept constant for 10 years; the fiscal surplus declines gradually and a deficit arises in 2024; the deficit peaks at about 1.5 percent of GDP in 2027. The debt-to-GDP ratio continues to decline until 2027, to about 30 percent.⁹ Afterwards revenues start to increase. In the "permanent deficit"

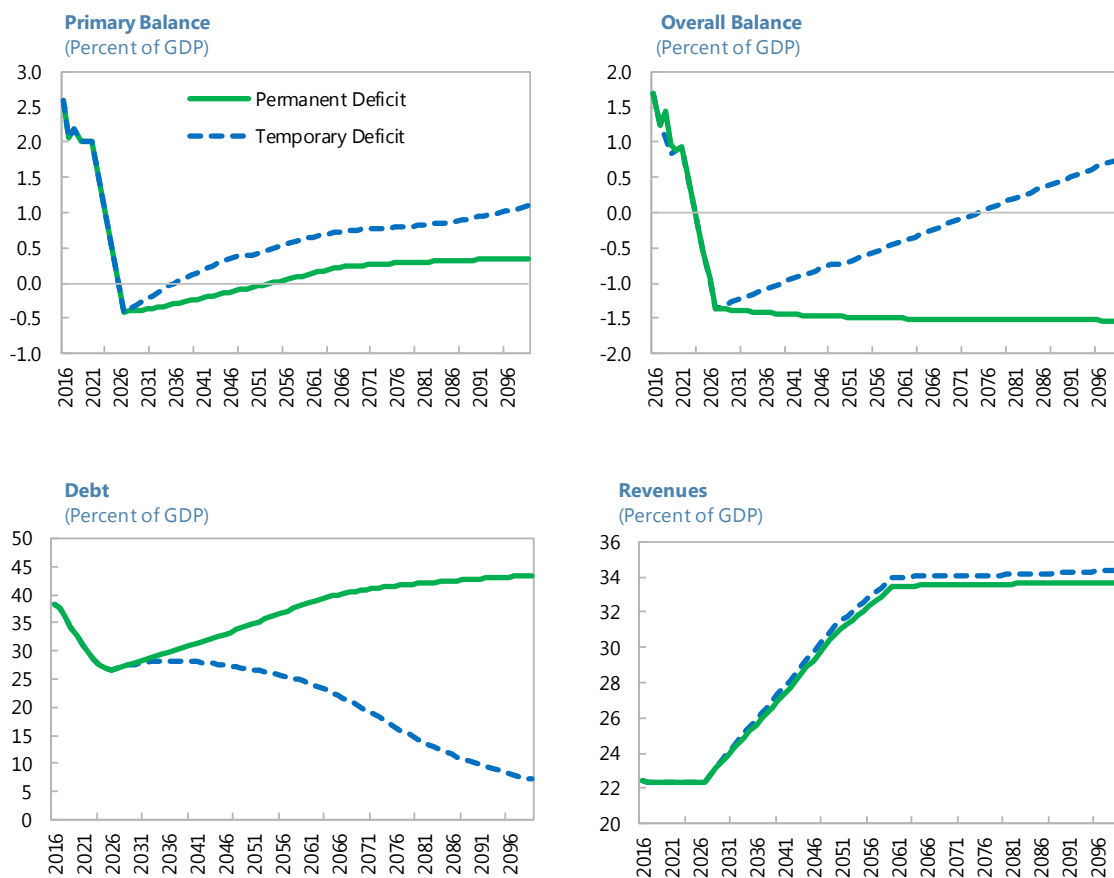
⁷ The pension age is currently 61 with at least ten years of contributions, but a reduced early pension can be withdrawn from the age of 56 years. The normal pension age is gradually being increased, reaching 65 in 2033 and the early pension age will increase to 60. An additional hike in the retirement age by 3 years by 2035 would reduce pension spending by an estimated 1 percentage point of GDP in 2050.

⁸ The average effective personal income tax rate is one of the lowest in OECD, and for the median wage earner is close to zero. The base could be broadened by gradually eliminating the wage and other deductions. The corporate income tax is a source of multiple distortions that could be streamlined, in particular there is a need to move toward neutrality in taxing various sources of capital income. VAT could be extended, notably to all new real state supplies, including the value of land, insurance and financial services, and suppliers to exporters.

⁹ The debt dynamics reflects also the assumption that fiscal surpluses are saved, so the decline in the debt-to-GDP ratio during periods when the overall balance is positive is driven by the increase in nominal GDP. The assumption that surpluses are saved is consistent with current practice, and it is made also to avoid the projected debt-to-GDP ratio falling to levels that are unrealistically low.

scenario, the deficit stabilizes at 1.5 percent of GDP. Debt reaches 40 percent of GDP in 2077 and achieve the steady state of 45 percent of GDP past beyond 2100. Revenues increase from 22 to 33 percent of GDP in 2060. In the “temporary deficit” scenario, revenues increase a bit faster, to reach nearly 34 percent of GDP in 2060; the deficit declines to zero in 2084. However, given the dynamics of the primary balance (which turns into a surplus in 2040), public debt-to-GDP ratio peaks at 30 percent in 2056 and declines afterwards. As the scenario illustrates, a slightly faster increase in revenues has a sizable impact on the debt-to-GDP ratio by affecting the primary balance and, hence, the overall debt dynamics.

Figure 2. Increased Age-Related Spending Financed by Higher Debt and Higher Revenues



Source: Authors' estimates.

D. Promoting Sustained, Inclusive and More Balanced Growth

22. In addition to ensuring fiscal sustainability in the face of pressure from age-related spending, Korea also needs to address declining potential growth, inadequate social protection and external imbalances. To analyze the implications of alternative fiscal policy measures aimed at tackling these issues, simulations are carried out using the G20MOD module of the Flexible System of Global Models (FSGM).¹⁰ In these scenarios, fiscal policy is actively used to strengthen social safety nets and boost female labor force participation and employment. The simulations show the impact of different measures compared to the baseline, which assumes that a combination of higher revenues and borrowing would be used to finance the increase in age related spending.

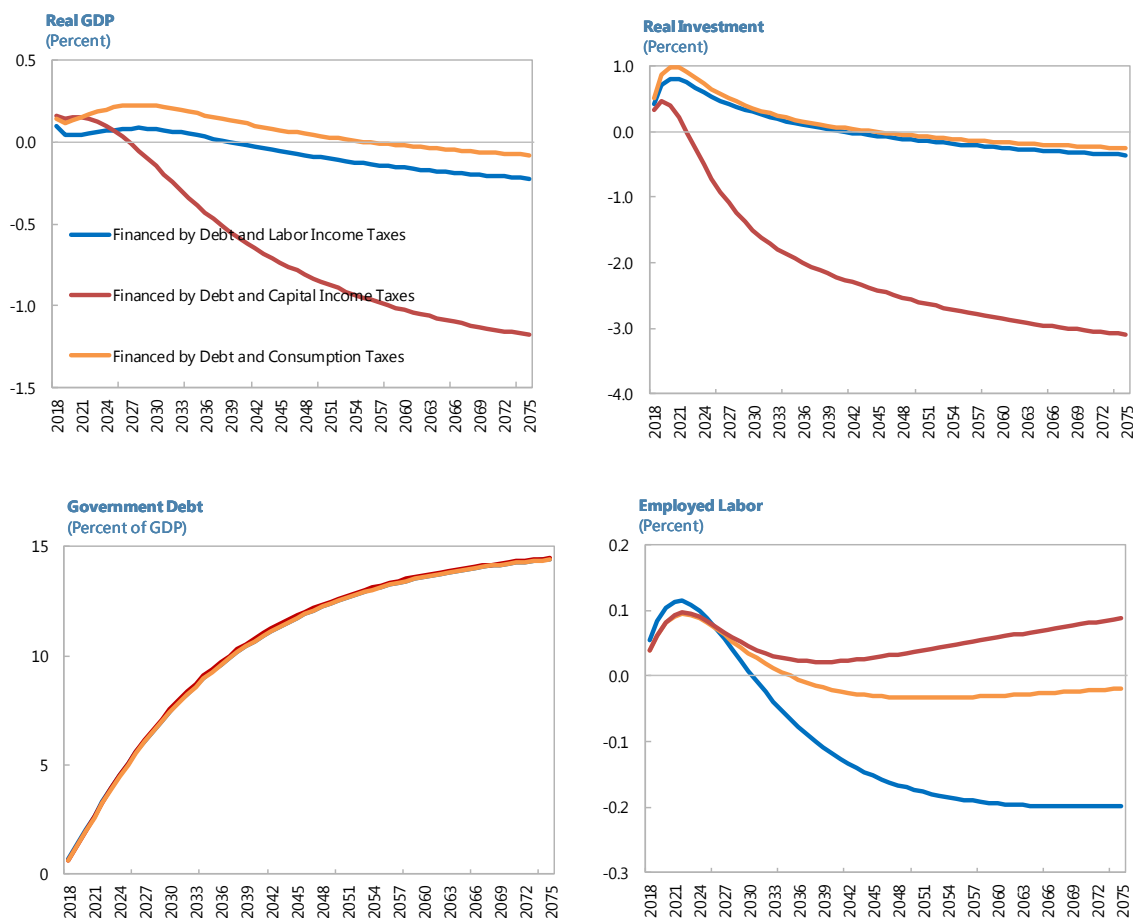
23. The module of FSGM used for the simulations is a multi-region, forward-looking, semi-structural global model consisting of the G20 countries and the rest of the world. The model includes various fiscal instruments, such as government investment, government consumption, transfers, and different types of taxes (capital, labor and consumption). The model features stock-flow consistency, where government deficits accumulate into higher levels of government debt and current account deficits accumulate into higher levels of net foreign debt. Unlike standard DSGE models, FSGM has a well-defined steady state where some countries are net creditors and others are net debtors. Given this structure it is possible to study the implications of a transition from one steady state to another where the government runs government deficits that permanently increase the government-debt-to-GDP ratio. The simulations will show the impact of policies relative to a baseline, which has to be formulated outside of the FSGM model. The projections in Figure 2 will be taken as baseline.

Permanent Increase in Social Safety Net Spending

24. Strengthening social protection would boost consumption-led growth and contribute to rebalancing the economy. Figure 3 illustrates the effects of a permanent increase in targeted transfers (transfers to liquidity-constrained consumers) of 0.75 percent of baseline GDP, financed by a gradual increase in either consumption, or labor income, or capital income taxes, as well as a rise in deficit by 0.8 percentage points. The consumption tax is the least harmful revenue source in terms of both its macroeconomic impact (low multiplier) and allocative distortions. Indeed, the increase in capital taxation would reduce investment, while an increase in labor income tax would lower employment, resulting in output loss compared to an increase in consumption taxes. Gradual and pre-announced increases in the consumption tax rate over time would avoid the abrupt intertemporal reallocations of consumption. In all three cases, government-debt-to-GDP ratio increases by 15 percentage points above the baseline in the very long run and stabilizes there.

¹⁰ Andrle and others (2015) provide the documentation of FSGM.

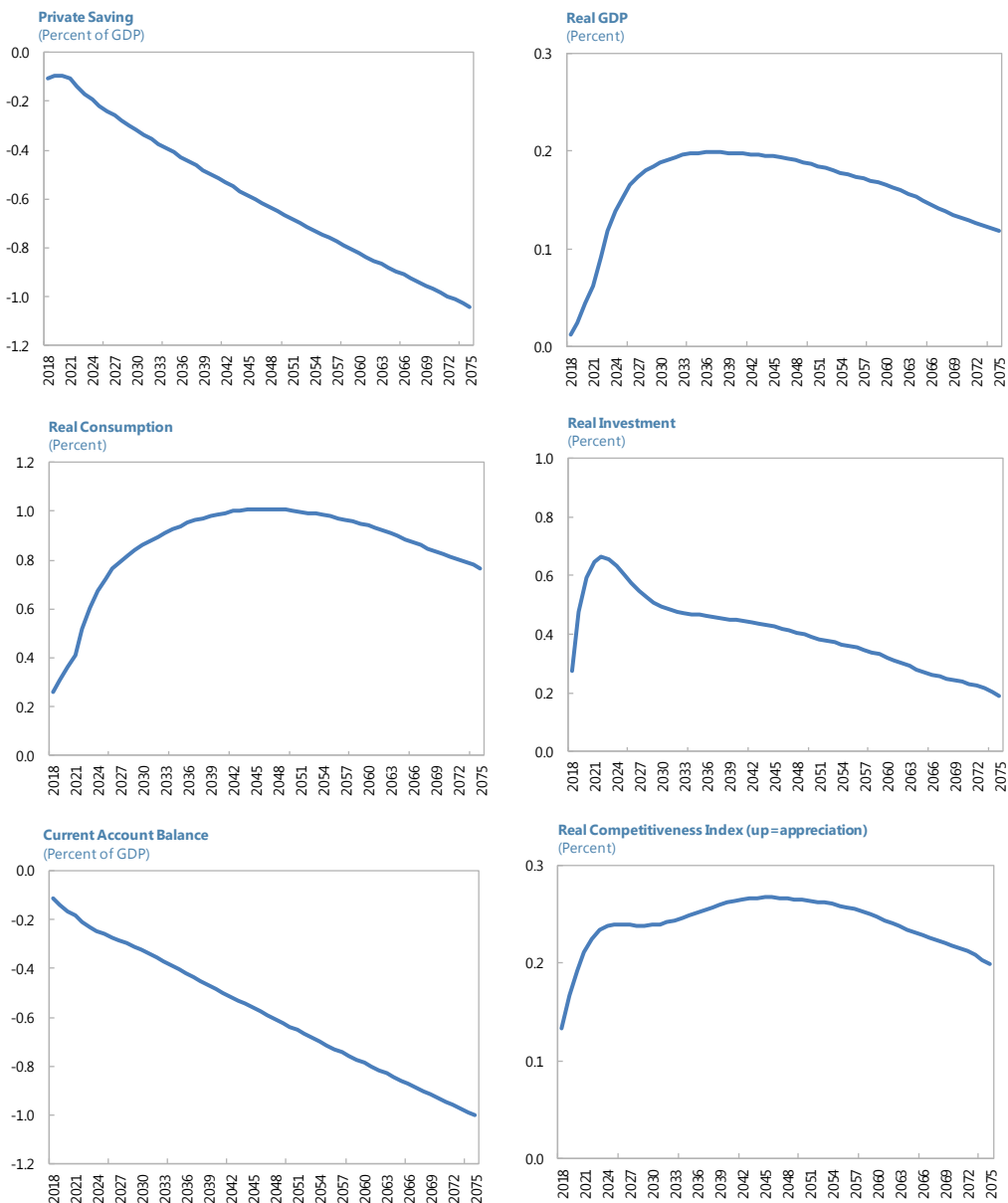
Figure 3. Permanent Increase in Social Safety Net Spending Financed by Difference Tax Instruments (Deviation from Baseline)



Source: Authors' estimates.

25. A stronger social safety net would also reduce income uncertainty and household precautionary saving. For example, OECD (2011) finds that an increase in public health care spending by 1 percent of GDP is associated with a decline in the saving rate by 1.9 percentage points. In the FSGM simulation, due to the impact of permanently higher transfers, private saving as a share of GDP declines by 1 percentage point in the long run, with stronger private consumption and investment boosting GDP growth and reducing Korea's current account surplus (Figure 4). The real exchange rate appreciates, consistent with stronger imports from the rest of the world. By helping the economy move towards an inclusive and consumption-led growth model, the underlying fiscal measures would lessen the economy's vulnerability in dealing with potential external shocks in the future. Such a policy would have a long-lasting, but not permanent impact on output and would need to be combined with policies that raise productivity growth and the labor supply.

Figure 4. Permanent Decrease in Saving Rate (Deviation from Baseline)



Source: Authors' estimates.

Structural Reforms and Fiscal Measures to Boost Labor Supply

26. Potential growth can be boosted through structural reforms and fiscal measures. Fiscal policy can support long-term growth through different channels (IMF, 2014b, c, 2015b). Efficient public investment, especially in infrastructure, can raise the economy's productive capacity. Social benefits for specific groups (e.g., public spending for childcare and active labor market policies, ALMP) can have significant impact on labor supply, and hence, potential output. Government

spending on research and development (R&D) or tax incentives to encourage private R&D can enhance productivity. Furthermore, fiscal policies can support labor and product market reforms that ultimately yield productivity gains by mitigating their distributive effects (Banerji and others, 2017). Moreover, rebalancing the tax structure away from direct taxes that fall on labor and capital and towards indirect taxes on consumption (VAT) and property taxes would improve allocative efficiency (Arnold and others, 2011; Ebrill and others, 2001).

27. Simulations are carried out to assess the impact of fiscal measures to boost labor supply and the efficiency of the tax structure, combined with structural reforms to strengthen productivity. The reform package includes: easing product market regulation and employment protection legislation¹¹, raising the share of consumption and property taxes in total tax revenues, increasing childcare spending and, strengthening active labor market policies.¹² The scenario assumes that Korea implements in 10 years 75 percent of the product market and employment protection reforms that would allow the country's regulation to converge to the average of the three OECD economies at the frontier.¹³ The share of consumption and property taxes in total tax revenues is assumed to increase by 3 percentage points, accompanied by a decline in the share of labor income tax that boosts labor force participation. Moreover, the scenario assumes an expansion in childcare spending by 0.25 percent of GDP, and an increase in ALMP spending by 0.5 percent of GDP, financed through a combination of higher VAT revenues and higher deficit.¹⁴

28. The simulation results indicate that with these reforms Korea's potential output could rise by more than 6 percent in the long run. On average, potential growth would increase by over 0.6 percentage point a year for a decade.¹⁵ The additional spending on childcare and ALMP would result in a rise in public debt in the very long run of 15 percentage points of GDP.

Combined Effects of Policies

29. The comprehensive policy package including stronger social safety nets, structural reforms, and an increase in fiscal spending to boost labor supply would yield multiple benefits. While supply-side reforms would improve the economy's competitiveness and its long-run growth, rebalancing the economy towards a more inclusive and consumption-driven growth model would be welfare-enhancing and reduce Korea's vulnerability to external shocks. Output and real

¹¹ For an analysis of labor market rigidity in Korea, see Schauer (2017).

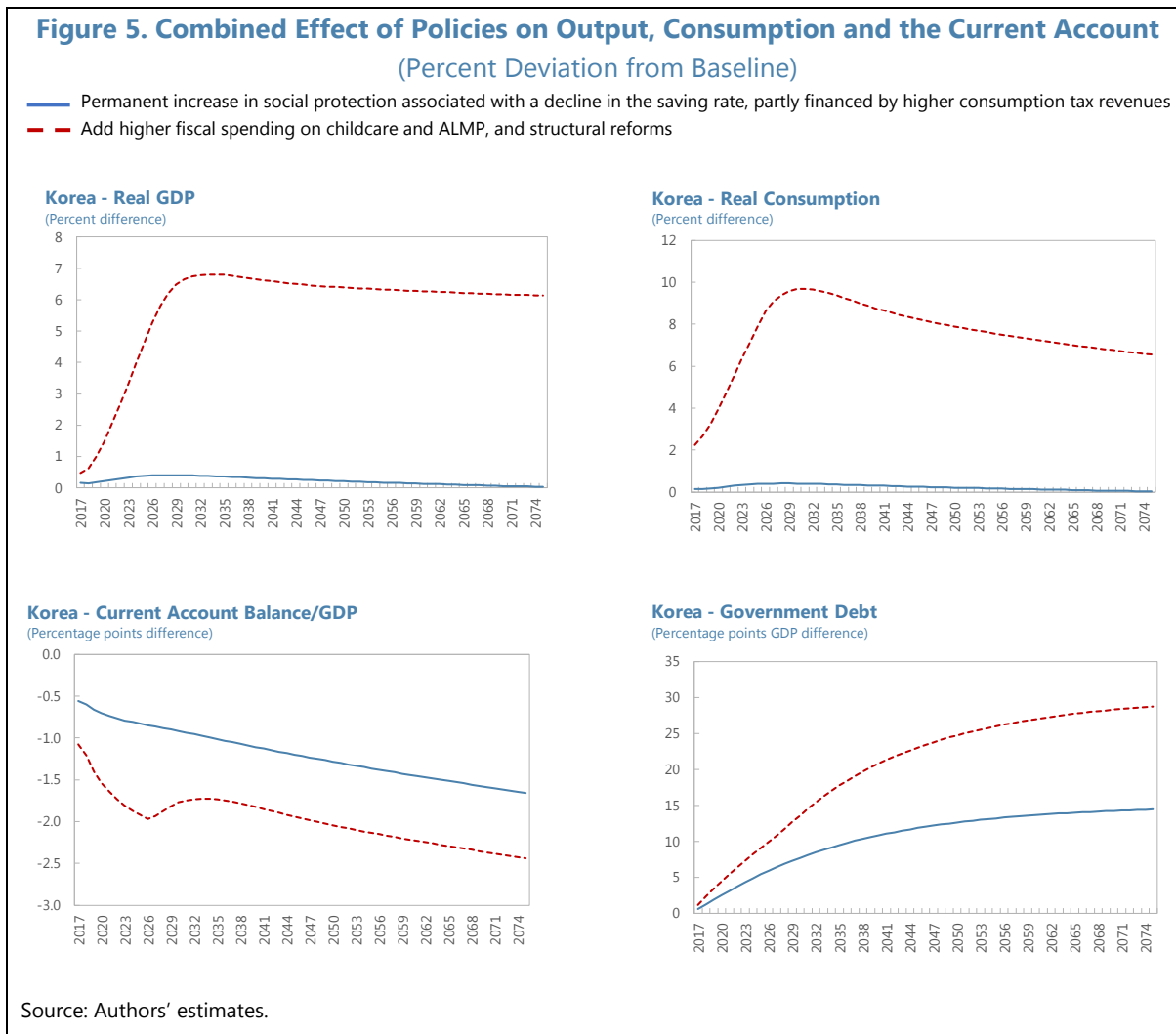
¹² A simulation involving increases in public spending on infrastructure is not carried out as Korea's infrastructure is already at the frontier (Corbacho and others, 2017).

¹³ Product market regulation is assessed using the OECD Product Market Regulation (PMR) index; the indicator of labor market regulation is the OECD employment protection legislation (EPL) index. Estimates of the impact of easing regulation on productivity are based on Bassanini and Duval (2006) and Bouis and Duval (2011).

¹⁴ The impact of childcare and ALMP spending on labor force participation and equilibrium employment is estimated using Bassanini and Duval (2006) and Bouis and Duval (2011).

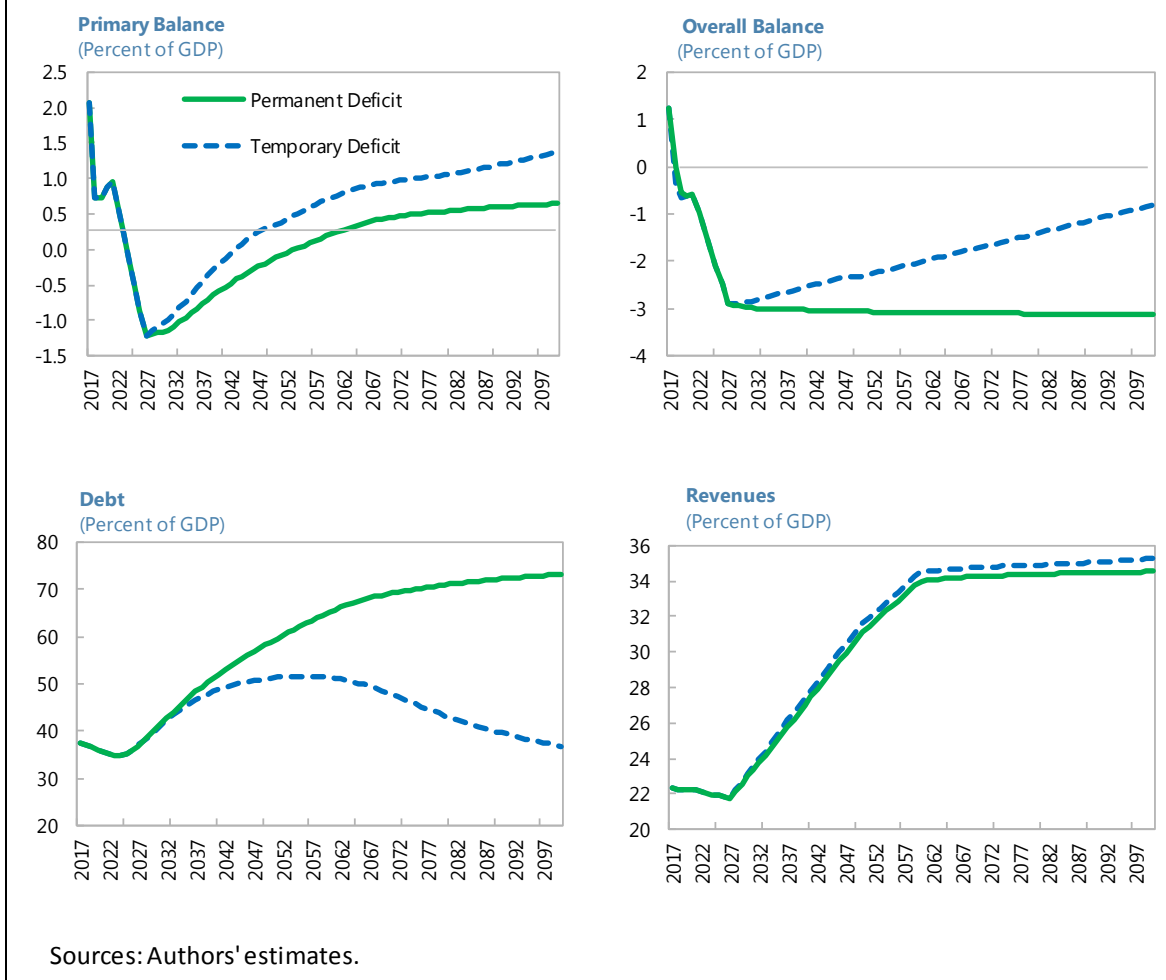
¹⁵ In the model the impact of an increase in spending on active labor market policies could be under estimated, as it is assumed to affect equilibrium employment, but does not have an impact on the participation rate.

consumption would increase by about 6 and 9 percent, respectively, in 10 years and the current account surplus would decline by nearly 2 percent of GDP in 10 years (Figure 5).



30. The policy package would imply a 30 percentage points increase in the debt ratio relative to the baseline scenario. Deficit would increase by 1.5 percentage points of GDP relative to the baselines. Assuming, for example, that the authorities decided to follow a path like the one depicted in the “temporary deficit” scenario of Figure 2, with the additional fiscal measures to boost social protection and labor supply, public debt-to-GDP would peak at 51 percent in 2061, and would decline afterwards. Deficit would peak at 3 percent of GDP in 2027 and decline afterwards (Figure 6). If, instead, the authorities decided to follow the “permanent deficit” scenario, public debt would reach 70 percent of GDP in 2080 and stabilize at 75 percent past beyond 2100. This level would still be well below the 85 percent benchmark for advanced economies. The deficit would stabilize at around 3 percent.

Figure 6. Combined Effect of Policies on Fiscal Variables



31. Maintaining government debt at these levels would provide buffers to deal with the fiscal costs of possible reunification. Great uncertainty surrounds the timing and modalities of a possible future reunification, making estimates of possible fiscal costs difficult to pin down. The process of equalizing living standards would require a large increase in both public and private sector investment on physical and human capital (e.g., McKibbin and others, 2017), as well as increased welfare expenditure for North Korean residents (e.g., Auerbach, Chun, and Yoo, 2004).¹⁶ With careful and appropriate policy responses, the integration of the North Korean economy would also bring benefits to South Korea, including an increase in the labor force and higher potential growth over time.

¹⁶ Estimates of the potential costs of reunification in Korea are wide ranging, reflecting different definitions of reunification costs, different methods, and different time horizons. They range from around 4 percent to 25 percent of South Korea's GDP each year for a decade (McKibbin and others, 2017; St. Brown, Choi, and Kim, 2012; Auerbach, Chun, and Yoo, 2004; Park, 1997).

E. Conclusions

32. Rapidly aging population and other structural impediments impinge on Korea's long-term fiscal outlook and potential growth. Moreover, inadequate social protection is creating poverty, boosting precautionary savings, dampening consumption and contributing to external imbalances. Under current baseline assumptions, with rising age-related fiscal spending, a policy that kept fiscal revenue to GDP constant would result in an unsustainable path of public debt in the long term. Given Korea's low public debt, and low interest rates, it would be more desirable to finance the rising age-related with higher borrowing and additional revenues obtained by broadening the tax base and with selected tax increases. Overall, the size of government will need to rise.

33. To promote sustained, inclusive and more balanced growth, Korea needs to implement a comprehensive package of fiscal and structural measures. This would entail an increase in targeted social spending to help reduce poverty and bolster private consumption, as well as fiscal measures to support employment and boost female labor force participation. Structural reforms aimed at raising productivity growth and efficiency would boost potential growth and contribute to fiscal sustainability. Illustrative simulations indicate that even taking into account the projected increase in age-related expenditure, higher spending on social safety nets, and fiscal measures to bolster labor supply, Korea can stabilize the debt-to-GDP ratio to levels well below the estimated dangerous threshold.

References

- Andrle, M., P. Blagrove, P. Espaillet, K. Honjo, B. Hunt, M. Kortelainen, R. Lalonde, D. Laxton, E. Mavroeidi, D. Muir, S. Mursula, S. Snudden, 2015, "The Flexible System of Global Models – FSGM," IMF Working Paper No. 15/64.
- Alichi, A., O. Bizimana, S. Domit, E. Fernández-Corugedo, D. Laxton, K. Tanyeri, H. Wang, and F. Zhang, 2015, "Multivariate Filter Estimation of Potential Output for the Euro Area and the United States," IMF Working Paper No. 15/253.
- , O. Bizimana, D. Laxton, K. Tanyeri, H. Wang, J. Yao, and F. Zhang, 2017, "Multivariate Filter Estimation of Potential Output for the United States," IMF Working Paper No. 17/106.
- Arnold J., B. Brys, C. Heady, A. Johansson, C. Scwellnus, and L. Vertia, 2011, "Tax Policy for Economic Recovery and Growth," *Economic Journal* 121: 1006-36.
- Auerbach, A., Y. Chun, and I. Yoo, 2004, "The Fiscal Burden of Korean Reunification: A General Accounting Approach," NBER Working Paper Series No. 10693.
- Banerji, A., V. Crispolti, E. Dabla-Norris, R. Duval, C. Ebeke, D. Furceri, T. Komatsuzaki, and T. Poghosyan, 2017, "Labor and Product Market Reforms in Advanced Economies: Fiscal Costs, Gains, and Support," IMF Staff Discussion Note 17/03 (Washington, D.C.: International Monetary Fund).
- Bassanini, A., and R. Duval, 2006, "Employment Patterns in OECD Countries: Reassessing the Role of Policies and Institutions," OECD Economics Department Working Paper No. 486 (Paris: OECD Publishing).
- Bouis, R., and R. Duval, 2011, "Raising Potential Growth After the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond," OECD Economics Department Working Paper No. 835 (Paris: OECD Publishing).
- Corbacho A., D. Muir, M. Nozaki and E. Zoli, 2017, "the New Mediocre in Asia: What Can Fiscal Policy Do?", Paper presented at the IMF-BOF-PIIE conference "Prospects and Challenges for Sustained Growth in Asia", Seoul, September.
- De la Maisonnette, C. and J. O. Martins, 2015, "The Future of Health and Long-Term Care Spending", OECD Journal: Economic Studies, Volume 2014.
- Ebrill, L., M. Keen, J.-P. Bodin, and V. Summers, 2001, "The Modern VAT," International Monetary Fund.
- Jain-Chandra, S. and L. Zhang, 2014, "How Can Korea Boost Potential Output to Ensure Continued Income Convergence?" IMF Working Paper No. 14/54.

- International Monetary Fund, 2013, Staff Guidance Note for Public Debt Sustainability, <http://www.imf.org/external/pubs/ft/dsa/mac.htm>
- , 2014a, Staff Report Republic of Korea: Staff Report for the 2013 Article IV Consultation, Country Report No. 14/101.
- , 2014b, "Chapter 3: Is It Time for an Infrastructure Push? The Macroeconomic Effects of Public Investment." *World Economic Outlook, October 2014* (Washington D.C.: International Monetary Fund).
- , 2014c, "Can Fiscal Policy Do More for Jobs?", Chapter 2 of Fiscal Monitor, October.
- , 2015a, "Where are we Headed? Global Perspective on Potential Growth," in World Economic Outlook (Chapter 3), Washington, International Monetary Fund.
- , 2015b, "Fiscal Policy and Long-Term Growth," IMF Policy Paper, June.
- , 2017, "The 'New Mediocre' and the Outlook for Productivity in Asia," Asia and Pacific Regional Economic Outlook, April.
- Kaminsky, G., S. Lizondo, and C. Reinhart, 1998, "Leading Indicators of Currency Crisis", IMF Staff Papers, Vol. 45 (1), March.
- Laxton, D. and R. Tetlow, 1992, "A Simple Multivariate Filter for the Measurement of Potential Output," Technical Report No. 59, (Ottawa: Bank of Canada), June.
- , H. Wang, and J. Yao, 2017, "Multivariate Filter Estimation of Potential Output with Production Function," IMF Working Paper, *Forthcoming*.
- McKibbin, W., J. Lee, W. L., and C. Song, 2017, "Modelling the Economic Impacts of Korean Unification," CAMA Working Papers 2017-30.
- Ministry of Strategy and Finance, 2015, "2016-2060 Long-term Fiscal Projections." http://www.mosf.go.kr/nw/nes/detailNesDtaView.do?searchBbsId1=MOSFBBS_0000000002&searchNttId1=OLD_4096802&menuNo=4010100
- National Assembly Budget Office, 2012, "2012-2060 Long-Term Economic Outlook and Fiscal Analysis."
- , 2016, "2012-2060 Long-Term Economic Outlook and Fiscal Analysis."

- National Pension Research Institute, 2013, "A Summary of the 2013 Actuarial Projection Result."
- Okun, A.M., 1962, "Potential GNP: Its Measurement and Significance," in Proceedings of the Business and Economic Statistics Section, pp. 98–104.
- OECD, 2011, "The Impact of Structural Reforms on Current Account Imbalances", *OECD Economics Department Policy Notes*, No. 3.
- , 2016, *OECD Economic Surveys: Korea*.
- Park, T. 1997, "Projection of Korean Reunification Cost and Fund Raising Method," Chapter VIII of Jun, Hong-Taek and Young-Sun Lee eds., *Strategies for Economic Integration after Korean Reunification*, Research Report, Korea Development Institute.
- Schauer, J., 2017, "Labor Market Duality in Korea," International Monetary Fund.
- St. Brown, M., S. Choi, and H. Kim, 2012, "Korean Economic Integration: Prospects and Pitfalls," *International Economic Journal*, 26: 471–485.
- Zoli, E., 2016, "Korea's Challenges Ahead—Lessons from Japan Experience," IMF Working Paper No. 17/2.

KOREA'S INTEGRATION INTO GLOBAL VALUE CHAINS AND EXTERNAL BALANCE¹

A. Korea's Integration into GVCs

- 1. Korea's economic structure is being transformed by the rapid expansion of GVCs.** This occurs through both direct effects on patterns of trade and production, and indirectly through macroeconomic channels that affect the private saving rate and investment. The productivity gains from the expansion of GVCs should yield major economic benefits.
- 2. There are two forms of GVC integration.** Backward GVC integration is where intermediate inputs are imported for use in production of the final good. They typically replace higher-cost domestically produced inputs, improving competitiveness. Forward GVC integration is where domestic firms export intermediate inputs as an input into final production in another country.
- 3. The relative importance of backward and forward integration in a country reflects its position in the GVC.** Backward integration is relatively important in lower income countries that specialize in lower value-added stages of the GVC. These tends to be the last production stage of final assembly where low labor costs are a key advantage. Forward integration predominates in higher income countries further up the GVC, which tend to exports technically sophisticated intermediate inputs for use in this final assembly. Finally, post-production stages like marketing services tend to be done in high income countries that are the export destinations (World Bank, 2017).
- 4. GVC integration reflects rapid outsourcing.** Outsourcing occurs when exporters in a country shift final production of the export good abroad and, instead, export intermediate inputs to support this production. It involves both an increase in forward integration, as intermediate exports rise, and a reduction in final export. Forward integration increases productivity in the outsourcing country by allowing it to specialize in production of the higher value-added goods. The firms doing the outsourcing should earn higher profits from the efficiency gained by shifting final production to a lower labor cost location, which they then can repatriate. The recipient country where production is relocated also benefits from competitiveness gains and higher export earnings from what is for them an increase in backward integration.

¹ Prepared by R. Sean Craig and Johanna Schauer (APD)

5. Korea’s backward and forward participation in GVCs is relatively balanced.

The size of these linkages for Korea is in the mid-range of countries, reflecting the fact that the smaller the country the higher is the percentage shares of imported inputs. What distinguishes Korea from other countries is how rapidly this balance in forward and backward participation has shifted.

6. Backward GVC integration expanded rapidly but then contracted.

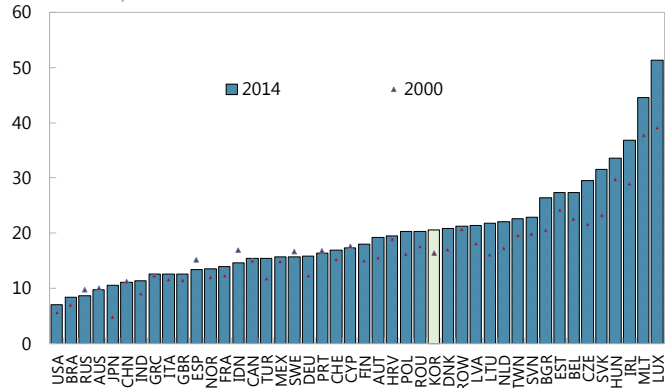
After registering one of the largest expansions from 2001 to 2011, backward participation declined between 2011-14 (Figure, red bar). The early growth in backward participation reflected increasing reliance on imported inputs. It reflects outsourcing of production to Korea by foreign multinationals, especially prior to the GFC, and the shift by Korean firms into higher technology activities more reliant on imported inputs. The reversal during 2011–14 represents a substitution of domestic for these imported intermediate inputs.

7. The expansion of forward GVC integration was quite stable as Korean firms steadily increased exports of intermediate inputs for use in production abroad

(see Figures). The evidence indicates that this largely reflects Korean corporates forward participation in GVCs in sectors where they are particularly strong, such as autos and electronics, and services (see Figure). This typically involves outsourcing of final stages of production to locations where labor costs are lower, while retaining domestic production of higher value-added intermediate inputs that are then exported to these locations. A prime example is Samsung smart phones, where 86 percent of final assembly is now

Backward Participation

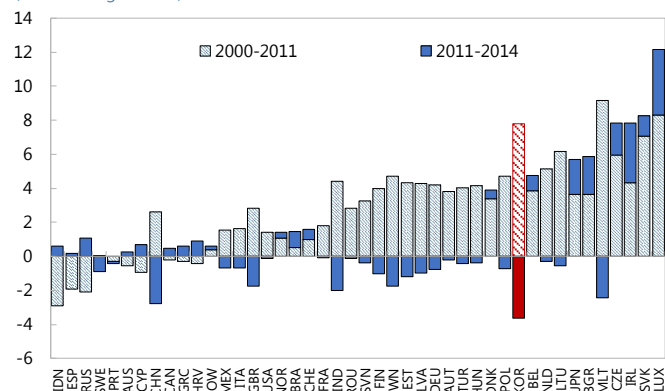
(In percentage of final product produced that comes from GVC related production and trade activities)



Sources: IMF staff estimates, UIBE GVC Index based on WIOD 2016.

Change in Backward Participation

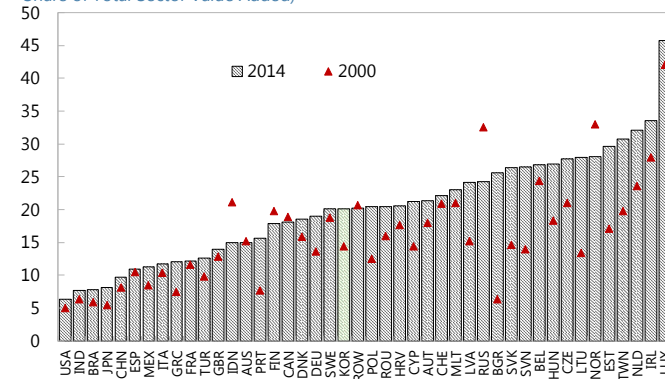
(In Percentage Points)



Sources: IMF staff estimates, UIBE GVC Index based on WIOD 2016.

Forward Participation

(Value Added Generated from GV Related Production and Trade Activities as a Share of Total Sector Value Added)



Sources: IMF staff estimates, UIBE GVC Index based on WIOD 2016.

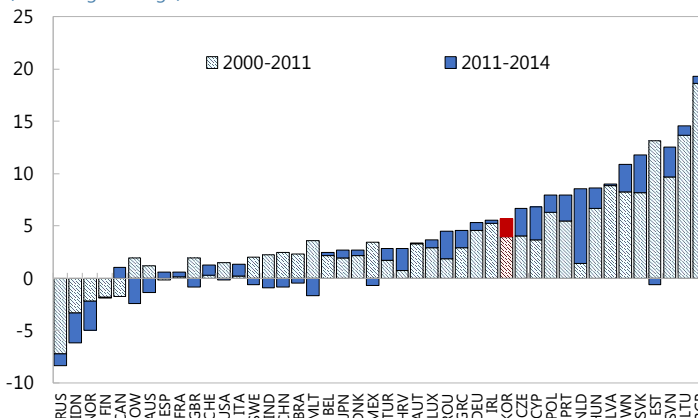
done outside Korea, notably in Vietnam. Samsung still produces domestically—and exports—many of the higher value-added components, both for its own phones and for other manufacturers.

8. In Korea, forward integration has been increasing relative to backward integration.

This is transforming the structure of its production and trade, with implications for employment and the distribution of income. As Korea move up the GVC, firms outsource production of final export goods to lower wage countries, and increase production and export of higher valued-added intermediate inputs. This involves closing local facilities producing outsourced goods and increasing foreign direct investment (FDI) abroad in facilities to produce these goods. The fall in employment as these local facilities close should be partly offset by the increase in production of intermediate inputs. In addition, corporates earn higher profits from relocating production abroad, which they should repatriate through the income balance of the current account.

Change in Forward Participation

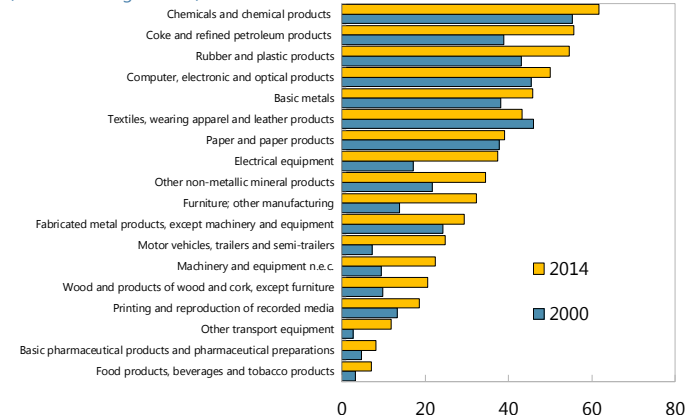
(Percentage Change)



Sources: IMF staff estimates, UIBE GVC Index based on WIOD 2016.

Forward Participation

(Manufacturing Sectors)



Sources: IMF staff estimates, UIBE GVC Index based on WIOD 2016.

B. Insights from the Literature on GVC Integration

9. Integration into GVCs will impact the current account through a variety of channels.

Economic theory implies that GVC integration improves the current account. The productivity gain from GVC integration will lead to a transitory, relative improvement in competitiveness that should be gradually eroded as competing countries achieve similar improvements by following suit. Residents recognize that the income gain from the productivity shock will be temporary and, therefore, save part of it to smooth consumption. This rise in the private saving rate contributes to a temporary improvement in the current account (Brumm et al., 2017). How this occurs in practice will depend on the form and pace of GVC integration, and whether the adjustment process occurs smoothly, consistent with theory, or is slowed by structural impediments.

10. There is by now a substantial literature on the impact of GVC integration. The theoretical analysis in this literature focuses largely on the trade channel, as the expansion of GVCs

generated major shifts in the structure of global trade and production. This work has typically relied on general-equilibrium microeconomic models of trade that can capture the employment impact and the effect on income accruing to factors of production. Adjustment through the other channels (see below) is assumed occur smoothly and rapidly in the model as resources are shifted to new activities and kept fully employed; and, in general, these channels are not analyzed specifically. Many models build on the seminal analysis by Melitz (2003) of trade in differentiated products, notably Demidova et. al. (2013), which extends this model to cover trade in intermediate inputs. Consequently, this research primarily yield insights into the trade channel. However, these other macroeconomic channels can become qualitatively important when structural impediments prevent the smooth and rapid adjustment process assumed in these models. This is the case in Korea and, probably, in other countries also, and will differ depending of the economic structure of the country.

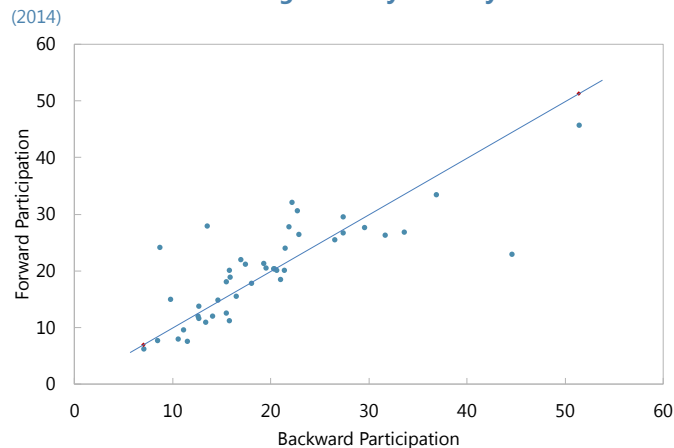
11. Most recent empirical literature estimate the cross-country, cross-industry effects of GVCs. It exploits major recent improvement in data on trade in value-added (intermediate) goods. This panel estimation approach has yielded valuable insights that reflect the average effect across many countries, and is reported in papers cited here. However, the experience of each country will depend on its specific economic structure, which makes case studies of countries, like that for Korea here, a essential complement to this more formal cross-country estimation approach.

C. Channels through which GVC Integration Impact Korea

12. GVC integration impacts the current account through different channels. The immediate impact occurs through the trade channel where productivity gains from outsourcing alter the structure of trade, production and employment. Then, second round effects occur through the macroeconomic channels of domestic investment, FDI, labor income, foreign investment income, and the distribution of income. These affect the private saving rate and investment and, hence, the current account. The impact on the current account depends on the extent that these channels affect Korea differentially vis-à-vis other countries, in line with the principle of multilateral consistency where current account balances should sum to zero globally.

- **Trade channel.** The effect of GVC participation through this channel depends on whether it takes the form of forward or backward integration. These two channels are relatively balanced for most countries, including Korea, which lies almost on the 45° line (Figure).
- **An increase in forward integration** is a rise in exports of intermediate inputs. However, when this is associated with outsourcing, the short-term net effect on the trade balance should be negative: the additional exports of intermediate inputs

Global Value Chain Integration by Country

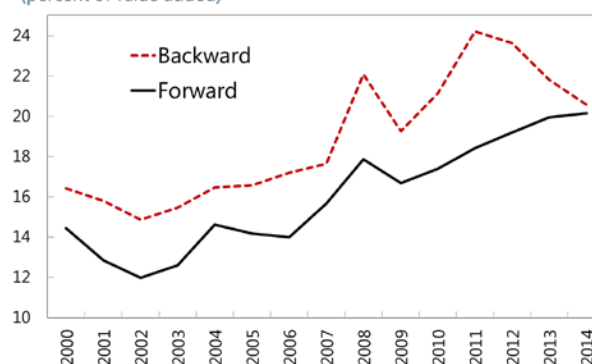


for use in production of the outsourced good will be more than offset by the fall in the exports of this good. Over time, this negative effect should reverse as exports of intermediate inputs increases strongly as the productivity gain from outsourcing increases external demand for these intermediate inputs. In Korea, recent GVC integration has been driven by forward integration, with exports of intermediate inputs rising steadily from 13 to 20 percent of value added (Figure).

- **An increase in backward integration** is a rise in imports of intermediate inputs. This results from a fall in the cost of imported relative to domestically-produced inputs. The impact of this rise in imports on the trade balance should be offset by the positive effect on exports from the lower cost of imported inputs that makes firms more competitive.² In countries where the

GVC Backward and Forward Integration

(percent of value added)



Sources: Authors' calculations, UIBE GVC Index based on WIOD 2016.

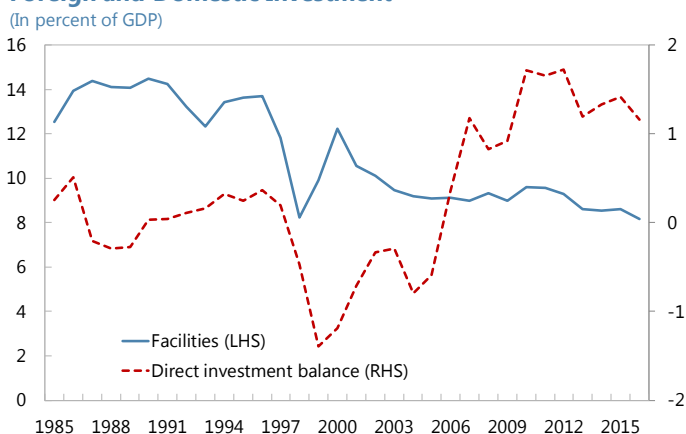
increase in backward integration is associated with the outsourcing of production to that country, the net effect on the trade balance will be positive as exports of these outsourced goods is likely to exceed the imports of intermediate goods used in their production. In contrast to the rise in forward integration, backward integration has declined over the last few years (Figure). Moreover, this outsourcing has been concentrated in sectors where Korean firms are particularly strong, where productivity and competitiveness gains are likely to be substantial.

- **Investment/FDI channel:** the outsourcing of production in GVCs lead local firms to invest abroad through FDI rather than at home, which tends to reduce domestic investment (Figure). The associated weakness in domestic demand widens the current account surplus. Over time, this effect can be partially reversed as the increase in intermediate input exports necessitates new investment to ramp-up production. Moreover, as the labor displaced by this outsourcing is redeployed in other domestic activities, this could necessitate new investment. Data for Korea are consistent with this channel, with outward FDI growing strongly and the domestic investment ratio declining steadily (Figure).

² Lee et. al. in "Offshoring, Exports and Employment: Theory and Evidence from Korean Firms" develop a model showing the conditions under which this effect will be positive. Estimation of their model on Korean sector level data shows that this effect is positive on balance for many sectors and, hence, for the economy as a whole.

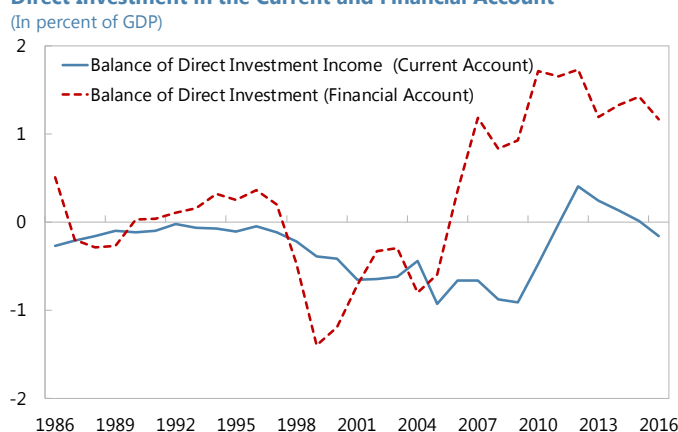
- Foreign investment income channel:** outsourcing in GVCs should increase productivity, generating higher profits in Korean corporates' foreign operations. These profits will be repatriated through the investment income balance, which raises the current account surplus directly. The strong growth in foreign investment income inflows following the surge in FDI associated with outsourcing suggesting that this channel is significant (see Figure). This positive effect on the current account is likely to be partly offset as this income is received by residents who spend part of it, boosting demand.

Foreign and Domestic Investment



Sources: IMF staff estimates, Bank of Korea.

Direct Investment in the Current and Financial Account



Sources: IMF staff estimates, Bank of Korea.

- Income-distribution channel.** Outsourcing can temporarily worsen income distribution, raising the aggregate private saving rate. Higher corporate profits raise corporates' income that accrues to their shareholders, investors or managers. In parallel, the shift in production abroad reduces domestic employment that initially is likely to be only partly offset by employment for additional production of intermediate exports. As a result, employment and labor income weaken. The net effect is a fall in the share of labor relative to capital income; and, since the former has a high propensity to consume than the latter, this should increase the private saving rate. As this labor is redeployed, employment and labor should recover, reversing this effect. In Korea, the falling share of labor income, and rising capital share, is consistent with this.

D. Implications of GVC Integration for Korea's Current Account

13. The channels documented above have differing impact on Korea's current account. The effect through the trade channel is dominated by the recent expansion in forward integration driven by outsourcing. The impact effect of this reduces the current account surplus as outsourcing shifts production of exports abroad, reducing net exports. Over the medium term, the trade channel effect could reverse, as gains in competitiveness drive strong growth in exports of intermediate goods. The other three "macroeconomic" channels all widen the current account surplus. While the net effect through these channels should ultimately be temporary, how long it lasts in practice will depend on

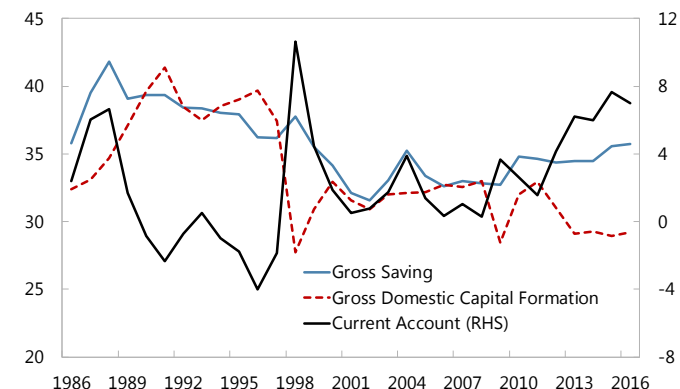
how rapidly labor is redeployed in higher value added production activities and the gain in competitiveness from GVC integration are eroded by productivity gains in other countries.

14. GVCs integration alters the saving-investment balance.

This is reflected in the recent widening in the gap between saving and investment (Figure). Domestic investment has been weakened by outsourcing as firms invest in production facilities abroad through FDI. In parallel, outsourcing raises the private saving rate by altering the distribution of income. The employment impact weakens labor income growth, while the productivity gains from outsourcing raises corporate earnings. This tends to reduce the share of national income going to labor – which has a high marginal propensity to consume (MPC)—and increasing the share accruing to capital—where the MPC is lower—raises the private saving rate. Over time, these effects should reverse—narrowing the current account surplus—as labor is redeployed and domestic investment expands for production of higher value added intermediate inputs for export. This wider gap between the saving and investment rate has been associated with a larger current account surplus (Figure).

Saving, Investment and the Current Account

(In percent of GDP)



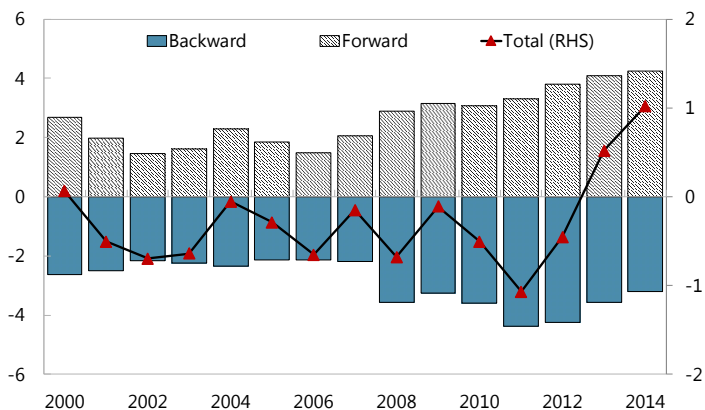
Sources: IMF staff estimates, Bank of Korea.

15. To assess whether backward and forward participation in GVCs is correlated with the current account, these two variables are added to the IMF’s multilaterally consistent model of current account determination.³

This modified specification shows forward integration has a positive, and backward integration a negative, correlation with the current account (Figure). The addition of a component of the trade balance (which is part of the dependent variable) as a regressor can give rise to endogeneity problems, thus, the results should only be viewed as indicative. They show that the effect of GVC integration on the current account has shifted from negative to positive, although this effect remains quite small relative to the size of the current account surplus (7 percent of GDP in 2016).

Contribution of GVC Variables to Korea's Current Account

(Based on EBA Specification)



Sources: IMF staff estimates, IMF ESR dataset, UIBE GVC Index.

³ The External Balance Assessment (EBA) model is a panel regression encompassing a large number of countries, and is described in the IMF’s 2017 External Sector Report, July 28th, 2017.

16. In sum, integration into GVCs will yield long run benefits for Korea. GVC integration results from the capacity to take advantage of developments in information and logistics technology that facilitate coordination of production processes across several different countries. Korean firms are leaders in key export industries where GVC participation can yield large productivity gains. This results from the capacity to outsource lower value added parts of the production process (e.g. final assembly of goods from exports) to countries with lower labor costs, while retaining the higher value added parts of the process in Korea (e.g. sophisticated microprocessors). While the increase in global integration of Korean industry into GVCs yield benefits, it also increases vulnerability to external shocks, including from protectionism.

References

- Bloom, D., and J. Finlay, 2009, "Demographic Change and Economic Growth in Asia," *Asian Economic Policy Review*, Vol. 4 (1), pp. 45–64.
- Brumm, J., G. Georgaidis, J. Grab, and F. Trottner, 2015, "Global Value Chain Participation and Current Account Imbalances," Manuscript.
- , 2017, "The Impact of Global Value Chain Participation on Current Account Balances—A Global Perspective" ECB Bulletin 2 / 2017.
- Demidova, S. and A. Rodriguez-Clare, 2013, "The Simple Analytics of the Melitz Model in a Small Economy," *Journal of International Economics*, 90(2), 266–272.
- Lee, J., D. Mitra, and P. Ranjan, 2017, "Offshoring, Exports and Employment: Theory and Evidence from Korean Firms," Manuscript, January.
- Melitz, M. J., 2003, "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," *Econometrica*, Vol. 71, pp. 1695–1725.
- World Bank, 2017, "Measuring and Analyzing the Impact of GVCs on Economic Development."

MACROPRUDENTIAL POLICY AND HIGH HOUSEHOLD DEBT¹

Household debt rose rapidly, posing risks to growth and financial stability. Example of other countries that safely operate with higher levels of household debt suggests that steps to strengthen financial resilience can lessen these risks. Macroprudential policies have been tightened aggressively to contain these risks and appear to be working.

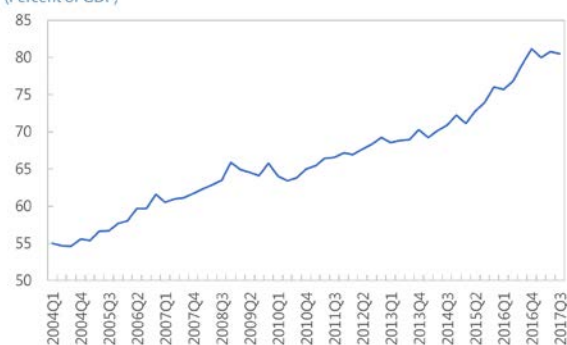
A. Policy Challenges from High Household Debt

1. Recent rapid household credit growth has increased the household debt to GDP ratio, posing a risk to economic growth and financial stability (Figure). It reflects a broader financial cycle driven by monetary easing that reduced the policy rate to an historic low, and strong demand for housing. This contributed to rise in housing prices, especially for apartments in the Seoul region, although housing prices do not appear overvalued for the country overall. The current low level of interest rates also exacerbates the risk from a large rise in interest rates on household debt, which could lead to a deterioration in asset quality. This Selected Issues Paper assesses these risks and the design of policies to effectively target them.

2. A key challenge is to identify the level of household debt with which Korea can operate safely. If this is underestimated, it could lead to costly, unnecessary deleveraging. Conversely, overestimation would involve operating with excessive levels of system risk. Adding to this challenge is the potential for raising this level by strengthening the resilience of the financial system, which would generally be preferable to deleveraging. The experience of other advanced economies can serve as a benchmark here. A few of them operate safely with a household debt ratios well above the Korean level, raising the question of what institutional features of their financial systems facilitate this. These cases are possible models for how Korea could strengthen its institutional framework to enhance the resilience of their financial system.

3. Korea is at the forefront of countries using macroprudential policy. The recent tightening has been successful in containing systemic risk, slowing credit growth and stabilizing house prices. However, an easing of policies in 2013-14, when the economy weakened, also may have exacerbated the financial cycle.

Korea - Household Debt
(Percent of GDP)



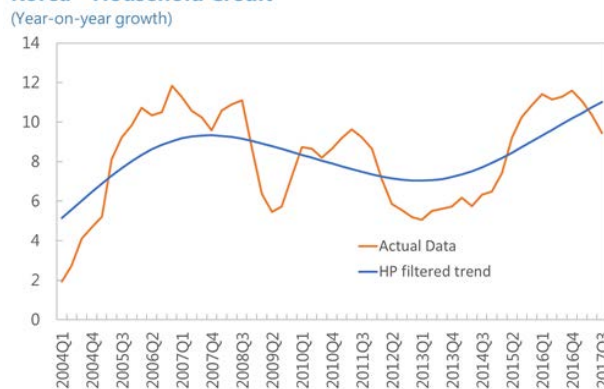
¹ Prepared by R. Sean Craig (APD).

B. The Financial Cycle and Risks from High Household Debt

4. Growth in the ratio of household debt to GDP accelerated in the last few years driven by a strong credit cycle.

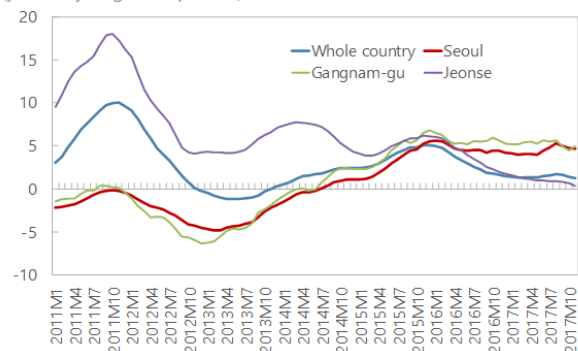
The debt to GDP ratio has risen to a high level, posing a risk to economic growth (Figure). The surge in household credit growth driving this rise has slowed to 9.5 percent (y. o. y.) in Q3 2017, its lowest pace in two years, suggesting the credit cycle – illustrated by applying an HP filter to credit – could be turning (Figure). Decomposition of credit growth into that for banks and non-bank financial institutions (NBFIs) shows that much of the acceleration in 2014 was driven by NBFIs (Figure). The latter were less strictly regulated than banks in the wake of the Global Financial Crisis (GFC) as bank regulation was tightened under the auspices of the Basel Committee. The decline in interest rates to records lows after the GFC also contributing to the credit cycle (Figure).

Korea - Household Credit



Sources: Haver, Staff calculations.

Housing Price Inflation: Apartments and Jeonse Rent Index (year-on-year growth, percent)

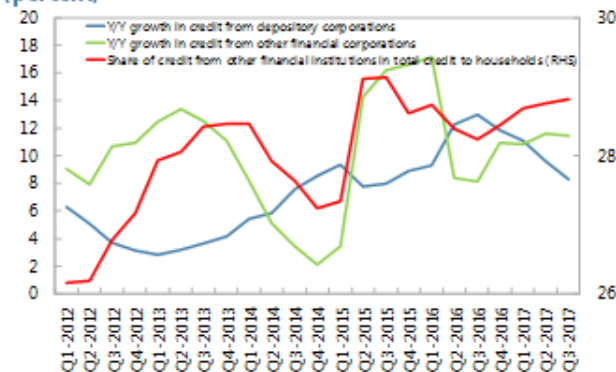


Sources: CEIC, IMF staff calculations.

5. The financial cycle in housing prices has been more moderate, limiting risks.

Recent house price increases have been concentrated in specific regions, with average prices stabilizing for the country overall (Figure). Apartment prices around Seoul are still registering significant increases, reflecting strong demand from household formation and the effect of record-low interest rates. There is also evidence of speculative demand, as reflected in multiple purchases of apartments by individuals, and purchases and resales before construction is completed.

Credit to Households (percent)



Sources: Haver

6. The risk from high household debt could increase as decline in interest rates to record lows reverses

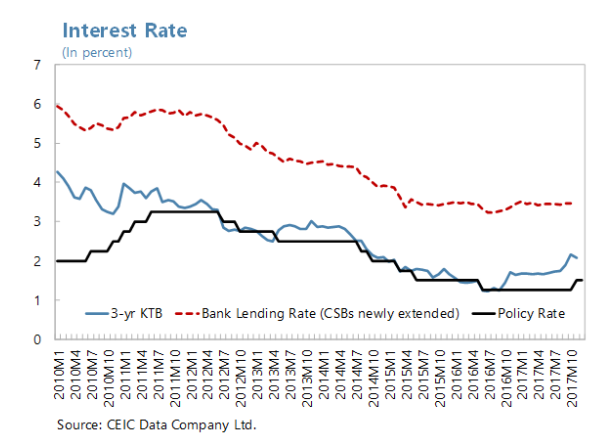
(Figure). With the ratio of household debt to GDP now relatively high, there is a risk that a large, sharp rise in interest rates as the Bank of Korea and other major central banks starting to tighten monetary policy, could have a more substantial impact on household consumption and asset quality. This risk is evaluated through stress testing by the authorities. For banks, stress tests show that even for a very large shock of

300 basis points, the Basel capital ratio falls 1.4 percent to 13.7 percent—well above the regulatory minimum (Table 1). Interest rate stress tests for insurance companies of 150 basis points show that their solvency ratio remains well above its regulatory minimum. Other NBFIs show comparable levels of resilience.² Overall, this suggests that risks from a jump in interest rates to financial stability are well contained.

Table 1. Korea: Results of Interest Rate Stress Tests of Bank Capital Adequacy

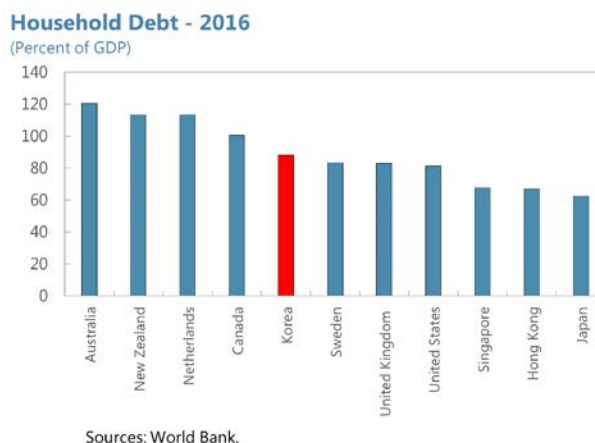
| Size of Interest Rate Shock | Basel Capital Ratio after Shock | Impact of Shock on Basel Capital Ratio |
|-----------------------------|---------------------------------|--|
| +100bp | 14.9 | -0.2 |
| +200bp | 14.4 | -0.7 |
| +300bp | 13.7 | -1.4 |

Source: Financial Stability Report “Stress Tests of Banking Sector under Interest Rate Hike Scenarios,” Box 6, June 2017, Bank of Korea.

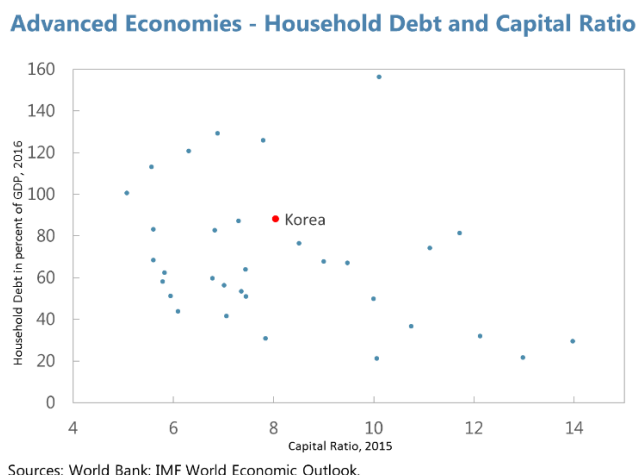


C. Lessons from Other Countries with High Household Debt

7. Higher household debt/GDP ratios in other advanced economies provides insights on what can be sustained (Figure). Econometric analysis shows that higher household debt is typically associated with greater likelihood of financial crisis.³ However, countries such as Australia, New Zealand and Canada with higher household debt than Korea all weathered the GFC without a crisis; while others, like the U.K. and U.S., experienced crises (Figure). The experiences of these successful countries may provide lessons for Korea on how to maintain stability with high levels of household debt as an alternative to costly deleveraging.



8. Strong institutional frameworks that build financial resilience enable countries to safely carry higher household debt. There is substantial anecdotal evidence from country studies for this but limited cross-country econometric evidence. The latter reflects the

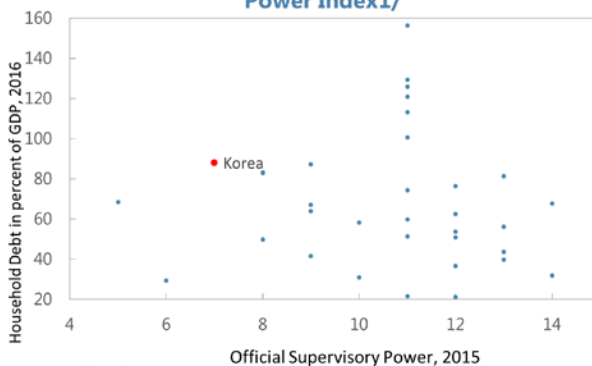


² Financial Stability Report “Examination of Nonbank Financial Institutions’ Interest Rate Risk,” pages 114-23, June 2017, Bank of Korea

³ This finding is documented in the October 2017 GFSR Chapter 2 “Household Debt and Financial Stability,” which estimates a panel regression covering 34 countries.

difficulty constructing good indicators of institutional quality and financial resilience. Widely used measures like the capital adequacy ratio do not really capture quality. Countries with demonstrated capacity to safely carry high household debt do not necessarily have particularly high CARs. This is reflected in the lack of correlation between the CAR and household debt/GDP ratio (Figure). Measures of the quality of supervision work better empirically, indicating that countries with “strict supervision” are the ones able to safely operate with high debt (Figure).⁴ Estimates from a panel regression reported in the GFSR, Chapter 2, “Household Debt and Financial Stability” assesses the extent to which different structural indicators reduce the negative effect of high household debt on GDP growth and finds that the stricter supervision produces the most improvement in resilience.

Advanced Economies - Household Debt and Supervisory Power Index1/



Sources: World Bank IMF WEO.
 1/Whether the supervisory authorities have the authority to take specific actions to prevent and correct problems; index ranges from 0 (no powers) to 14 (most powers).

9. The Korean authorities are taking steps to build resilience. These include upgrading NBFI supervision to harmonize it with that for banks and promoting more rigorous bank credit assessment. New supervisory tool such as the Debt Service Ratio (DSR) covering all forms of household debt are being introduced in 2018-19. Mortgage contracts are being changed to insulate household from interest rate risk through a rapid shift from variable-rate bullet loans to fixed-rate amortizing mortgages, which now make up 47 percent of the total. As wealthy households generally have assets to cover debt repayment, new government initiatives are targeting lower-income, highly leveraged borrowers where risks are concentrated. These facilitate debt restructuring and support repayment in the event of distress; including, for example, writing off around \$6 bn of debt of 1.6 million people earning less than \$1,000 equivalent per month. The cumulative effect of these policies and initiatives should substantially improve financial resilience.

D. Role of Macroprudential Policies

10. Macroprudential policies are being extensively used to curb risks from high household debt and credit growth. A broad range of macroprudential instruments that have been tightened and new ones introduced (Table 2). The loan-to-value

Table 2. Main Macroprudential Policy Actions

| Date | Impact | Action |
|--------------------|------------|---|
| 2005 | Tightening | Introduced DTI. |
| Summer 2008 | Easing | Raised LTV, eased registration, property transfer taxes, and urban resale limits except in 3 regions. |
| Summer 2009 | Tightening | Lowered LTV. |
| Summer 2010 | Easing | Cut registration, property and transfer taxes. |
| Winter 2011 | Easing | Raised LTV, eased registration, property transfer taxes, and urban resale limits in three regions. |
| Summer 2014 | Easing | Raised DTI and LTV, canceled transfer tax for owners with multiple homes. |
| Spring/summer 2016 | Tightening | Tighten mortgage lending standards. |
| Summer 2017 | Tightening | Lowered LTV and DTI, raised transfer tax in region with speculative activity. |
| Fall 2017 | Tightening | Expanded DTI coverage of debt and introduced DSR. |

⁴ This indicator was produced in Barth, James R., Gerard Caprio Jr., and Ross Levine. 2013. “Bank Regulation and Supervision in 180 Countries from 1999 to 2011.” *Journal of Financial Economic Policy* (5).

(LTV) and debt-to-income (DTI) ratios were reduced to record lows of 40 percent, and are now well below recent highs of 70 and 60 percent, respectively, to which they were increased in August 2014. And, a lower level of 30 percent was set for borrowers with multiple mortgages and in designated regions of speculative activity, mostly around Seoul. In October 2017, the DTI was effectively tightened further by broadening the range of debt subject to it. Also announced is a new, debt-service ratio (DSR) with comprehensive coverage of all household debts, which will be implemented for banks in mid-2018; and then for NBFIs at the start of 2019.

11. Evidence suggests that this macroprudential tightening will be effective. The growth in credit to households has slowed significantly over the last few months. Moreover, speculative purchases of apartments before construction is has diminished. An event study analysis by Federal Reserve Board economists finds that hikes in LTVs and DTIs have been effective in slowing credit growth and housing price increases.⁵ New cross-country panel regression analysis show that use of LTVs and DTIs is effective in reducing real household credit growth across 34 advanced and emerging market economies, including Korea.⁶

⁵ Akinci, Ozge, and Jane Olmstead-Rumsey "How Effective are Macroprudential Policies? An Empirical Investigation," Board of Governors of the Federal Reserve System, International Finance Discussion Papers, No. 1136, May 2015.

⁶ Reported in the October 2017 GFSR Chapter 2, "Household Debt and Financial Stability," Box 2.5.; which also discussed findings in other cross countries studies.

LABOR MARKET DUALITY IN KOREA¹

Labor market duality in Korea is a complex issue, which encompasses various types of non-regular workers. Nonetheless, it is particularly prominent among SMEs and in the service sector and disproportionately affects women, the elderly and youth. On a macro level it has likely contributed to increasing inequality, low fertility rates and declining productivity growth. The two main drivers behind duality are various employment protection legislations and large productivity differentials in the product market. A general equilibrium search-and-matching model is applied to model duality and simulate the impact of flexicurity policies. It finds that a well-calibrated introduction of flexicurity could address a number of issues that Korea is facing, such as reducing duality and inequality, and raising productivity and welfare. For this it would be crucial to implement all three pillars to ensure gains are distributed among all individuals.

A. Definition and Impact of Duality

1. Duality is usually employed to characterize a labor market consisting of two tiers.

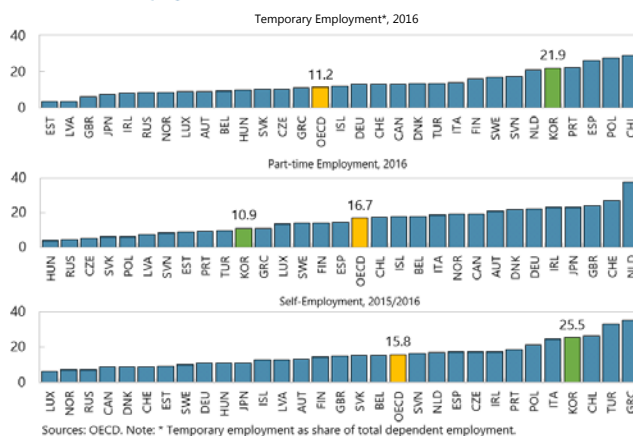
In the regular tier workers enjoy high wages and social benefits—such as unemployment insurance and pensions—and have a high degree of job security. In the non-regular tier workers tend to receive lower wages, are less likely to be covered by social benefits and have lower levels of job security. In practice, non-regular work can take many forms, with potential for overlap. Often it is defined using types of employment

contracts. The OECD provides cross-country data for three forms of employment that could be classified as non-regular: temporary, part-time and self-employment. Compared to other OECD countries Korea stands out for having a relatively high share of temporary and self-employed workers (see figure). With regards to part-time employment, Korea lies below the OECD average. However, beyond the incidence of non-regular employment contracts, it is critical to examine the impact of duality on individuals' lives and the economy and society as a whole.

2. The existence of different employment arrangements is not an inherent concern in itself.

On the contrary, they can serve different priorities of employers and workers and thereby enhance welfare. For example, part-time contracts might be preferred by individuals desiring higher work flexibility and can raise labor force participation. Temporary contracts can be used as a screening device by employers, which can lower skill mismatches. In general, a certain variety in

Non-Regular Employment (Share in total employment)



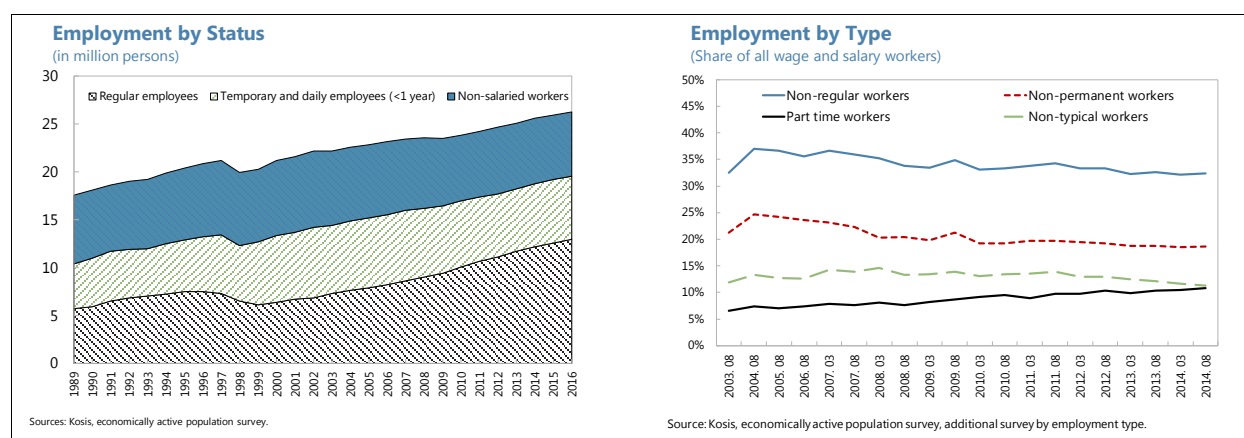
¹ Prepared by Johanna Schauer (APD).

employment arrangements has the potential to lower unemployment and in particular long-term unemployment and reduce loss of skills.

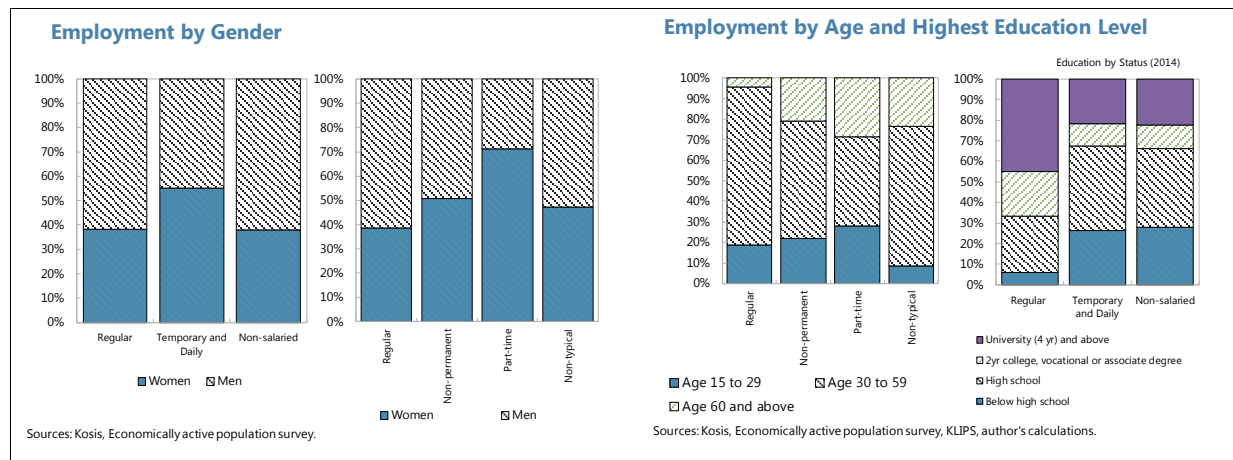
3. Labor market duality can become a significant problem if it results in inefficiencies and welfare losses. Labor market duality can reduce productivity. For example, if non-regular employment arrangements result in recurring spells of short-term employment and unemployment, this can cause an inefficient “revolving door.” Labor market duality can also contribute to inequality by inducing insider-outsider dynamics, with regular workers enjoying higher bargaining power and ensuring higher wages and job-security (Bentolila and Dolado, 1994; Lindbeck and Snower, 2002). This can result in very different working conditions for similar work (Aoyagi and Ganelli, 2013) and loss of intergenerational mobility, e.g. by reducing non-regular workers’ investment into their children’s education (OECD, 2016). Finally, labor market duality can result in negative externalities as firms might not internalize social costs of non-regular employment arrangements (Bentolila and Dolado, 1994; Dolado et al, 2017).

B. Development of Labor Market Duality in Korea

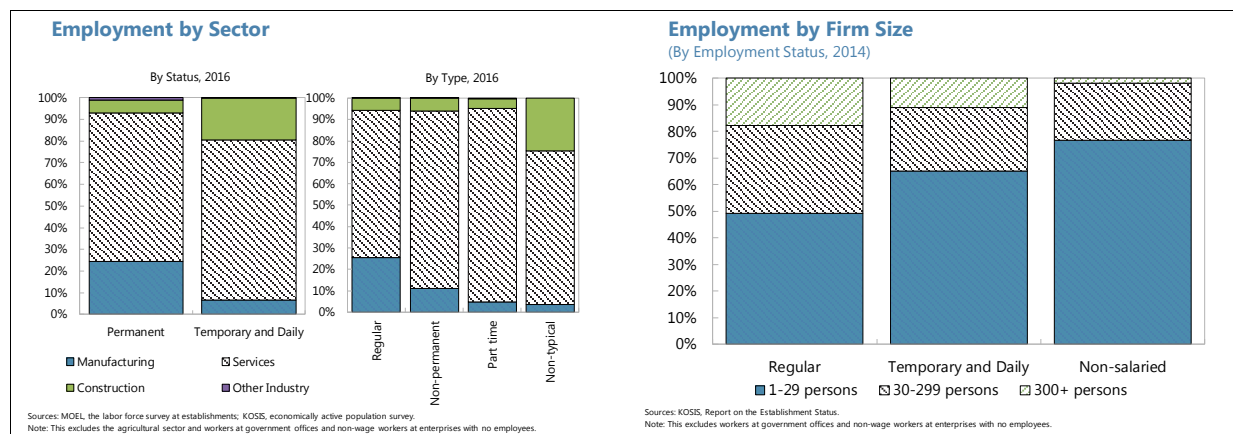
4. Different types of non-regular employment have experienced varying trends over time. A classification of employment by status suggests that the share of non-salaried workers declined significantly from 41 percent in 1989 to 25 percent in 2016 (see Figure). The share of temporary workers remained largely unchanged. Standing at 27 percent in 1989 it peaked at 33 percent in 2002 and subsequently declined to 25 percent in 2016. A break-down by employment type suggests that the incidence of non-regular workers has remained relatively constant since 2003 (see Figure). However, the share of part-time employment has increased from 7 percent in 2003 to 11 percent in 2014. In addition, it has also been found that subcontract work has increased since the Asian financial crisis (Cooke and Brown, 2015).



5. Women, youth and the elderly account for disproportionately large shares of non-regular employment. While less than 40 percent of regular workers were women, they held 55 percent of temporary and more than 70 percent of part-time contracts (see Figure). Youth and the elderly only held about 23 percent of regular jobs, but 43 percent of non-permanent and 56 percent of part-time employment (see Figure). In addition, using micro data from the Korean Labor and Income Panel Study (KLIPS) suggests that the level of education also differs by employment status workers (see Figure). While about 34 percent of regular workers had only a high school education or below, this share was twice as high for temporary and daily (67 percent) and non-salaried workers (66 percent).

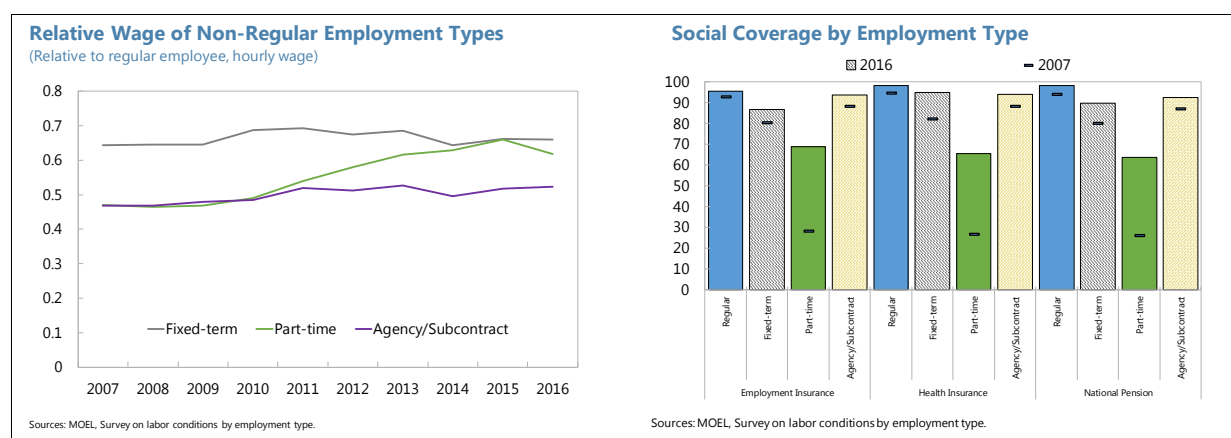


6. Most non-regular workers work in small firms and the service sector. In general, most Koreans are employed in the service sector. Among permanent workers about 68.5 percent are employed in the service sector, while for temporary and daily employees the share stood at 73.9 percent (see Figure). It was highest for part-time workers at 90 percent. Construction also accounts for a relatively large share of non-regular workers when compared to regular workers. A similar conclusion holds for small firms. They provide about half of all regular jobs. However, they account for 65 percent of temporary and daily employment and 77 percent of non-salaried workers.



C. Impact of Labor Market Duality in Korea

7. Non-regular workers in Korea tend to receive lower wages and are less likely to enjoy social benefits. Fixed-term workers receive on average about 66 percent of the hourly wage of regular workers, while part-time workers earn on average 62 percent and agency workers about 52 percent (see Figure). However, some of these gaps could be explained by differences in e.g., education, firm size, ability or tenure. With respect to social benefits, almost all regular workers are covered by employment insurance, health insurance and the national pension (see Figure). This is also true for most fixed-term and agency workers. Much less of part-time workers receive these social benefits, even though the share has more than doubled since 2007. Lower wages and social coverage have been connected to negative long-run effects for non-regular workers and their families, such as lower marriage and fertility rates and significantly lower spending on education of their children (OECD, 2016).



8. Non-regular employment likely accounts for some of the income inequality observed.

While income inequality as measured by the Gini index is comparatively low in international comparison at 29.5 in 2015, it has increased compared to earlier levels observed in the 1990s. In addition, the low pay incidence was high in Korea at 23.7 percent in 2014 compared to the OECD average of 16.2 percent. Various literature has found that labor market duality has worsened inequality in Korea and poverty is closely related with the status of employment (Lee, 2011; Shin, 2009; OECD, 2016). A theil-decomposition using KLIPS survey data suggests that in 2014 around 17.6 percent of overall inequality among salaried employed could be explained by inequality between regular and temporary workers.

9. Labor market duality has created a revolving door for temporary workers, with little opportunity to secure permanent employment. Separation rates are much larger and more volatile for temporary workers compared to regular workers (see Figure). While only around 2.4 percent of permanent employees left their jobs in 2016, 18.8 percent of temporary and daily workers did so. Moreover, the share of permanent workers being laid off is negligible at 0.4 percent of employment, while it stood at 14.2 percent for temporary and daily workers. Annual employment flows also hint towards low mobility between non-regular and regular workers (see Table 1). Most temporary workers remain in temporary employment a year later, while only 5.5 percent become a

regular employee. Regular workers are in a much more absorbing state, with 92.5 percent remaining in their employment status.

10. Disadvantages and persistency of non-regular employment could be resulting in inefficient investments into education and on-the-job training.

Given the persistence and low expected income of non-regular employment, Koreans spend a lot of time and resources on trying to obtain high-quality regular employment. This starts at a very early age with private tutoring and continues in high school to prepare for the entrance exam for higher education. For those, who are not able to secure a regular job out of college, studying for entrance exams and accumulation of certifications and diplomas often continues (Kim, 2015b). While additional accumulation of human capital is usually seen as enhancing productivity and opportunities, in this case benefits of these investments have been questioned. On the contrary, investments into on-the-job training might be inefficiently low for non-regular workers on account of the “revolving door” effect. Kim (2016) has found that non-regular employees receive significantly less on-the-job training.

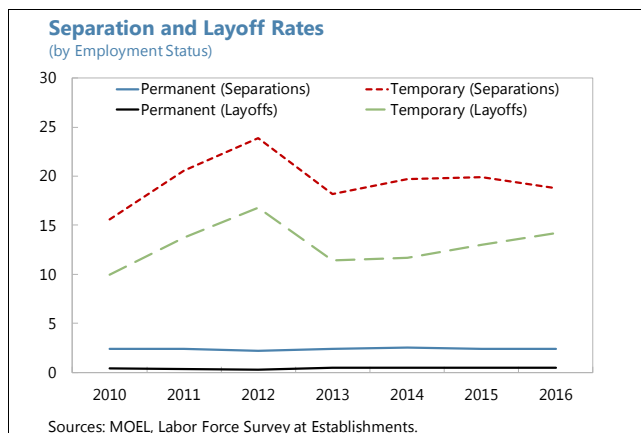


Table 1. Flow Probabilities by Employment Status (2013-2014)

| | | To | | | |
|------|---------------|---------|-----------|---------------|--------------|
| | | Regular | Temporary | Self-employed | Non-employed |
| From | Regular | 92.5% | 1.4% | 0.9% | 5.1% |
| | Temporary | 4.8% | 81.4% | 1.7% | 12.2% |
| | Self-employed | 1.3% | 2.2% | 92.1% | 4.4% |
| | Non-employed | 3.6% | 4.1% | 0.9% | 91.4% |

Source: KLIPS, staff calculation.
Note: Non-employed includes unemployed and inactive.

D. Drivers of Labor Market Duality in Korea

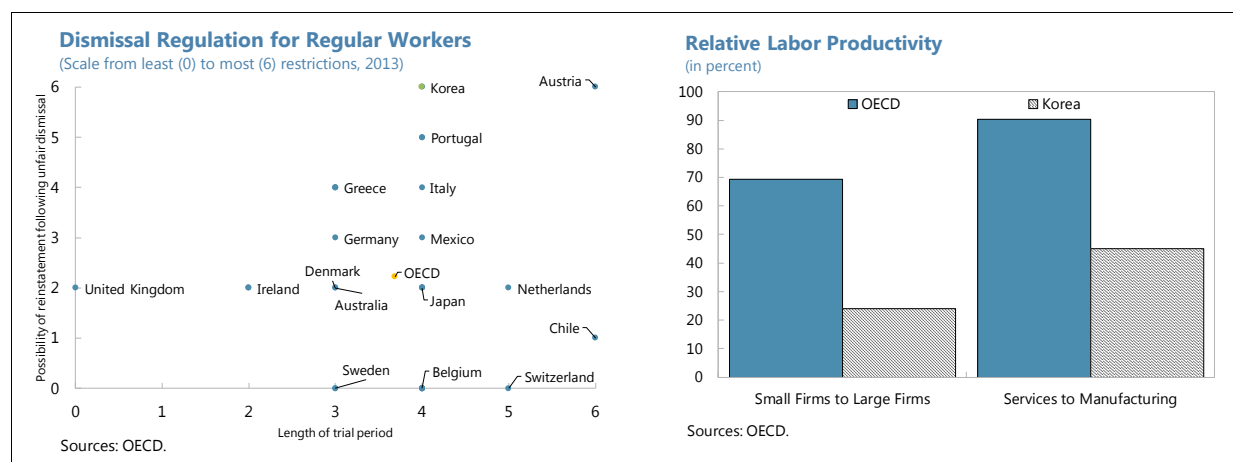
Employment Protection Legislation

11. Korea has particularly strong restrictions on dismissal of regular workers. The OECD EPL measures (see Figure) suggest that Korea has very strict dismissal regulation in international comparison. In the case of dismissal for economic reasons firms have to prove that they actively tried to avoid dismissal and have exhausted “all means” (OECD, 2013). If dismissal is on account of managerial reasons, there must be an “urgent managerial necessity”, for which a clear definition is lacking (Kim, 2015a). In addition, dismissal above a certain number of employees has to be reported to the MOEL in advance (OECD, 2013). Korea has also a high frequency of reinstatement orders in case of unfair dismissal. In addition, a steep schedule in severance payments and significant gap in labor costs incentivize firms to hire non-regular employees.

Product Market Segmentation

12. There are large productivity gaps between sectors and firms and temporary workers in SMEs face a double penalty in terms of wages, social coverage, training and job mismatch.

Labor productivity in the service sector was only 45 percent of that in manufacturing—far below the OECD average of 90 percent (see Figure). In addition, small firms' productivity is only 24 percent of that of large firms, compared to an OECD average of 69 percent. These large productivity gaps have likely contributed to labor market duality as low productivity firms are unable to offer high-quality regular jobs (Ha and Lee, 2013; OECD, 2013). An analysis of KLIPS micro data supports the idea of a “double duality” as (i) temporary employees are generally receiving lower wages and have less social coverage than regular employees and (ii) temporary workers in SMEs are even worse off than temporary workers in large companies.



Insider-Outsider Dynamics

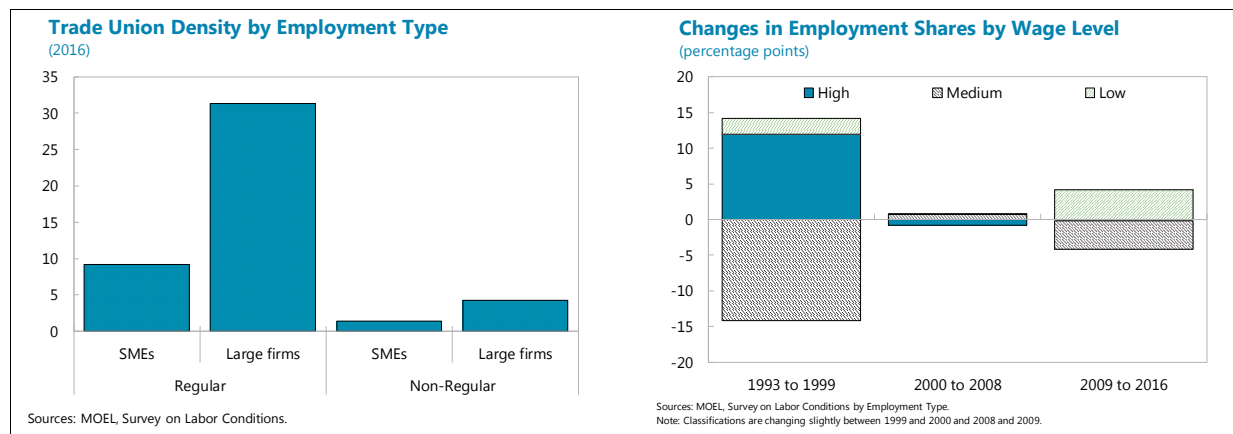
13. Insider-outsider dynamics have likely exacerbated labor market duality in Korea.

Insider-outsider dynamics arise due to labor turnover costs, which give a group of employees larger bargaining power and thus the ability to negotiate better contracts compared to outsiders with regards to wages, benefits or job security (Lindbeck and Snower, 2002). Some evidence for insider-outsider dynamics can be found in Korea as company welfare in certain firms is significantly larger than legally required with regards to benefits and retirement allowance (OECD, 2013; Kim, 2016). Union density is low in Korea at about 10 percent, compared to an OECD average of 17 percent. They have been criticized for lacking representativeness (OECD, 2013; Kim, 2016). It has been argued that they negotiate high benefits for their members (Eichengreen et al., 2015). Indeed, unions in Korea are largely representing regular workers, especially those in large companies (see Figure).

Global Trend of Market Polarization

14. There exists some evidence that Korea has experienced labor market polarization. A trend of polarization of labor markets—employment shifting away from middle-wage tasks towards low- and high-wage jobs – has been documented for many advanced and emerging economies (Autor, 2010; Reijnders and de Vries, 2017 and references therein). For Korea, previous analysis has found mixed results. While Reijnders and de Vries (2017) do not find evidence for polarization of employment shares, while Lee and Lee (2015) do find evidence that offshoring has contributed to larger wage inequality between temporary and regular workers in manufacturing sectors. Changes in employment shares by wage levels suggest that Korea has undergone different trends between

1993 and 2016 (Figure). A clear polarization took place from 1993 to 1999 with employment shares moving from medium-wage largely to high-wage occupations. A further polarization took place from 2009 to 2016 as employment shares moved from medium- to low-wage occupations.

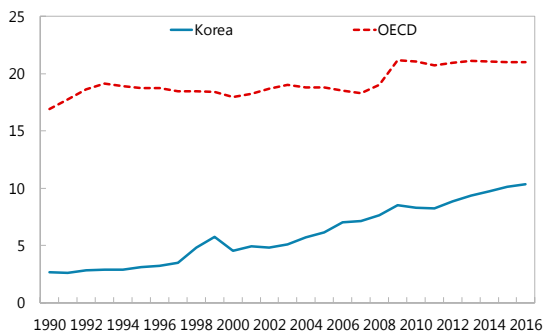


Box 1. Key Labor Market Reforms

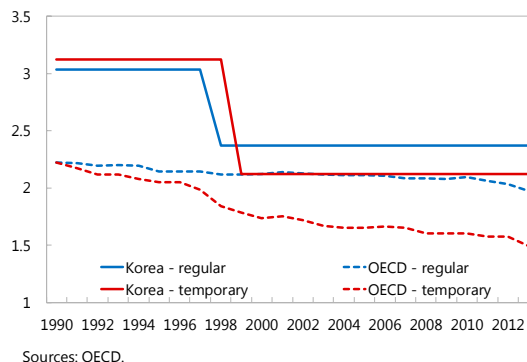
Before the Asian crisis employees enjoyed high level of employment protection. Korea introduced its first labor law in the 1950s and the minimum wage in 1988. However, labor regulations were not a widely-debated issue as the country was realizing an “equitable growth miracle” with high levels of employment and job protection (see Figure). In particular, regular workers enjoyed high protection with regards to notification procedures, the definition of justified or unfair dismissal and a high possibility of reinstatement following unfair dismissal. Temporary work was very restrictive concerning the types of work for which it was allowed and the maximum duration of successive fixed-term contracts.

During the Asian crisis labor market regulations underwent significant changes under the lead of a tripartite commission. Both, regular and temporary employment regulation became significantly less strict (see figure). The main change for regular employees was the recognition of collective dismissal in case “urgent managerial need.” In addition, the Dispatched Workers Act was introduced, which allowed the practice of temporary work agency employment in 26 specified occupational areas. It did not set any limits on the duration of fixed-term contracts or contract renewals (Kim and Skott, 2016). At the same time, social expenditure picked up significantly from an average of 2.9 percent of GDP between 1990 to 1996 to 4.8 percent from 1997 to 2003. The increase in the flexibility of employment protection during the Asian crisis has been put forth as a main driver behind significant changes in the structure of employment, mainly an increase in the share of non-regular workers and an increasing gap in wages and benefits (Cho and Keum, 2009; Ha and Lee, 2013; OECD, 2013).

Public Social Expenditure
(Share of GDP)



Strictness of Employment Protection
(Index ranging from 0 to 6, with higher values indicating higher strictness)



Box 1. Key Labor Market Reforms (Concluded)

The government aimed to curb labor market duality in 2007 with the introduction of the Fixed-Term and Part-Time Employees Act and the Dispatched Employees Act. These aimed to reduce labor market segmentation by restricting the employment period for fixed-term workers to two years and prohibiting discrimination against non-regular workers, who perform similar tasks to regular workers in the same firm. However, these laws have been criticized for only applying to firms with at least five workers and very specific types of non-regular employment, which has led to avoidance behavior by firms (Cooke and Brown, 2015). In addition, it has been argued that the cap on the length of fixed-term employment has been counterproductive as firms reacted by firing and replacing them to avoid reaching the threshold (OECD, 2016). Still, around one-third of workers were converted to regular employment and some literature suggests that it has contributed to a modest decline in temporary workers (OECD, 2013; Ha and Lee, 2013)

In recent years, the Korean government has tried to improve employment protection legislation for non-regular workers. In 2012, guidelines were introduced to reduce discrimination in wages and working conditions and penalties for inadequate use of temporary agency contracts were strengthened (OECD, 2013). In addition, the Temporary Workers Act and Dispatch Workers Act were amended in 2014 to give greater protection to non-regular workers with regards to discriminatory treatment and compensation for overtime (Cooke and Brown, 2015). The regulation of regular contracts has also seen some changes, including a shortening of notice period in case of dismissal, and replacing penal provisions with financial penalties in case of unfair dismissal (OECD, 2013). A new tripartite agreement was announced in September 2015 with one main goal being the alleviation of the dual structure of the labor market. However, critics say it later lost support from key actors (IMF, 2016).

In addition, the government has passed various measures to enhance social insurance and union coverage for non-regular workers. In 2010 the government implemented the Trade Union and Labor Relations Adjustment Act, which introduced a framework that allows multiple unions to exist within a firm and set cost limits for union representatives that employers need to cover (OECD, 2013). In addition, in 2011 the Comprehensive Non-regular Workers Initiatives was introduced and included the expansion of the social insurance system, stronger enforcement of the minimum wage and vocational training for non-regular workers (OECD, 2016). Also, the Korean government did succeed in significantly increasing social care programs targeted at the vulnerable by introducing parental leave, childcare support, subsidies to the elderly and vocational training. For example, the share of social expenditure targeted at families increased from about 2.2 percent in 1998 to 11.5 percent in 2014. The government also introduced the Duru Nuri Social Insurance Subsidy Program that provides targeted subsidies to low-wage workers at small businesses for social insurance contributions (OECD, 2013).

The policy program of the new administration is also aiming to reduce duality. The new administration is aiming to address duality through three main pillars, (i) increasing households' disposable income through a higher minimum wage and expanding eligibility for basic social security recipients, (ii) promoting decent employment by restricting application of temporary contracts and reducing the legal limit of weekly working hours and (iii) advancing fair competition between large corporations and SMEs by promoting profit sharing and removing unfair practices.

E. Policies to Address Market Duality in Korea

15. Labor market duality in Korea is a complex issue, but policies can play a critical role in addressing it. Duality is an entrenched characteristic of Korea's labor market. Moreover, the causes behind it are multifold and go beyond laws and policies, including the nature of contract negotiations and global trends reducing the bargaining power of specific workers. Yet, the previous discussion has also shown that policies have critically contributed to duality and its harmful

implications for those affected. Thus, labor reforms have the potential to significantly improve Korea's labor market and give important impulses. It is also clear that measures would need to address labor as well as product markets to address the "double duality". This section will focus on the side of the labor market and present and evaluate detailed policy options.

16. Korea should consider moving towards its own form of "flexicurity" to reduce duality and its negative effects on the economy and society. Labor market policies should shift towards "protecting the workers, not the jobs" by pursuing a model of flexicurity. This would address duality and its negative effects through various channels:

- *Increasing productivity.* A model of flexicurity would enhance resource allocation and thereby increase productivity (Blanchard et al., 2013 and references therein). This would allow workers to move towards the most productive jobs and ensure they would acquire the necessary training. This would likely result in better matches and thus lower product market segmentation and labor market duality.
- *Raising labor force participation.* A flexicurity approach is often suggested to countries wanting to reduce high unemployment rates (Zhou, 2007). While this is not generally an issue for Korea with an unemployment rate at 3.8 percent, flexicurity could help to increase its low labor force participation rate by incentivizing inactive individuals to enter the labor market. As this would often be women it could have a further feedback effect - by adding a second earner to families the demand for job-security among insiders might relax as implications of job loss are better cushioned.
- *Preparing for structural change.* Korea stands out as the country with the biggest education gap between youth and the elderly in the OECD and one of the fastest aging countries in the world. Thus, it is unlikely that the jobs the elderly are retiring from, are a good match for youth joining the labor force. It is thus critical to protect workers instead of jobs a la flexicurity to avoid large mismatches and productivity losses, which would exacerbate duality. This is even more pressing, given the global trends of technological change and integration of labor markets which call for quicker adjustments of workers to new tasks.
- *Enhancing equity.* A flexicurity approach would reduce the high protection granted to regular employees and adapt a smoother schedule. This would lower labor market duality and the inequalities it entails. In addition, the combination with higher unemployment benefits and activation policies would enhance job matches and protect the vulnerable, which would enhance equity and lower duality further.

17. The flexicurity model centers around three main levers of labor market policy—employment protection legislation, unemployment insurance and active labor market policies. In particular, it consists of the so-called "golden triangle" of (i) flexible rules for hiring and firing, (ii) a strong safety net in form of unemployment insurance and (iii) active labor market policy. This policy mix aims to provide a necessary level of labor market flexibility, while ensuring a high level of security to the workers through social protection and active labor market policies (Zhou, 2007). The general idea is that workers should be protected more through unemployment insurance than employment protection legislation, while acknowledging that unemployment benefits can only be higher if active labor market policies ensure incentives for work are not diminished (Blanchard et al, 2013).

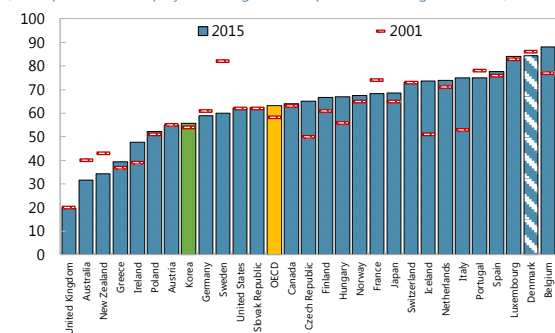
Box 2. Flexicurity: Country Examples and Best Practices

Country Examples

Denmark has a long history with flexicurity and is its leading example. Denmark has often been used as the model student of flexicurity (Auer, 2010; Zhou, 2007; Algan and Cahuc, 2006). A cross-country comparison illustrates the significant spending on unemployment insurance (see Figure) and active labor market policies (see Figure). While it has also been argued that Denmark has flexible rules for hiring and firing (Wilthagen, Tros, and van Lieshout, 2003; Danish Ministry of Foreign Affairs, 2017), it falls in the middle of OECD countries in the OECD indicator for strictness of employment protection legislation. However, this is largely due to the length of mandated notification periods and not, as in the case of Korea, complexities regarding dismissal trials. The flexicurity model in Denmark has a long history and has undergone continuous calibration to improve outcomes and adjust to emerging challenges (Zhou, 2007). In addition, the success of the flexicurity model in Denmark has been attributed to a fundamental trust of employees towards their employers and the social safety net, flexibility within jobs to ensure a good work-life balance, an education system that fosters independent thinking and working and a strong tradition for lifelong learning (Danish Ministry of Foreign Affairs, 2017).

Net Replacement Rate

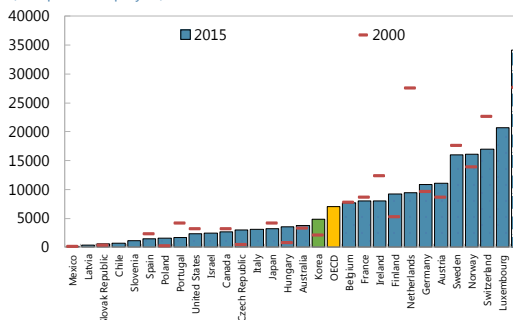
(Initial phase of unemployment, single earner, previous earnings = 67%AW)



Sources: OECD.

Spending on Active Labor Market Policies

(US\$ per Unemployed)



Sources: OECD, Haver, Staff calculations.

Other countries have moved towards flexicurity more recently, with some promising results. For example, Austria introduced a reform of severance pay in 2003, which increased flexibility while ensuring income security. Kettemann et al. (2017) find that the reform resulted in a substantial increase in job mobility. Portugal introduced an even broader set of reforms between 2011 and 2015 that reduced severance pay and eased the definition of fair dismissal, while widening the safety net and strengthening its activation framework. In a preliminary evaluation, the OECD has called the reforms “a move in the right direction”, noting that both employment and unemployment rates improved significantly and stronger than expected (OECD, 2017).

Best Practices

The three pillars of flexicurity critically depend on each other and need to be calibrated together to ensure an adequate balance between incentives, support and protection. In particular, workers should be mostly protected through unemployment insurance. Employment protection through legislation should be limited and turnover costs due to judicial uncertainty should be avoided. Where there is a role for legislation it should focus on monetary transfers from the firm to the worker and should increase smoothly with tenure, avoiding jumps that can cause duality. If unemployment insurance is raised it will need to be accompanied with effective active labor market policies (Blanchard et al., 2013).

Box 2. Flexicurity: Country Examples and Best Practices (Concluded)

Initial conditions likely play an important role in ensuring success of reforms towards flexicurity.

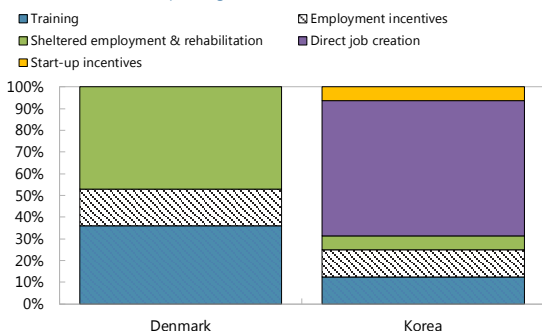
Various factors have been identified that increase the likelihood of success of flexicurity reforms. These include a high level of trust between firms and workers (Blanchard et al., 2013), a certain degree of “public spiritedness” of citizens (Algan and Cahuc, 2006), a low unemployment rate and a healthy fiscal position (Zhou, 2007).

Continuous calibration and attention to detail are critical for a successful implementation. The flexicurity model in Denmark has been continuously adjusted and fine-tuned, which appears critical for its success (Zhou, 2007). In addition, the details of the policies implemented matter. For example, there exists a wide range of active labor market policies that need to be chosen carefully and adjusted to the country-specific context (Blanchard et al., 2013). Comparing Korea’s and Denmark’s spending on active labor market policies suggests that Korea spends the largest share on direct job creation, while Denmark mostly spends on training and sheltered employment and rehabilitation (see Figure).

The right level of flexicurity should be chosen to ensure fiscal viability. Denmark spends large amounts on active labor market policy (1.7 percent of GDP in 2015) and unemployment insurance (1.1 percent of GDP), compared to Korea’s comparatively low spending of 0.4 percent and 0.3 percent of GDP. This has called into question the efficiency of the flexicurity model as large costs might result in a high labor tax wedge thereby discouraging employment creation (Zhou, 2007). Additionally, costs are likely to expand significantly in times of crisis (Andersen, 2011). Thus, it is critical to find an adequate balance between flexibility and security and ensure that the tax wedge does not widen excessively. For example, Denmark has reduced its tax wedge since 2000 and is now close to the OECD average. Korea’s tax wedge is comparatively low (see Figure).

ALMP Spending by Type of Program

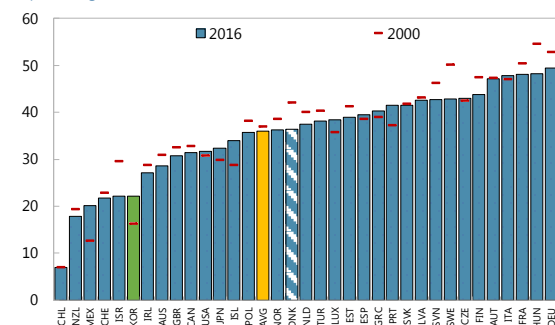
(Share of Total ALMP Spending, 2015)



Sources: OECD.

Tax Wedge

(In percentage of labor cost)



Sources: OECD. Note: ratio between the amount of taxes paid by an average single worker (a single person at 100% of average earnings) without children and the corresponding total labour cost for the employer.

F. Simulation of Flexicurity Policies

18. A general equilibrium search-and-matching model is applied to model duality and simulate the impact of flexicurity policies. In this model, based on Dolado et al. (2017), labor market duality and unemployment arise endogenously on account of employment protection legislation and search- and matching-frictions. The type of duality focuses on that between temporary and permanent workers and accounts for differences in wages and job security. In addition, the ‘revolving door’ arises endogenously as employment protection legislation jumps after a certain amount of tenure in a job. The model also accounts for the positive aspect of severance pay and job security as individuals are risk averse and have only partial private insurance. This means

workers value the protection and insurance aspects of severance pay and dismissal costs. The baseline of the model is calibrated to the Korean economy.²

19. The calibrated model is able to capture main aspects of duality in Korea. The calibrated model produces a “revolving door” effect in the shape of a significant spike in job-destructions just before temporary workers would enter into permanent employment and become subject to the protection of firing cost. In addition, temporary workers are accepting lower wages due to significantly lower bargaining power and the possibility to be retained as a permanent worker in the future. On the other hand, the wage profile of regular workers increases with tenure as employees gain bargaining power through accumulation of severance pay benefits. Older workers accept lower wages compared to younger workers as they do not have the possibility to search for new employment once laid-off.

Table 2. Korea: Policy Experiments

| | Baseline | Decrease in Firing Cost | UI Increase | Increase Matching | Increase Training | Flexicurity Package |
|--------------------------------------|----------|-------------------------|-------------|-------------------|-------------------|---------------------|
| Unemployment rate | 7.50% | 6.90% | 7.80% | 7.00% | 7.30% | 6.70% |
| Output | 1.00 | 1.00 | 1.00 | 1.01 | 1.08 | 1.09 |
| Average Productivity | 1.00 | 1.00 | 1.00 | 1.00 | 1.08 | 1.08 |
| Average Income | 1.00 | 1.01 | 1.00 | 1.02 | 1.08 | 1.11 |
| Average Welfare | 1.00 | 1.00 | 1.02 | 1.03 | 1.08 | 1.12 |
| Relative job-turnover (temp to perm) | 7.50 | 2.29 | 7.50 | 7.50 | 8.00 | 4.29 |
| Relative wage (temp to perm) | 0.75 | 0.83 | 0.75 | 0.71 | 0.77 | 0.87 |
| Income Gini | 16.1 | 15.4 | 15.6 | 16.6 | 16.3 | 15.0 |

20. The model analyzes the impact of a move towards flexicurity on duality, welfare and income. Five different simulations are conducted. First, each of the pillars is introduced separately, and then a full package of flexicurity is passed. The first pillar -a move towards more flexible hiring and firing – is modelled through a decline in the firing costs. The second pillar of a stronger safety net is introduced through an increase in unemployment benefits. Finally, active labor market policies are introduced as measures that enhance matching and provide training. In the model, they take the form of an increase in the productivity parameter in the matching function and an increase in the productivity of initial matches, assuming that training will increase productivity of workers. Table 2 provides main results of all experiments.

² For details on the model and calibration see IMF Working Paper “Labor Market Duality in Korea” (forthcoming).

21. Lowering firing costs significantly reduces the revolving door effect, but only benefits the poorest.

Lowering the cost of firing significantly by about 60 percent reduces the revolving door effect by lowering job-destruction among temporary workers and raising their wage relative to permanent workers (see Table 2). It thereby significantly reduces inequality and the unemployment rate. The latter is due to less turnover of temporary workers, who thus spend less time in unemployment. Overall, average measures of income, welfare and productivity remain largely unchanged as does total output (Table 2). However, a closer look at the distribution of income and welfare effects suggests that there are winners and losers of this reform. In particular, income gains accrue to the bottom 40 percent of the income distribution (see Figure), in particular the young as they are more likely to be temporary workers. The upper 40 percent are instead losing some income.

22. Increasing unemployment benefits can significantly lower inequality, but has no effect on duality and can exacerbate unemployment.

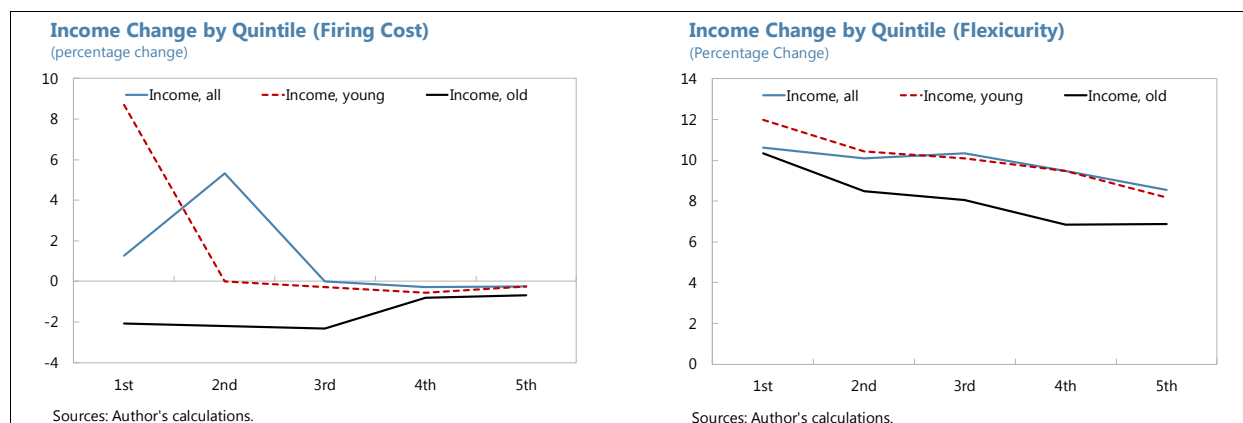
We increase unemployment benefits moderately by 15 percent, which is around the increase necessary to raise Korea's net replacement rate to the OECD average. This measure is not able to reduce duality in any way and has no significant impact on the level of productivity, output or average income (see Table 2). However, it does raise welfare. It also lowers inequality as measured by the Gini coefficient. Yet, it does increase the unemployment rate as it raises individuals' incentives to remain unemployed. Hence, an introduction of unemployment benefits by itself can only address concerns of inequality and bears the risk to induce higher unemployment rates.

23. Enhancing matching or productivity through training can contribute to higher income and welfare, but might exacerbate duality between temporary and permanent workers.

An increase in the matching productivity by 20 percent, increases output, income and welfare through lowering the unemployment rate (see Table 2). However, it has no effect on the "rotating door" effect and even exacerbates inequality through widening the wage gap between temporary and permanent workers. This is because as the probability of a match becomes more likely, firms are more ready to separate from a current worker-match and post a new vacancy. Raising the productivity by 10 percent has the strongest impact out of all policy measures on output, productivity, income and welfare (see Table 2). However, it actually exacerbates the revolving door effect and raises inequality. This is on account of training raising the productivity of the outside applicant pool. It is important to note, that this simulation does not account for the costs of these measures and thus effects on income, unemployment and welfare should be seen as an upper bound.

24. Introducing all three pillars of flexicurity can reduce duality, lower inequality and raise income and welfare for all groups of the economy.

Introducing all three pillars (corresponding to four measures) raises output and average productivity, income and welfare significantly (see Table 2). In addition, it lowers the "revolving door" substantially and reduces the wage gap between temporary and permanent workers. It also lowers income inequality as measured by the Gini coefficient. A distributional analysis shows that a well-calibrated flexicurity package is able to raise income (see Figure) and welfare across all quintiles in the distribution, young and old. Hence, the combination of the measures would be able to improve economic and social outcomes across all dimensions, while implementation of only one pillar would likely carry some negative side-effects.



G. Conclusion

25. Labor market duality in Korea is a complex issue, which encompasses various types of non-regular workers. Nonetheless, it is particularly prominent among SMEs and in the service sector and disproportionately affects women, the elderly and youth. On a macro level it has likely contributed to increasing inequality, low fertility rates and declining productivity growth. The two main drivers behind duality are various employment protection legislations and large productivity differentials in the product market. However, other factors such as insider-outsider dynamics and global trends such as globalization of labor markets and technological progress are also likely contributing.

26. Korea should consider implementing its own version of flexicurity. The previous literature and model analysis has shown that a well-calibrated introduction of flexicurity could address a number of issues that Korea is facing, such as reducing duality and inequality, and raising productivity and welfare. For this it would be crucial to implement all three pillars to ensure gains are distributed among all individuals. Yet, as the country examples have shown such a reform would need further important components, such as flexibility at the intrinsic margin (i.e., flexible jobs to ensure they fit the heterogenous needs of individuals), an education system teaching responsibility and independent thinking and a culture of life-long learning. In particular, trust and ownership by all social partners are critical, with all stakeholders being part of the social dialogue, including non-unionized workers, SMEs and the self-employed.

27. Measures need to be carefully designed and targeted, gradually implemented and constantly revised. While the model is a clear simplification, each of the three pillars can be implemented in manifold ways. For example, unemployment benefits can be increased, expanded or extended in various ways. Rigidity in regular contracts can be reduced through reducing complexity and uncertainty in dismissal procedures or adjusting severance pay to a smoother schedule. In particular, there exist many different active labor market policies and various evaluations have shown the importance of careful design and targeting (Card et al., 2010; Card et al., 2015). For Korea, it will be particularly important to consider women, youth and the elderly in their policies to ensure that their particular issues are addressed.

References

- Algan, Y., and P. Cahuc, "Civic Attitudes and the Design of Labor Market Institutions: Which Countries Can Implement the Danish Flexicurity Model?" IZA Discussion Paper No. 1928.
- Andersen, T., 2011, "A Flexicurity Labour Market in the Great Recession: The Case of Denmark," Discussion Paper Series, Forschungsinstitut zur Zukunft der Arbeit, No. 5710.
- Aoyagi, C., and G. Ganelli, 2013, "The Path to Higher Growth: Does Revamping Japan's Dual Labor Market Matter?" IMF Working Paper, WP/13/202.
- Auer, P., 2010, "What's in a Name? The Rise (and Fall?) of Flexicurity," *Journal of Industrial Relations*, Volume 52, Issue 3, pp. 371-386.
- Autor, 2010, "The Polarization of Job Opportunities in the U.S. Labor Market. Implications for Employment and Earnings," Paper released by The Center for American Progress and The Hamilton Project.
- Autor, D., R. J. Murnane, and F. Levy, 2003, "The Skill Content of Recent Technological Change: An Empirical Exploration," *Quarterly Journal of Economics* 118 (4), pp. 1279-1334.
- Bentolila, S., and J. Dolado, 1994, "Labour Flexibility and Wages: Lessons from Spain," *Economic Policy*, V.9, No. 18, pp. 55-99.
- Blanchard, O., F. Jaumotte, and P. Loungani, 2013, "Labor Market Policies and IMF Advice in Advanced Economies During the Great Recession," Staff Discussion Note, SDN/13/02.
- Blanchard, O., and A. Landier, 2001, "The Perverse Effect of Partial Labor Market Reform: Fixed Duration Contracts in France," NBER Working Paper 8219.
- Blinder, Alan S, 2009, "How Many U.S. Jobs Might Be Offshorable." *World Economics* 10 (2), pp. 41-78.
- Cabrales, A., J. Dolado, and R. Mora, 2014, "Dual Labour Markets and (Lack of) On-the-Job Training: PIAAX Evidence from Spain and Other EU Countries," IZA Discussion Paper No. 8649.
- Card, David, J. Kluve, and A. Weber, 2010, "Active Labour Market Policy Evaluations: A Meta-Analysis," *The Economic Journal*, 120, pp. 452-477.
- , J. Kluve, and A. Weber, 2015, "What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations," Institute for the Study of Labor (IZA). Discussion Paper No. 9236.

- Cho, J., and J. Keum, 2009, "Dualism in Job Stability of the Korean Labour Market: The Impact of the 1997 Financial Crisis," *Pacific Economic Review*, 14:1, pp. 155-175.
- Cooke, F., and R. Brown, 2015, "The Regulation of Non-Standard Forms of Employment in China, Japan and The Republic of Korea," ILO Conditions of Work and Employment Series No. 64.
- Dao, M., D. Furceri, J. Hwang, M. Kim, and T. Kim, 2014, "Strategies for Reforming Korea's Labor Market to Foster Growth," IMF Working Paper, WP/14/137.
- Dolado, J., E. Lale, and N. Siassi, 2017, "From Dual to Unified Employment Protection: Transition and Steady State," Working Paper, April 2017.
- , S. Ortigueira, and R. Stucchi, 2016, "Does Dual Employment Protection Affect TFP? Evidence from Spanish Manufacturing Firms," *SERIEs*, Volume 7, Issue 4, pp. 421-459.
- Eichengreen, Barry and others, 2015, "The Korean economy. From a Miraculous Past to a Sustainable Future," Harvard University Asia Center.
- Grubb, D., J. Lee, and P. Tergeist, 2007, "Addressing Labour Market Duality in Korea," OECD Social, Employment and Migration Working Papers No. 61.
- Ha, B., and S. Lee, 2013, "Dual Dimensions of Non-Regular Work and SMEs in the Republic of Korea," ILO Employment Working Paper No.148.
- IMF, 2016, "Article IV Staff Report," IMF Country Report No. 16/278.
- Kettemann, A., F. Kramarz, and Zweimüller, 2017, "Job Mobility and Creative Destruction: Flexicurity in the Land of Schumpeter," Working Paper.
- Kim, H., 2014, "Intergenerational Mobility and the Role of Education in Korea," Korea Development Institute.
- , 2015a, "Directions for Improving Korea's Employment Legislation to Reduce the Duality of the Labor Market," *e-Labor News* No. 154.
- , 2016, "Three Dualization Processes in Korea: The Labor Market, Welfare Policy and Political Representation," *Development and Society*, Volume 45, Number 2.
- , and P. Skott, 2016, "Labor Market Reforms, Temporary Workers and Wage Inequality," *Metroeconomica*, 67:2, pp. 313-333.

Kim, S., and J. Lee, 2014, "Accounting for Ins and Outs of Unemployment in Korea," *Korea and the World Economy*, Vol.15, No.1, pp.17-44.

Kim, Y., 2011, "The Size and Conditions of Non-Regular Employment," *Labor & Society*, Vol. 162.

———, 2015b, "The Youth Labor Market in Korea: Current Situation and Employment Policy," Korea Labor Institute.

Lee, I., 2011, "Wage Differential between Standard and Non-Standard Workers: Evidence from an Establishment-Worker Method Matched Data", *Korean Journal of Labor Economics*, 34(3), pp. 119–139.

Lee, H., and J. Lee, 2015, "The Impact of Offshoring on Temporary Workers: Evidence on Wages from South Korea", *Rev. World Econ.* 151, pp. 555-587.

Lindbeck and Snower, 2002, "The Insider-Outsider Theory: A Survey," IZA Discussion Paper, No.534.

McGowan, M., and D. Andrews, 2015, "Skill Mismatch and Public Policy in OECD Countries," OECD Working Paper, ECO/WKP(2015)28.

Ministry of Foreign Affairs of Denmark, <http://denmark.dk/en/society/welfare/flexicurity>, accessed October, 2017.

Reijnders, L., and G. de Vries, 2017, "Job Polarization in Advanced and Emerging Countries: The Role of Task Relocation and Technological Change within Global Supply Chains." GGDC Research Memorandum 167.

Saint-Paul, G., 1996, "Dual Labor Markets. A Macroeconomic Perspective," The MIT Press.

———, 2002, "Employment Protection, International Specialization, and Innovation", *European Economic Review*, 46(2), pp. 375-395.

Shin, S., 2009, "An Empirical Analysis of the Wage Differentials between Regular and Irregular Workers in Korean Labor Markets," *Korean Society*, 10(2), 93–123.

OECD, 2013, "Strengthening Social Cohesion in Korea," OECD Publishing, Paris.
<http://dx.doi.org/10.1787/9789264188945-en>

———, 2015, "Pensions at a Glance 2015: OECD and G20 indicators," OECD Publishing, Paris.
http://dx.doi.org/10.1787/pension_glance-2015-en

———, 2016, "OECD Economic Surveys: Korea 2016," OECD Publishing, Paris.
http://dx.doi.org/10.1787/eco_surveys-kor-2016-en

- , 2017a, "Labour Force Statistics in OECD Countries: Sources, Coverage and Definitions," Last update June 2017.
- , 2017b, "Labour Market Reforms in Portugal 2011-2015. A Preliminary Assessment". OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264269576-en>
- Wilthagen, T., T. Frank, and H. van Lieshout, 2003, "Towards 'Flexicurity'?: Balancing Flexibility and Security in EU Member States," Paper presented at the 13th World Congress of the International Industrial Relations Association (IIRA), Berlin.
- Zhou, J., 2007, "Danish for All? Balancing Flexibility with Security: The Flexicurity Model," IMF Working Paper, WP/07/36.

YOUTH (UN)EMPLOYMENT IN KOREA—RECENT TRENDS AND DRIVERS¹

While Korea's rate of youth unemployment is low in international comparison, it has recently increased. In addition, the share of inactive youth is exceptionally high. These developments are concerning as extensive research has shown long-lasting negative effects for individuals affected and the society and economy as a whole. This paper discusses the potential drivers behind youth unemployment in Korea, the various measures taken by the authorities and best practices from the literature and other countries. The analysis suggests that various factors have contributed to the current situation, including cyclical, structural and policy variables. In particular, weak consumption, a temporary increase in the youth cohort and expectation and skill mismatches are likely responsible. Moreover, issues with educational quality, a focus on direct job creation and high protection of regular workers and the resulting labor market duality have also contributed. The Korean government has already made significant and comprehensive efforts to tackle youth employment issues and plans to further expand on them. Based on a growing literature of international experiences and policy evaluations, the government could consider (i) fine-tuning existing measures, (ii) expanding pre-emptive measures and (iii) addressing general cyclical and structural impediments.

A. The Impact of Youth (Un)Employment

1. Youth unemployment and low-quality employment can have wide ranging and long-term effects on the individuals experiencing it, and the society and economy as a whole. In the short-term, youth unemployment could lower aggregate demand, increase fiscal costs and raise job mismatches (ILO, 2010; World Bank, 2012, Godfrey et al., 2002). However, it is the potential long-term effects that are most concerning as a growing literature has shown that a lack of decent work can have a persistent negative impact on future employment prospects, health and life satisfaction (Bell and Blanchflower, 2010; ILO, 2010; Banerji et al. 2015). In particular, empirical studies across multiple countries have found evidence of *scarring*, which describes an increased likelihood of unemployment and lower wages in later years.² In the aggregate this can translate into lower savings and contributions to the social safety net (ILO, 2010; Banerji et al., 2015). It has also been shown to lower fertility in the short and long-run (Currie and Schwandt, 2015). In addition, persistent mismatches and loss of skills can hamper productivity and potential growth (Banerji et al., 2014). Studies have also found evidence of youth unemployment eroding social cohesion and increasing crime (Bell and Blanchflower, 2010; Banerji et al, 2015).

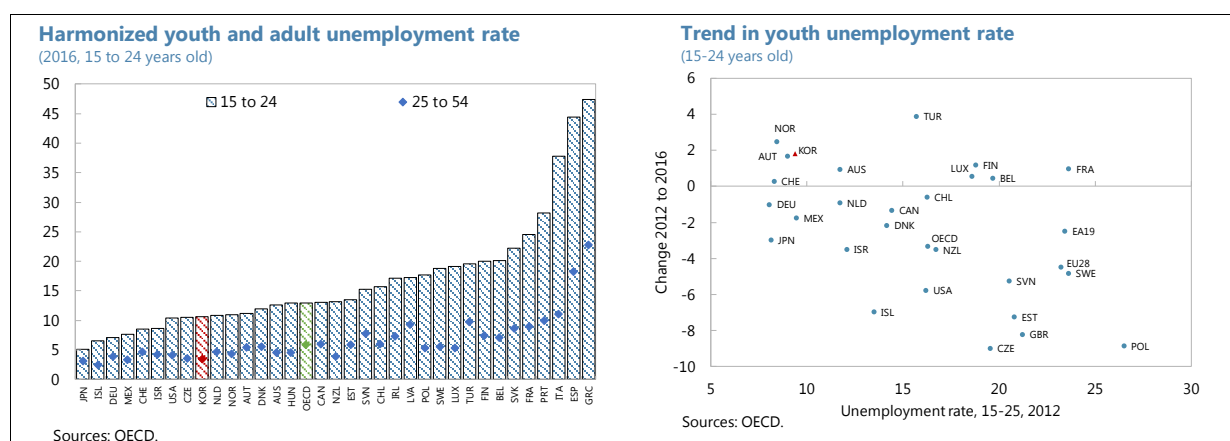
¹ Prepared by Cristina Arbelaez (APD) and Johanna Schauer (APD).

² E.g., Oreopoulos et al., (2012) using Canadian data find that a rise in unemployment rates by 5 percentage points can lead to cumulative earnings losses of up to 8 percent in the first 10 years after graduation. Gregg and Tominey (1995) found a wage penalty from early unemployment of the magnitude of 13–21% at age 42 for the UK. Kahn (2010) finds large, negative wage effects of graduating in a worse economy for the US. Other literature also finds scarring in the form of youth unemployment increasing the incidence of future unemployment (Gregg, 2001; Nilsen and Reiso, 2011).

2. Youth unemployment and inactivity are having a negative impact on Korea's economy and society. Nam and Kim (2013) provide evidence of the *scarring* effect for Korean youth. In particular, they find that youth who experienced periods of inactivity (i.e., not in employment, education or training) had a lower rate of employment, and higher rates of unemployment and inactivity later in life. In addition, they were more likely to be non-regular workers with lower wages. At the same time marriage rates have been declining to a record-low of 5.5 per 1000 people in 2016, which has also translated in low fertility rates at 1.17 in 2016, the lowest level since 2009. In addition, public opinion surveys suggest growing pessimism with regards to upward mobility and the return on effort and diligence (Kim, 2014).

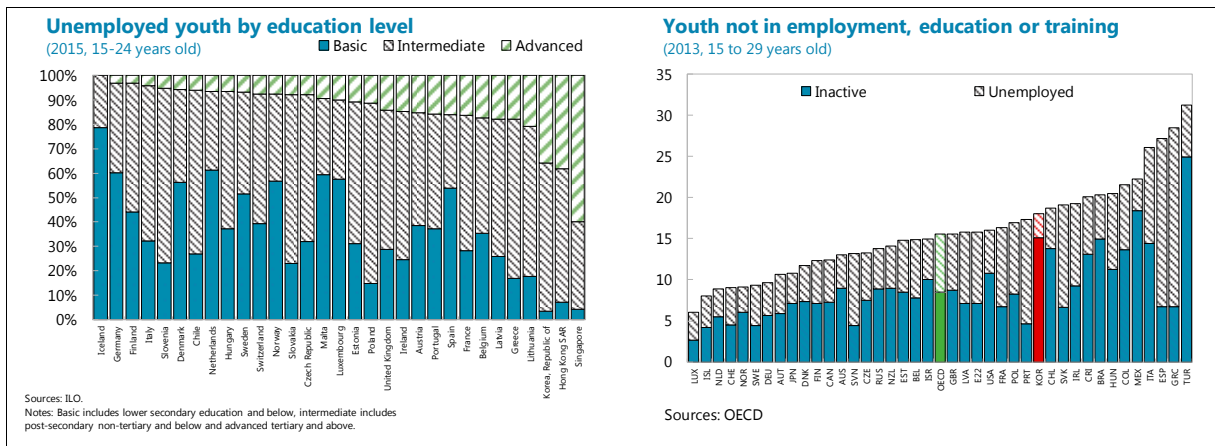
B. Trend and Current State of Korea's Youth (Un)Employment

3. Korea has one of the lowest rates of youth unemployment, but it has been increasing recently. The rate of youth unemployment (age 15 to 24) in Korea is relatively low compared to other OECD countries (see Figure).³ In 2016, it stood at 10.7 percent for youth aged 15 to 24, which was more than 2 percentage points lower than the OECD average. At the same time, Korea also had one of the lowest adult unemployment rates at 3.4 percent for those aged 25 to 54. This implies that the youth unemployment rate is more than three times as high than those for adults, which is one of the highest multiples in the OECD. In addition, Korea is one of few countries for which the youth unemployment rate has increased since 2012 (see Figure). It had the third highest increase in the OECD after Turkey and Norway.



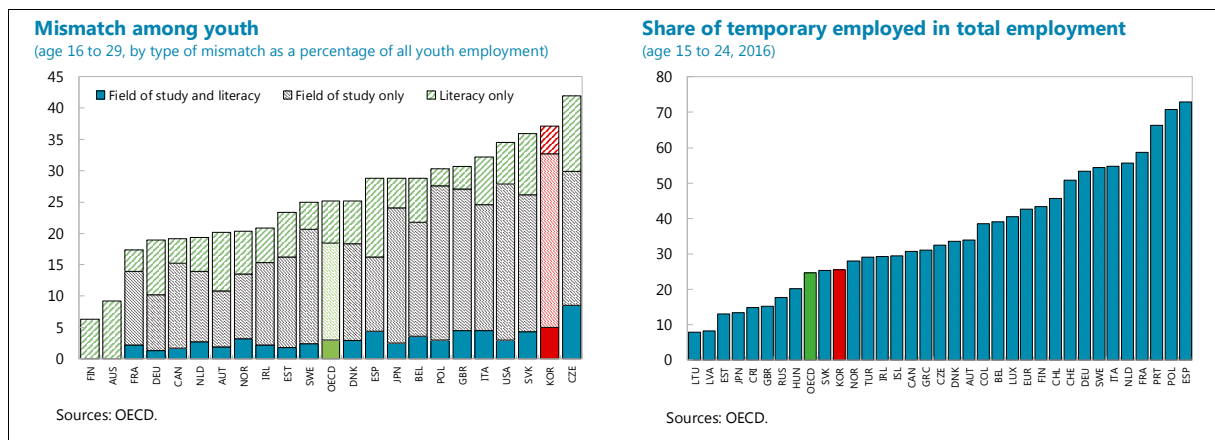
4. Korea stands out due to a large share of highly educated unemployed youth and a high rate of inactive youth. More than a third of the young unemployed have tertiary education and almost all of them have finished their upper secondary education (see Figure). In addition, a broader measure adding inactive to the unemployed youth suggest a much larger group affected by the lack of employment opportunities. As of 2013, 18 percent of youth age 15 to 29 were not in employment, education or training (see Figure). However, this number is possibly overestimated for Korea as data on programs between upper secondary and post-secondary education are not available.

³ Korea also stands out due to its very low share of long-term unemployed (defined as being unemployed for one year or longer) in total unemployed. For those aged 15 to 24 it stood at 0.5 percent.



5. Korea’s youth struggles in finding high quality employment matching their skills.

Korea’s employment rate for youth is low in international comparison at 27 percent in 2016, 13.5 percent below the OECD average. In addition, of those who do find employment the share of mismatches is high compared to other jurisdictions (see Figure). In particular, mismatches with regards to field of study are frequent at 33 percent among the youth. The share of temporary employment for youth was 25.5 percent in 2016, only slightly above the OECD average of 24.6 percent (see Figure).

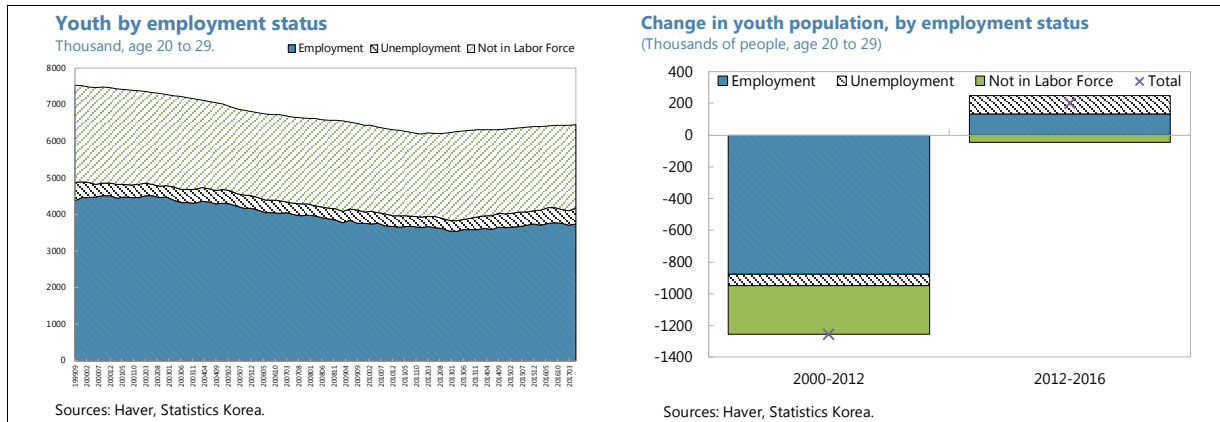


6. Changes in youth employment and unemployment rates appear to be linked to demographic changes.

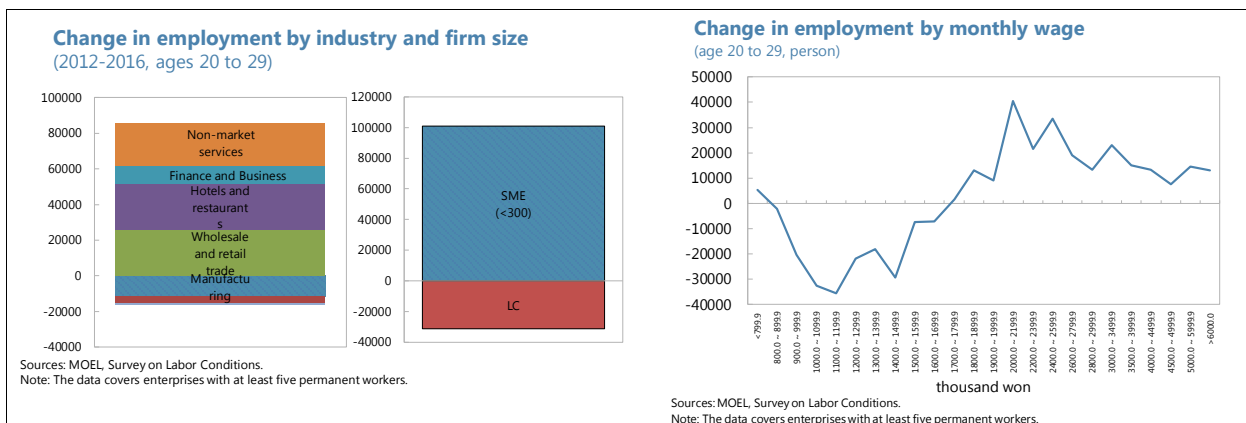
Between 2000 and 2012 the population of youth age 20 to 29 declined by 1.2 million between 2000 and 2012 (Figure).⁴ This translated predominantly into a decline in employed youth by almost 900 thousand (see Figure) and thus a decline in the employment rate from 60.1 percent to 58.1 percent. The unemployment rate remained relatively stable around 7.5 percent during this period. Since 2012 the population of youth began to increase again as the children of the baby boom generation entered this age group (see Figure). Until 2016 the cohort grew by 200 thousand. This resulted in an increase in the number of unemployed and the

⁴ In the analysis, we focus on the age group from 20 to 29 whenever data is available. The use of the word “youth” thus refers to the age group 20 to 29, if not explicitly presented otherwise. Given the high share of tertiary enrolment this age group appears the most important for employment analysis.

unemployment rate rose from 7.5 in 2012 to 9.8 in 2016 (see Figure). Employment also rose in absolute terms, but the employment rate only increased slightly to 58.3 percent in 2016.



7. The increase in youth employment since 2012 has been focused in the service sector and SMEs. While the recent increase in youth employment appears encouraging, a closer look is warranted at the type of employment created. The survey on labor conditions by the Ministry of Employment and Labor suggests that many new jobs for youth were generated in the service sector, in particular in hotels and restaurants and wholesale and retail trade. At the same time, jobs in manufacturing declined (see Figure). New employment also appears to be created mainly in SMEs, while overall employment for youth declined in large companies (see Figure). Many of the jobs created were in the range of a monthly wage from 1.9 to 2.7 million won.⁵



C. Drivers of Youth (Un)Employment

8. To understand how youth unemployment and quality of employment can be addressed it is crucial to understand the main drivers of its trend and magnitude. In the following, three main categories of potential drivers are discussed including (i) cyclical factors, (ii) structural drivers and (iii) policies. Our analysis suggests, that cyclical factors have a significant

⁵ This translates into 67 percent to 96 percent of the average wage in 2016.

impact on changes in youth unemployment in Korea, but it is smaller than in most other countries. In addition, structural factors are significantly contributing to the level of youth (un)employment, particularly skill and expectation mismatches and duality in the labor market. Changing demographics have likely contributed to the recent uptick in youth unemployment. Policy variables that have affected the level of youth (un)employment in Korea include high protection of regular workers, educational quality and a focus of active labor market policies on direct job creation.

9. It is important to acknowledge that natural explanations exist for why youth unemployment rates tend to be higher than those of the prime-working age population.

These include higher uncertainty regarding skills and productivity of a young applicant on the firm side and lack of job search experience and uncertainty about job preferences on the side of the applicant (ILO, 2010; World Bank, 2012). Youth is also more likely to move between employment, unemployment and education because of the periodical nature of educational terms.

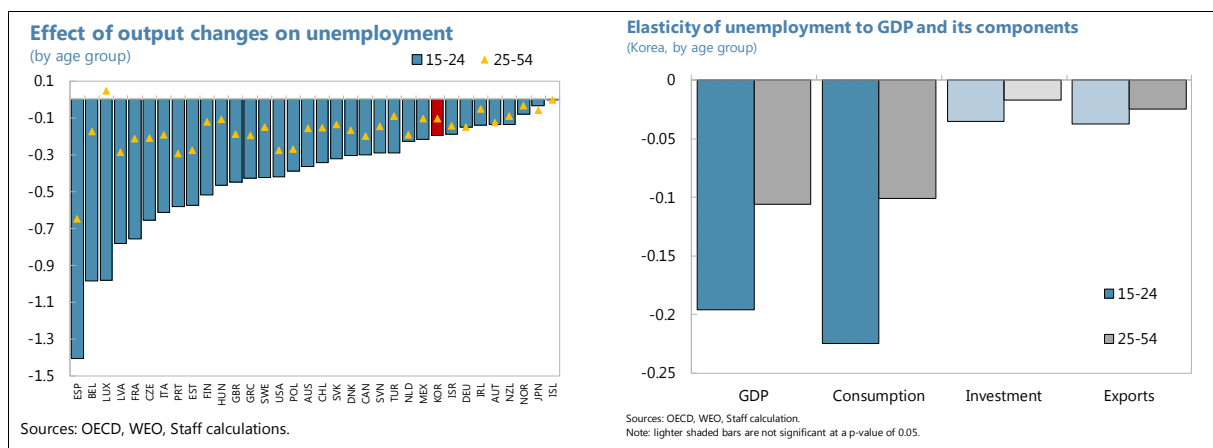
Cyclical Factors

10. Cyclical factors, especially consumption growth, have a significant impact on youth unemployment in Korea. Nevertheless, the effect is smaller than in most other countries.

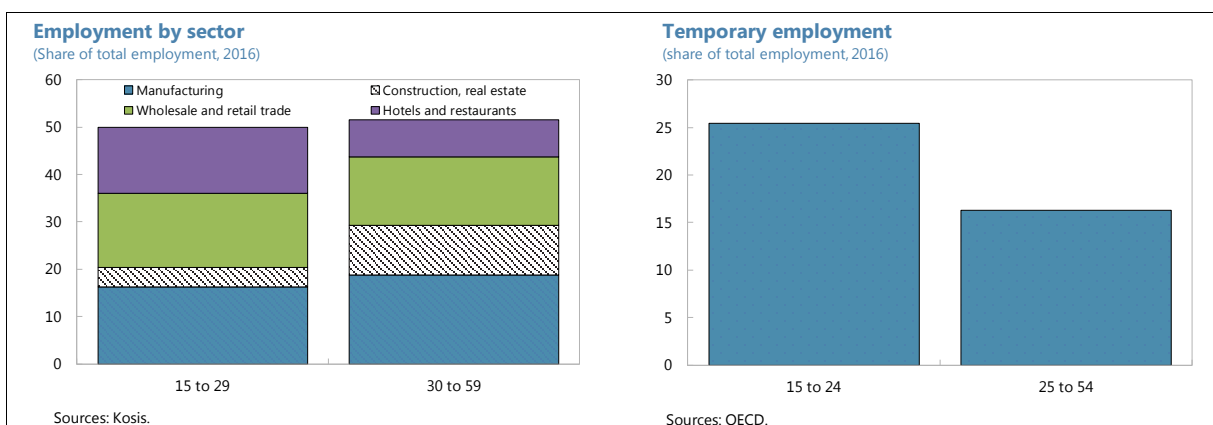
11. Theoretical channel: In general, an economic downturn implies fewer job vacancies and thus a higher competition for existing jobs. For youth, this can translate into a delay of labor market entry and acquisition of additional education. In case of labor market entry, stronger competition could prolong unemployment spells, worsen job mismatches or lower wages of job matches (ILO, 2010). In addition, various analysis has found that youth unemployment rates tend to be more sensitive to output growth and economic shocks than adult unemployment rates (ILO, 2010; Banerji et al., 2014). This is because youth are most likely to be dismissed first as they have less time to accumulate firm-specific skills and job protection tends to increase with tenure (World Bank 2012; ILO, 2010). Youth have also been found to work in more cyclically sensitive sectors and more fragile employment conditions, such as temporary contracts (Banerji et al., 2014).

12. Korea's case: A regression analysis based on Okun's law suggests that real GDP growth can only explain about 20 percent of the variation in the youth unemployment rate for Korea (see Figure).⁶ This is a relatively small effect compared to most other countries. While it is unclear why youth unemployment is relatively less elastic to GDP in international comparison, it could be due to the comparatively large share of highly educated youth or the tendency of youth to become inactive rather than unemployed (see Figure). As in most other countries the youth unemployment rate appears more sensitive than that of the prime-working age population. Testing the sensitivity of the unemployment rates to different components of GDP growth indicates that the relationship is largely driven by consumption growth (see Figure). A similar result has been found for European countries by Banerji et al. (2014).

⁶ We follow the methodology of Banerji et al. (2015) and Ball et al. (2013).



13. Data of employment by sector and employment type provides further insight into cyclical factors (see Figure). A smaller share of youth is employed in manufacturing and construction, which explains the lower sensitivity to exports and investment. At the same time, more youth is employed in the non-tradeable service sectors, especially hotels and restaurants, which explains the higher sensitivity to consumption growth. The share of temporary employment is also higher for youth at 25 percent in 2016, compared to 16 percent for those of age 25 to 54 (see Figure).



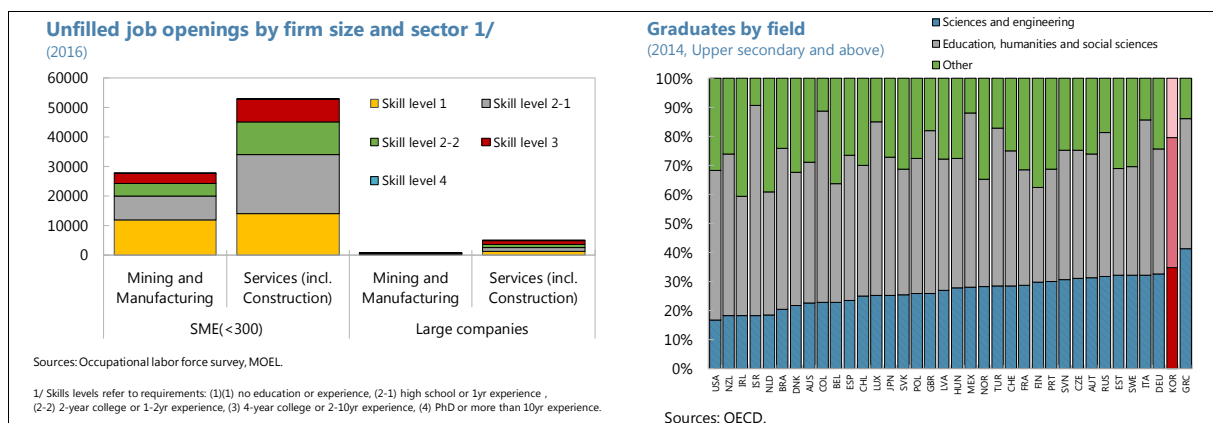
Structural Factors

14. Structural factors are significantly contributing to the level of youth (un)employment in Korea, particularly skill and expectation mismatches and duality in the labor market. In addition, changing demographics – a temporary spell of growing youth cohorts and large education gaps between elderly and youth – have likely contributed to the recent uptick in youth unemployment. The effect of technological change and integration into global value chains is less obvious and needs further analysis.

Skill Mismatch

15. Theoretical channel: Skill mismatch appears in various aspects, including the *level of education*, the *lack of specific skills* needed for a certain position or the *field of study*. These mismatches can lower the probability of finding employment or decrease the quality of employment. Accepting jobs below the attained education can result in a “trap” as on-the-job search intensity might decrease (Holzer, 1987), accumulation of job-specific human capital might keep youth stuck in their position (Pissarides, 1994) or the acceptance of an underskilled job is a negative signal to other potential employers (de Grip et al., 2008). For example, Baert et al. (2013) find that accepting a job for which one is overeducated substantially retards the transition to an adequate job in a sample of Belgian youth.

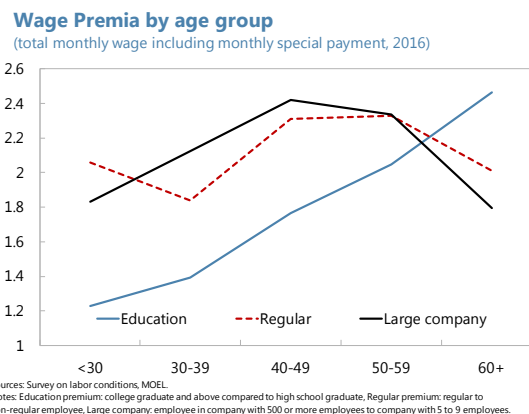
16. Korea’s case: Skill mismatch has likely contributed to low labor force participation and increases in youth unemployment in Korea. Dao et al. (2014) find that youth’s *education mismatch* in Korea has been on an increasing trend since 2006. They estimate that a 10 percent decrease in mismatch could raise employment rates by about 6 to 14 percentage points. More recent data supports this finding as a significant number of jobs remained unfilled in SMEs in 2016, especially for lower skill levels that only require high school graduation (see Figure). This development is not surprising as Korea has by far the largest educational gap between elderly and youth (see Figure). Thus, the jobs that are freeing up are likely not suited for high-skilled youth entering the labor market. Other work also provides evidence with regards to the *lack of specific skills*, arguing that in general most formal education falls short of meeting businesses’ demands (Kim, 2015; OECD, 2012). The *field-of-study mismatch* has also been found to be high in Korea at 50 percent, compared to a country average of 38 percent (Montt, 2015).



Expectation Mismatch

17. Theoretical channel: Higher educated youth might voluntarily choose a state of unemployment or inactivity. This could be due to high reservation wages or certain expectations regarding one’s career path. In particular, when labor markets are very segmented and rigid, it can pay off for youth to stay unemployed and queue for better jobs (World Bank, 2012). However, accepting a job below one’s skills can also act as a stepping stone (in the absence of the trap discussed in the previous paragraph) and avoids scarring from unemployment (Sicherman and Galor, 1990; discussion in Baert et al., 2013).

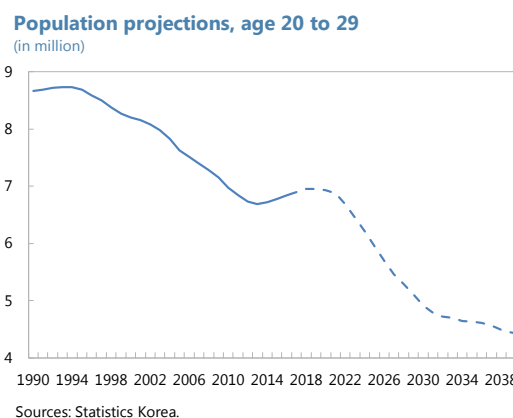
18. Korea’s case: A survey by the national statistics office in 2015 found that most youth between 15 and 29 desired a career in government and public enterprises (44 percent) or large companies (25 percent). This is not surprising since there is the significant labor market duality in the form of high wage premia for regular workers compared to non-regular workers and for employees in large companies compared to small companies (see Figure). These premia are even larger than those for college graduates and can thus not only be explained by education. Hence, these clear preferences of most youth have resulted in extensive preparations to enter the job market. Significant amounts of time are spent on preparing for recruitment exams or accumulating diplomas or certificates, thereby delaying labor market entry (Kim, 2015). In addition, more than 80 percent of young people that left their first job, did so for voluntary reasons. 47 percent left their job because they were dissatisfied with their working conditions, further supporting an expectation mismatch (Keum and Yi ,2016).



Demographics

19. Theoretical channel: Standard theory suggests that an increase in the labor force reduces the capital-labor ratio, which would lower wages (Solow, 1956). If wages cannot fully adjust due to rigidities, unemployment could also increase. However, if capital is determined by an endogenous saving rate the outcome would be less clear (Ramsey, 1928). In addition, theories suggest that larger youth cohorts might increase vacancies (Shimer, 2001) and that youth might choose to stay in education thereby increasing wages and employment in the long-run (Newhouse and Wolff, 2014). Empirical evidence largely finds that an increase in cohort size entering the labor market lowers wages (Welch, 1979; Brunello, 2011; Morin, 2015) and increases youth unemployment (Korenman and Neumark, 2000). However, Shimer (2001) finds the opposite result for the US that youth unemployment falls as cohort size increases.

20. Korea’s case: As discussed above, Korea has experienced a period of almost 20 years in which the youth cohort declined. However, this did not result in a decline in the rate of youth unemployment and the employment rate decreased. Since 2014, youth population (age 20 to 29) has started increasing again, which has coincided with increases in youth unemployment and some absolute increase in employment, yet most of the increased employment has taken place in SMEs and the service sector. This recent increase is temporary and Korea is forecasted to reach a cliff in 2019 after which the youth cohort will drop-



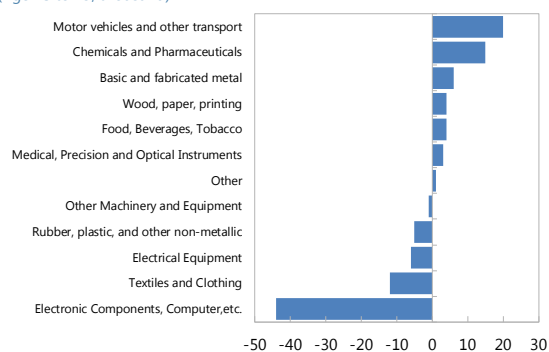
off sharply (see Figure). This might release some pressure on the labor market in the future. Nevertheless, the current youth cohort faces the risk of becoming a “lost generation”, given the potential scarring effect of unemployment spells at a young age.

Structural Changes in Labor Market Demand

21. Theoretical channel: Structural changes in labor market demand have been at the forefront of theoretical and empirical discussions. In particular, technological change and integration into global value chains (GVCs) has been seen as a potential driver of the polarization of the job distribution and the loss of certain routine jobs (Autor, 2010; Acemoglu and Autor, 2011). Youth might be at a special disadvantage if the education system does not prepare them for the new types of jobs that are being created. At the same time, they might have the ability to learn and adjust faster, which could increase their chance of employment compared to older cohorts.

22. Korea’s case: As previously discussed employment for youth in manufacturing and large companies has recently declined, which could be related to the structural changes discussed above. A more detailed break-down of the change in employment by manufacturing sectors reveals significant differences and suggests that GVCs did not have exclusively negative effects on employment creation (see Figure). For example, the chemicals sector has added jobs for youth, while having one of the highest indicators for forward and backward participation in GVCs (see SIP GVC for details). However, the sector of electronics and computers, which has lost the most jobs for youth, is also highly integrated into GVCs.

Change in employment in manufacturing sectors, 2013-2016
(Age 15 to 29, thousand)



Sources: Kosis.

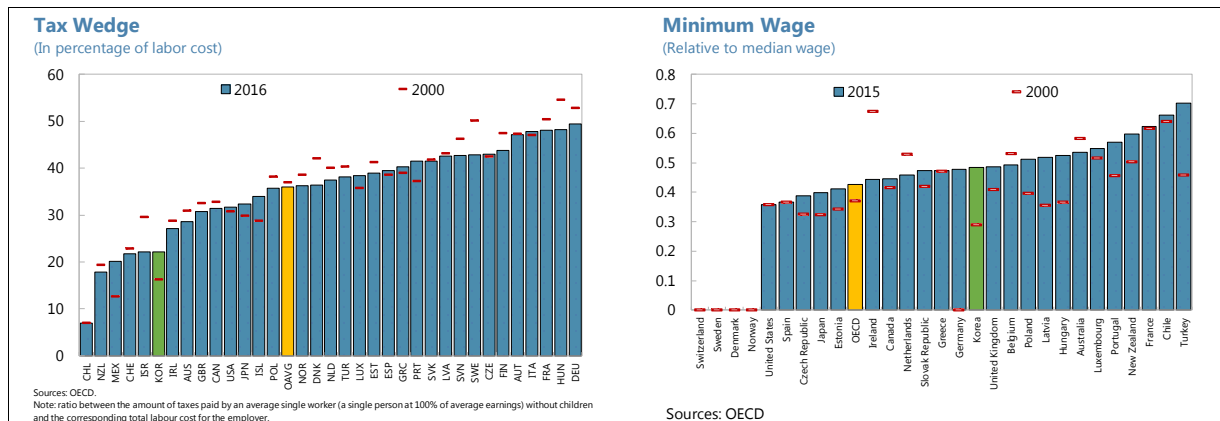
Policies

23. Significant policy variables that have affected the level of youth (un)employment in Korea include high protection of regular workers, educational quality and a focus of active labor market policies on direct job creation. Standard policy variables – including the tax wedge, minimum wage and generosity of unemployment benefits – are comparatively moderate in international comparison and are likely not strong factors driving the level and recent change in youth (un)employment.

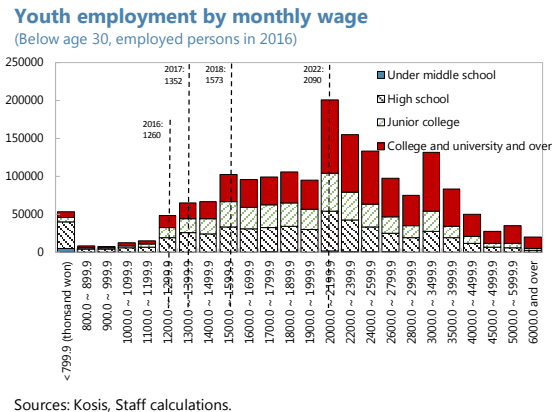
Labor Costs

24. Theoretical channel: Labor costs can have a direct effect on unemployment by increasing the relative price of labor and thereby lowering labor demand (Banerji et al., 2014). While wages tend to be an outcome of a bargaining process between a firm and its employees, policies can also

affect labor costs. Most prominently, minimum wages and tax wedges can raise labor costs.⁷ High minimum wages and labor costs can become a problem for youth as they tend to have less work experience and employers might face higher uncertainty regarding their skills and productivity. Therefore, several countries set lower minimum wages for youth and sometimes provide subsidies (ILO, 2012). However, if highly educated youth are unemployed because they are rejecting precarious wage conditions, a lower minimum wage could further reduce incentives to work.



25. Korea’s case: Korea’s tax wedge was 22 percent in 2016, significantly below the OECD average of 36 percent (see Figure). In addition, the Enterprise Labor Cost Survey finds that in 2015 79 percent of labor costs were direct labor costs. The remainder was largely attributable to severance pay (9 percent) and legally required benefits (7 percent). However, other analysis suggests that it is not the cost of hiring or employing a worker, but the cost of dismissal, which limits the availability of regular employment (OECD, 2013; Kim 2015). Regarding the minimum wage, Korea lies above the OECD average if measured relative to median wage (see Figure). While introduced in 1988, it has only applied to all workers since 2000. In addition, only recently the full minimum wage has been expanded to workers below the age of 18. The government has also struggled with and recently tried to improve enforcement (OECD, 2013). Most youth below the age of 30 received wages significantly above the minimum wage, but significant hikes could affect wages and potentially employment (see Figure and SIP Minimum wage).



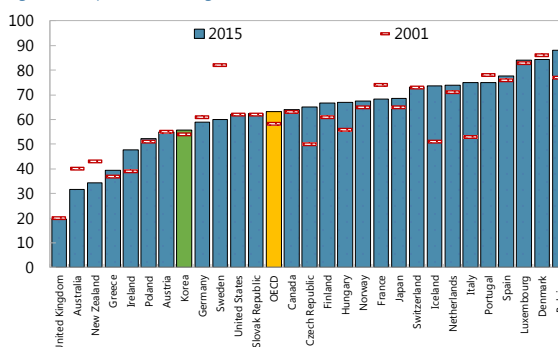
⁷ The OECD defines tax wedges as the ratio between the amount of taxes paid by a worker and the corresponding total labor cost for the employer. It is supposed to measure the extent to which tax on labor income discourages employment.

Opportunity Costs

26. Theoretical channel: If unemployment benefits are high individuals could reduce their search effort for employment and might be more reluctant to accept lower wages. This could increase unemployment (Banerji et al., 2014). However, an adequate level of unemployment insurance would allow job seekers to wait for a better job match and could thereby lower skill mismatches and contribute to longer and more productive employment spells. For youth, eligibility is a major issue as first-time job seekers are usually not part of unemployment benefit schemes. Thus, they usually rely on unemployment assistance benefits (ILO, 2012; Carcillo et al., 2015).

27. Korea’s case: For Korea, the net replacement rate in the initial phase of unemployment was 56 percent, slightly below the OECD average of 63 percent (see Figure). However, unemployment benefits are conditional on having been insured under the Employment Insurance System for at least 180 days. In addition, if the employee quit voluntarily no benefits are paid (OECD, 2007). Thus, young Koreans are less likely to be eligible for these benefits, also because they often leave their jobs voluntarily (see above). However, the government introduced an “Employment Success Package Program” in 2009 which offers allowances to job seekers conditional on job-seeking activity or participation in trainings (see Box 1).

Net Replacement Rate, initial phase of unemployment
(single earner, previous earnings = 67%AW)



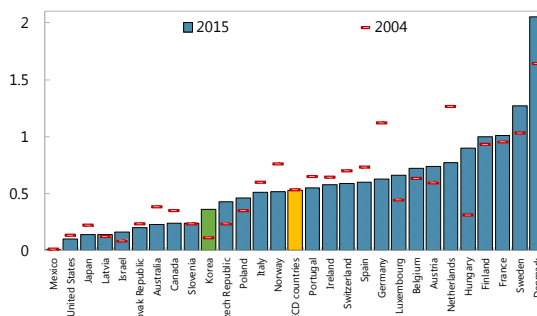
Sources: OECD.

Active Labor Market Policies

28. Theoretical channel: Policies that aim to activate individuals are expected to have positive employment effects. For example, trainings increase employability and conditionality of allowances should raise incentives to search for work and accept jobs. Indeed, most cross-country econometric analysis has found such a positive effect, but detailed micro evaluations point towards a more mixed picture. These studies suggest that effectiveness significantly depends on the type of program and its implementation (Banerji et al., 2014 and discussion in section D).

29. Korea’s case: Spending on ALMPs as a share of GDP is relatively low in Korea at 0.4 percent of GDP in 2015, compared to an OECD average of 0.5 percent. It falls also below the OECD average if measured per unemployed (see Figure). Regarding the composition, about 56 percent of ALMP spending in 2015 was on direct job creation. Cross-country research has shown that these tend to be the least effective (see section D). Training and employment incentives made up about 28 percent of public expenditure of ALMPs. The new government is planning to expand various of these measures (see Box 1).

Public expenditure on active labor market policy
(share of GDP)



Sources: OECD.

Box 1. Key Policies on Youth (Un)employment

The Korean government has identified the issues of youth unemployment and the quality of youth employment for some time. Beginning in 2003 with the administration of Moo-hyun Roh extensive policies targeted at youth employment have been passed by all administrations, such as the special act on youth employment promotion (2004) and the comprehensive measures for youth employment (2013). They have been comprehensive and addressed all aspects of the issue, including the supply and demand side and the matching process. The total number of job policies under different central Ministries and local authorities have been estimated to be around 200, which holds the potential for some redundancies or inefficiencies (Kim, 2017).

Measures on the supply side have targeted the quality and types of skills developed in education. Meister schools, a new type of vocational schools, were introduced in 2010. These are based on the German method of training master craftspersons (OECD, 2016b) and are set up to adapt their curriculum to industry needs. Job placement rates are high at 90 percent (OECD, 2016a) and their number increased to 41 schools by 2016. In addition, National Competency Standard (NCS) were developed in 2013 to identify and standardize skills for specific jobs. New curricula based on NCS were introduced to high schools, Meister schools and vocational colleges (OECD, 2016b). The work-study dual system, introduced in 2013, allows firms to hire young job-seekers as employees, who simultaneously study and earn certificates based on the NCS with financial support from the government. Jeon et al. (2015) estimate the net benefit of one position to be 8.9 million KRW. By August 2017, around 50000 youth and 10000 companies had participated in the program (HRD, 2017; MOSF). In 2016, the stepping stone program was launched, which provides job training and education in public institutions and large enterprises. In addition, part of the Employment Success Package Program targets young unemployed age 18 to 34. It financially supports youth who are developing an individual plan for job-seeking or attend vocational training (MOEL, 2016). While these measures are widely seen as steps in the right direction, it has been pointed out that further improvements are necessary such as ensuring the quality of placements, increasing ownership of businesses and expanding the reach of programs (Kim, 2014).

Measures on the demand side have aimed to expand job opportunities across the public and private sector. Increasing public employment of youth has been a strategy since President Roh. Since 2013, government agencies and public enterprises have a quota for youth of 3 percent. In addition, subsidies are given to SMEs that employ youth aged 15 to 29. These include a tax credit of five million won for each permanent young job-seeker employed and 150 percent tax deductions for increases in wages paid for young permanent workers (MOSF, 2015). In 2017 a further subsidy was introduced that provides KRW 20 million a year for three years to SMEs that hire three youth workers as regular workers. Measures have also been taken to raise youths' interest in SME employment by improving working conditions through support for voluntary improvements (MOEL, 2016). Youth entrepreneurship has also been promoted through the Young Entrepreneurs Start-up Academy, the Youth Development Fund, and the provision of seed money for youth enterprises through the "Youth Business 1000" program. In addition, the K-Move program helps young job-seekers to find jobs overseas. In 2016 it secured close to five thousand jobs (HRD, 2017). However, to address the quality of youth employment it will be critical to tackle the dualities between regular and non-regular and small and large companies through reforms in labor and product market.

Measures aimed at improving the matching processes have focused on internships and improvement of information provisions. Since 2009, the government subsidizes 6-month internships for unemployed youth in SMEs. Recently, the initiative was further focused on increasing the number of internships with high-growth SMEs (Kim, 2015). In addition, the infrastructure of employment services on campus has been expanded through on-campus youth employment centers and the creation of a human resources computer network connecting the private and public sectors is supposed to improve information exchange about employment opportunities (MOEL, 2016). While these measures target the matching process, it could also be fruitful to introduce pre-emptive measures (see section D) to help youth adapt to a changing labor market and support their career planning at an early stage.

The new administration is planning to strengthen previous efforts in its supplementary budget for 2017 and policy program. In particular, the new policy program will ask public institutions to fill more than 5 percent of their positions with youth. In addition, it is aiming to provide SMEs with extra incentives for hiring youth and to further promote overseas employment. It also pledges to reform public education and introduce innovative job training programs. The supplementary budget plan for 2017 included an increase in the young startup fund by 500 billion won, the adoption of a young job seeker allowance, and an increase in young SME employees matching funds to their asset building accounts.

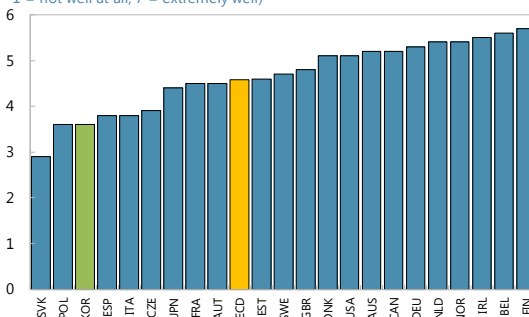
Education and Vocational Training

30. Theoretical channel: Higher levels of educational attainment in a youth cohort tend to mechanically lower labor force participation as more time is spent in education. However, higher education is generally expected to increase productivity of individuals and thus their employability and job quality in the future. Moreover, the quality of education and applicability of skills is of great importance for youth employment outcomes (Banerji et al., 2014).

31. Korea's case: In Korean society, a university education holds a high value (OECD, 2016). This is reflected in one of the highest gross enrolment ratios of tertiary education at 93 percent in 2015 and very large private expenditure on higher education. Korean students perform well on PISA tests and study excessively in high school to prepare for the entrance exam to higher education (College Scholastic Ability Test, CSAT). However, universities are chosen based on their network-enhancing role rather than their teaching and research performance. Universities' general curricula and lack of creative and critical skill development are struggling to prepare students adequately resulting in job mismatches and too few technical specialists (Kis and Park, 2012; Eichengreen et al., 2015). In addition, vocational training tends to have a negative image as some programs have low quality and links to the business sector tend to be weak (Kis and Park, 2012). This has translated into low enrolment rates in vocational education and training at upper secondary level (18 percent in 2014, compared to the OECD average of 44 percent). However, the government has undertaken significant steps to address these issues (see Box 1).

Educational Quality

(how well does the education system meet the needs of a competitive economy?
1 = not well at all; 7 = extremely well)



Sources: World Economic Forum, Executive Opinion Survey.

D. Best Practices

32. Successful policies need to be comprehensive and tailored, with recurring impact evaluations and adjustments. Measures are most successful if they are formulated and implemented as a comprehensive policy framework and are embedded into national development plans. They need to consider structural and cyclical aspects of the issue as well as combine demand- and supply-side interventions. At the same time, their design needs to recognize the individual characteristics of the youth and the specific barriers and disadvantages they face. Targets should include qualitative measures, with regular monitoring and evaluation assessments ensuring adjustments are made when necessary. While a multi-stakeholder approach is important, it is also crucial to ensure coordination and coherence. Mechanisms should also be put in place to allow affected youth to be part of the design and implementation process. (see ILO, 2012; ILO, 2015)

33. Active labor market policies have been a main tool to address youth unemployment. Active labor market policies include job search assistance, job training programs, employment services and employment subsidies. International experience suggests that to be successful they

need to address individual characteristics and specific labor market disadvantages, and be well-targeted to the most vulnerable. The design should ensure a clear contribution of the program by avoiding deadweight losses and ensuring that activities do not merely substitute existing employment (ILO, 2012). Coordination with passive labor market policies, such as unemployment insurance and social assistance, also work well to provide incentives for participation. For example, the Netherlands provide offers of work or education to youth aged 18 to 27 but if they refuse the offer they are denied social benefits (ILO, 2012). In Denmark, if pupils do not follow their individual education plan parents risk losing child benefits (OECD, 2010). Various countries have also introduced comprehensive youth guarantee schemes that provide commitments to place youth in education, training or work programs (Banerji et al., 2014).

Demand Side Policies

34. Well-designed fiscal policy can play an incentivizing role to increase private sector labor demand. As youth is particularly sensitive to the business cycle, counter-cyclical policies can reduce the negative impact of volatility on youth employment (ILO, 2012). Fiscal policy can also stimulate demand through a reduction in labor taxes or social security contributions (SSC). These have been found to be most effective if targeted to low-wage earners (Hammermesh, 1993; IMF, 2012), in the form of employer SSC cuts (IMF, 2014) and applied in more rigid labor markets (IMF, 2014). While targeting of cuts can reduce fiscal costs, their incentives need to be considered carefully. For example, cuts conditional on the level of the wage should be phased out gradually to avoid the creation of a “low-pay trap” (IMF, 2014). Another option is hiring subsidies. However, these need to be short-term, carefully targeted and closely monitored (Kluve et al., 2016; IMF, 2014). Targeting should be based on workers instead of firms (IMF, 2012) and avoid concentration on individual characteristics such as age and diploma, which can lead to substitution effects (Carcillo et al., 2015). Most importantly, they should be linked to on-the-job training (ILO, 2012).

35. Public employment programs have not been effective in addressing youth unemployment. Public employment programs have usually been used in times of crisis to prevent depreciation of human capital and sustain labor market attachment. However, they have recently become a more regular measure of youth employment policy (ILO, 2015; Carcillo et al., 2015). Empirical evidence largely finds no or even a negative effect of public employment programs on youth employment (Sianesi, 2001 for Sweden, Caliendo et al., 2011 for Germany, Dorsett, 2006 for the UK, Card et al., 2010). Possible reasons include the lack of transferable skills acquired, a potential for stigma, or a reduction in search efforts (IMF, 2012; Carcillo et al., 2015; ILO, 2015). Public employment might also crowd out private employment and could create a pool of applicants waiting for permanent public sector employment (IMF, 2012). To improve the impact of public employment measures they would need a clear policy objective and careful targeting, while ensuring interlinkages with other activation strategies and skills training that increases employability beyond the public sector (ILO, 2015).

36. Structural policies can increase labor demand and the quality of jobs. Reforms in product and capital markets have the potential to encourage job growth (IMF, 2012). In addition, labor market reforms can improve the transition of youth from entry jobs to more stable

employment by reducing duality between temporary and permanent contracts (OECD, 2010). Moreover, some countries have a separate minimum wage for youth set below that of adults to encourage employment. However, empirical results on the effect of a special minimum wage for youth have been inconclusive (ILO, 2012).

Supply Side Policies

37. Supply side measures need to be based on rigorous analysis of skill demand and provide valuable education or work experience. Many countries are measuring and forecasting skill shortages. These can be used to adjust curricula and education policy, but should also be employed to provide information, counselling and guidance (ILO, 2012). In addition, youth often struggle to find employment because of the lack of work-experience. Apprenticeships, internships and other labor market training programs can address this issue. For these programs to be successful they need to provide a real learning experience by combining theoretical training with periods of work experience. It is also crucial to ensure value of programs through recognized qualification or certification and a market-based design. Integration with the formal schooling system and ensuring a gateway to good quality jobs will avoid the fear of youth to be locked into these programs (ILO, 2015). Various countries have increased incentives for apprenticeships through tax credits, scholarships or exemptions (OECD, 2014). Other countries have also established business colleges and industrial or applied universities that can supply more market-oriented skills (Schmid, 2013).

38. Measures supporting youth entrepreneurship need to ensure that it is a viable career opportunity and not just a survival strategy. Successful programs identify the particular barriers faced by youth and offer comprehensive packages that accompany youth along the process, including theoretical classes, financial support, business advisory services, mentoring and follow-up. Measures should also include the introduction of entrepreneurship in the curricula of secondary and tertiary education to increase awareness and reputation of the profession (ILO, 2012; ILO, 2015).

Transition and Matching Policies

39. To ensure efficient matching public employment services need to be personalized and provide accurate labor market information. In particular, the design of an individual employment plan early in the spell of unemployment is crucial. In addition, profiling systems need to build on accurate and timely labor market information and take into account the personal situation of clients. Services also need to reach out to diverse groups and target those, who need assistance the most through forming broad-based partnerships with e.g., educational institutions (ILO, 2012; ILO, 2015). Denmark is an example of an approach providing quick, intensive and individualized services for youth of all ages. Pupils in lower secondary education prepare education plans in collaboration with parents, the school and the guidance center. Older youth are provided with an individual interview, a job-search training course and an educational opportunity or work placement quickly after application for welfare benefits. In addition, the Ministries of Education and Employment developed a database, which provides an overview of all youth and their education to identify and target vulnerable youth (OECD, 2010).

E. Policy Implications

40. While Korea's rate of youth unemployment is low in international comparison, it has recently increased. In addition, the share of inactive youth is exceptionally high. These developments are concerning as extensive research has shown long-lasting negative effects for individuals affected and the society and economy as a whole. Staff analysis suggests that various factors have contributed to the current situation, including cyclical, structural and policy variables. In particular, weak consumption, a temporary increase in the youth cohort and expectation and skill mismatches are likely responsible. Moreover, educational quality, a focus on direct job creation and high protection of regular workers and the resulting labor market duality have also contributed. The Korean government has already made significant and comprehensive efforts to tackle youth employment issues and plans to further expand on them. Based on a growing literature of international experiences and policy evaluations, the government could consider (i) fine-tuning existing measures, (ii) expanding pre-emptive measures and (iii) addressing general cyclical and structural impediments.

41. The current policies are a significant and important step to address youth unemployment. In particular, Meister schools, the work-study dual system and internships are important measures that can have long-run positive effects. The effect of these programs could be further strengthened by increasing ownership by businesses, expanding the reach of programs and ensuring the quality of placements, to guarantee accumulation of on-the-job skills and enhance career prospects. In general, it will be crucial to continuously evaluate and monitor impact and costs and adjust the programs when necessary. For example, the youth guarantee program in Finland was first introduced in 1996, but has continuously been revised since then. These revisions included broad working groups comprising ministries, employer associations, trade unions and a youth organization. It will also be critical to retain a comprehensive policy framework that encompasses all measures to ensure coordination and coherence. A national media campaign, as done in Finland, might also be useful to encourage participation and involve stakeholders. The use of direct job creation should be considered carefully and should be linked to developing or expanding services that cannot be provided adequately by the private sector.

42. The effectiveness of existing measures could further be enhanced through more pre-emptive engagement of youth. For example, Denmark has introduced the development of education plans in lower secondary education. This measure could help Korean children, who are investing a lot of time and resources at an early age, by developing realistic and individual education and career plans. For this, it will also be crucial to provide forecasts of skill demands to help youth choose efficient educational investments. In addition, Denmark also introduced a database, which provides an overview of all youth and their qualifications to identify the most vulnerable. Korea could apply a similar strategy to identify and provide ALMPs to discouraged youth.

43. Measures will also need to address broad-based cyclical and structural impediments. As youth unemployment is particularly sensitive to the business cycle, it will be critical to address the current negative output gap and weak consumption growth. Expansionary fiscal policy can help to increase domestic demand and thereby boost

employment growth. However, the analysis has also shown the importance of broad-based structural issues. Product market reform should aim to increase productivity in SMEs and services, thereby boosting their potential to provide decent jobs and reducing segmentation. Duality in employment contracts should also be reduced. For example, policies should aim to simplify rules for dismissal for regular workers and adjust contracts and benefits to a smoother schedule.

44. A youth strategy as part of a comprehensive and well-coordinated policy package would yield multiple benefits. Given the significant interactions with the broader issues of labor market duality, product market segmentation and sluggish domestic demand, youth (un)employment would best be tackled as part of a comprehensive strategy. As analyzed in the selected issues papers “A New Strategy for Korea’s Fiscal Policy in a Low-Growth Environment” and “Labor Market Duality in Korea” this would encompass a move towards flexicurity, stronger social safety nets, structural reforms in the product market, and an increase in fiscal spending to boost labor supply. In combination with the targeted policies towards youth discussed above, this package would create decent and sustainable employment through improved competitiveness and long-run growth, while ensuring youth will be able to take advantage of the new opportunities created. Thus, it will be critical to implement the policies in a coordinated and gradual way. Given the significant fiscal space and still negative output gap measures that boost demand should be given priority, while policies that could have short-term contractionary effects need to be cushioned well.

References

- Acemoglu, Daron, and David Autor, 2011, "Skills, Tasks and Technologies: Implications for Employment and Earnings," *Handbook of Labor Economics*. Volume 4b, pp. 1044-1166.
- Arulampalam, Wiji, and others, 2001, "Unemployment Scarring," *The Economic Journal*. F577-F584.
- Autor, David, 2007, "Structural Demand Shifts and Potential Labor Supply Responses in the New Century," Federal Reserve Bank of Boston. Pp. 161-238.
- , 2010, "The Polarization of Job Opportunities in the U.S. Labor Market-Implications for Employment and Earnings", Center for American Progress.
- Baert, Stijn, and others, 2012, "Overeducation at the Start of the Career: Stepping Stone or Trap?", *Labour Economics*, pp. 123-140.
- Banerji, Angana, and others, 2014, "Youth Unemployment in Advanced Economies in Europe: Searching for Solutions," IMF Staff Discussion Note. SDN/14/11.
- , and others, 2015, "Youth Unemployment in Advanced Europe: Okun's Law and Beyond," IMF Working Paper. No.15/5.
- Bell, David, and David Blanchflower, 2010, "Youth Unemployment: Déjà vu?", Institute for the Study of Labor (IZA). Discussion Paper No. 4705.
- Brunello, G., 2010, "The Effects of Cohort Size on European Earnings," *Journal of Population Economics*, 23(1), pp.273-290.
- Caliendo, Marco, and others, 2011, "Fighting Youth Unemployment: The Effects of Active Labor Market Policies," Institute for the Study of Labor (IZA). Discussion Paper No. 6222.
- Carcillo, Stephane, and others, "NEET Youth in the Aftermath of the Crisis," OECD Social, Empowerment and Migration Working Papers No. 164.
- Card, David, and others, 2015, "What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations", Institute for the Study of Labor (IZA). Discussion Paper No. 9236.
- Currie, Janet, and Hannes Schwandt, 2015, "Short and Long-Term Effects of Unemployment on Fertility," Institute for the Study of Labor (IZA). Discussion Paper No. 9299.
- De Grip, A. and others, 2008, "Job-Worker Mismatch and Cognitive Decline," *Oxford Economic Papers* 60, pp.237-253.

- Dao, Mai, and others, 2014, "Strategies for Reforming Korea's Labor Market to Foster Growth," International Monetary Fund. WP/14/137.
- Dorsett, Richard, 2006, "The New Deal for Young People: Effect on the Labour Market Status of Young Men," *Labour Economics*, pp. 405-422.
- Eichengreen, Barry and others, 2015, "The Korean Economy. From a Miraculous Past to a Sustainable Future," Harvard University Asia Center.
- Escudero, Veronica, and Mourelo Elva, 2015, "The Youth Guarantee programme in Europe: Features, implementation and Challenges," International Labour Office. Working Paper No.4.
- Godfrey, Christine and others, 2002, "Estimating the Cost of Being Not in Education, Employment or Training at Age 16-18," Research Report, 346, Department of Education and Skills, Nottingham.
- Gregg, Paul, 2001, "The Impact of Youth Unemployment on Adult Unemployment in the NCDS," *Economic Journal* 111(475), pp. 626-653.
- , and Emma Tominey, 2005, "The Wage Scar from Male Youth Unemployment," *Labour Economics*. Pp. 487-509.
- Hammermesh, D.S., 1993, "Labor Demand," Princeton University Press.
- Holzer, H., 1987, "Job Search by Employed and Unemployed Youth", *Industrial and Labor Relations Review* 40, pp. 601-611.
- Human Resources Development Service of Korea, 2017, "35 Years of HRD Korea".
- Hwang, Soo Kyeong, 2010, "Youth Unemployment" in Korea: Challenges and Policy Options", Korean Development Institute.
- International Labour Office, 2010, "Global Employment Trends for Youth."
- , 2012, "The Youth Employment Crisis: Time for Action", International Labour Conference, 101st Session.
- , 2015, "Global Employment Trends for Youth 2015: Scaling Up Investments in Decent Jobs for Youth."
- , 2016, "Youth Employment Policy Summary—Republic of Korea".

- International Monetary Fund, 2012, "Fiscal Policy and Employment in Advanced and Emerging Economies."
- , 2014, "Fiscal Monitor: Back to Work, How Fiscal Policy Can Help".
- Kahn, Lisa, 2010, "The Long-term Labor Market Consequences of Graduating from College in a Bad Economy," *Labour Economics*. Pp. 303-316.
- Kim, Hisam, 2014, "Intergenerational Mobility and the Role of Education in Korea", Korea Development Institute.
- Kim, Sung-taek, 2017, "Overview: Employment and Labor Policies in Transition," KLI Working Paper 2017-07.
- Kim, Yoo Bin, 2015, "The Youth Labor Market in Korea: Current Situation and Employment Policy", Korea Labor Institute.
- Kis, Viktoria, and Park, Eunah, 2012, "A Skills beyond School Review of Korea," *OECD Reviews of Vocational Education and Training*.
- Keum, Jeaho, and, Yi, Insill, 2016, "Job Separation and Youth Unemployment in Korea," *Korea and the World Economy*. Vol. 17, No. 1.
- Kluge, Jochen and others, 2016, "Do Youth Employment Programs Improve Labor Market Outcomes? A Systematic Review," *IZA Discussion Paper No. 10263*.
- Ministry of Employment, Denmark, 2014, "Danish Youth Guarantee Implementation Plan".
- Ministry of Employment and Labor, Korea, 2016, "Employment and Labor Policy in Korea, 2016."
- Ministry of Strategy and Finance, Korea, 2015, "2015 Tax Revision Focuses on Increasing Youth Employment and Promoting Working Class Asset Building," Press Release.
- Montt, Guillermon, 2015, "The Causes and Consequences of Field-of-Study Mismatch," *OECD Social, Employment and Migration Working Papers*. No. 167.
- Morin, Louis-Philippe, 2015, "Cohort Size and Youth Earnings: Evidence from a Quasi-Experiment," *Labour Economics*, pp. 99-111.
- Mukoyama, Hidehiko, 2015, "Labor Market Reform Given Priority Among South Korea's Big Four Reforms-Trying to Reconcile Youth Job Creation with a 60-Plus Retirement Age-", Japan Research Institute. Volume XV, No. 58.

- Nam, J., and S. Kim, 2013, Korean EETs: Characteristics and Labor Market Performance," Korea Labor Institute Research Projects, No.535, Korea Labor Institute (in Korean).
- Newhouse, David, and Claudia Wolff, 2014, "Cohort Size and Youth Employment Outcomes," Institute for the Study of Labor (IZA). Discussion Paper No.8197.
- Nilson, Oivind, and Katrine Holm Reiso, 2011, "Scarring Effects of Unemployment," Institute for the Study of Labor (IZA). Discussion paper No. 6198.
- OECD, 2007, "Korea-Jobs for Youth," OECD Employment, Labour, and Social Affairs Committee.
- , 2013. "The OECD Action Plan for Youth-Giving Youth a Better Start in the Labour Market," Meeting of the OECD Council at Ministerial Level.
- , 2014, "Promoting Better Labour Market Outcomes for Youth".
- , 2016a, Economic Surveys-Korea.
- , 2016b, "Education Policy Outlook – Korea".
- , and ILO, 2015, "Setting Objectives for Achieving Better Youth Employment Outcomes."
- , and others, 2015, "Local Implementation of Youth Guarantees: Emerging Lessons from European Experiences", OECD Working Papers.
- Oreopoulos, Philip, 2012, "The Short-and-Long-Term Career Effects of Graduating in a Recession," American Economic Journal.
- Pissarides, Christopher, 1994, "Unemployment with On-the-job Search," The Review of Economic Studies. Vol. 61, No. 3.
- Ramsey, Frank, 1928, "A Mathematical Theory of Saving", Economic Journal 38 (152), pp. 543-559.
- Scarpetta, Stefano, and others, 2012, "Rising Youth Unemployment During the Crisis: How to Prevent Negative Long-term Consequences on a Generation?", OECD Social, Employment and Migration Papers. No. 106.
- Schmid, Gunther, 2013, "Youth Unemployment in Korea: From a German and Transitional Labour Market Point of View," Institute for the Study of Labor (IZA). Policy Paper No. 63.
- Shimer, Robert, 2001, "The Impact of Young Workers on the Aggregate Labor Market," The Quarterly Journal of Economics, pp. 969-1007.

Sianesi, Barbara, 2001, "Swedish Active Labour Market Programmes in the 1990s: Overall Effectiveness and Differential Performance," *Swedish Economic Policy Review*. Pp. 133-169.

Sicherman, N. and O. Galor, 1990, "A Theory of Career Mobility," *Journal of Political Economy* 98, pp. 169-192.

Solow, 1956, "A Contribution to the Theory of Economic Growth." *Quarterly Journal of Economics*.

Welch, F., 1979, "Effects of Cohort Size on Earnings: The Baby Boom Babies' Financial Bust," *The Journal of Political Economy*, pp. S65-S97.

World Bank, 2012, "Chapter 1-Why Focus on Youth Unemployment? Youth Employment Programs: An Evaluation of World Banks and International Finance Corporation.

THE NEW MINIMUM WAGE POLICY IN KOREA

A. Recent Developments

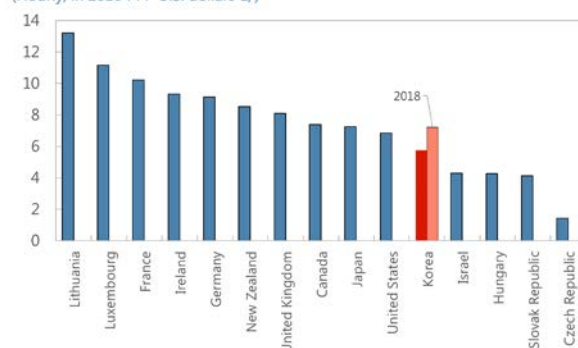
1. The new administration of President Moon announced in July 2017 its economic policy platform that aims to shift the “growth paradigm from large production and fast-follower-led growth to sustainable growth.” One of the key pillars of this platform is income-led growth, which includes raising the minimum wage. In line with this policy direction, the Minimum Wage Commission comprising representatives from labor, businesses, and the public dramatically increased the minimum wage for 2018 to KRW 7,530 per hour, a 16.4 percent rise compared to this year. To partially compensate small businesses for the increased labor cost, the government plans to pay part of the additional burden, which is estimated at KRW 3 trillion (0.2 percent of GDP) for 2018.



Sources: OECD Database, IMF World Economic Outlook; Staff calculations.

2. The 2018 minimum wage hike is by far the largest increase in real terms since the minimum wage system was established in late 1980s. Only the minimum wage hike in 2001 comes close to the current hike. That hike followed sharp increases in output and employment, after the contraction in output and wage growth in the wake of the Asian crisis. This time, the minimum wage growth is projected to substantially exceed the growth rates of real and nominal output.

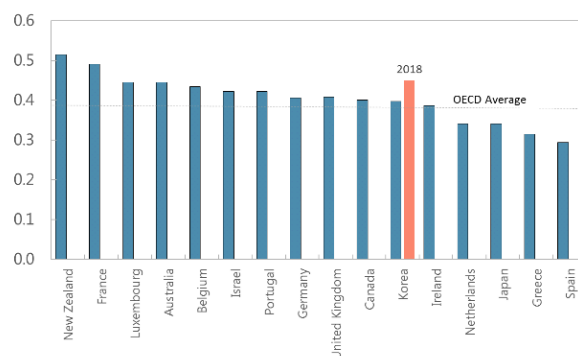
OECD - Minimum Wages - 2016
(Hourly, in 2016 PPP U.S. dollars 1/)



Sources: OECD Database; IMF World Economic Outlook; Staff calculations.
1/ Purchasing power parities for private consumption.

3. This hike will bring Korea's minimum wage close to the OECD average. Last year, the minimum wage in Korea stood at \$5.8 per hour, estimated using the purchasing power parity for private consumption. In 2018, this rate will increase to \$7.2 per hour. According to the OECD, Korea's 2016 minimum wage ranked 16th out of 27 OECD countries, and the 2018 minimum wage would put Korea in the middle of the group, assuming no change in other economies' minimum wages. The hike will also push the ratio of minimum to average wage slightly above the OECD average.

OECD - Minimum relative to average wages of full-time workers - 2016



Sources: OECD Database; Staff calculations.

B. The Impact of a Minimum Wage Hike—General Considerations

4. A hike in the minimum wage could have an impact on multiple fronts. In general, it affects employment, especially youth employment, the overall wage levels in the economy, income distribution, and competitiveness of the firms. These in turn affect economic growth and inflation.

Employment

5. The impact of minimum wage on employment is by far the most important and controversial part of the debate on minimum wages. An increase in the minimum wage could potentially cause some low-skilled workers to lose employment, as their contribution to the firm is deemed to be less than their wage, and/or some workers maintain their jobs and see their wages rise to the new minimum wage level. Non-compliance with the regulations or reduction in non-wage benefits are also possibilities. To what degree a higher minimum wage affects employment in any given economy is ultimately an empirical question.

6. Academic literature on the impact of minimum wage on employment spans decades and covers hundreds of studies. The key takeaways are that (1) the impact of minimum wage on total employment is still being debated; and (2) there is quite strong evidence that higher minimum wages reduce the employment of low-skilled low-wage workers (Neumark and Wascher (2003, 2007)). Indeed, based on international data, Neumark and Wascher find that a one percent increase in the minimum wage would lower youth employment by around 0.12 percent in the short run and 0.21 percent in the longer run. An IMF study (IMF (2016)) finds that in Central Eastern and South Eastern European (CESEE) economies, a 10 percent increase in minimum wage is associated with a youth employment reduction of 2 percent.

7. OECD takes a cautious view (OECD (2015)), arguing that “at reasonable levels, increases in the minimum wage are unlikely to cause substantial job loss,” but notes that country- and time-specific factors determine what is a reasonable level. OECD recognizes that the negative employment impact could be larger on the youth and other vulnerable groups. Case studies provide further evidence of the complexity of the debate. For example, studies on the minimum wage increase in New Jersey do not find any systemic impact even on firms that employ low-skilled labor, while studies on the sharp rise in the minimum wage in Seattle find a significant and negative impact on low-skilled labor. The case study on France shows that when the minimum wage is high relative to the average wage, it can lead to lower overall employment (Box).

The Overall Wage Level in the Economy

8. An increase in the minimum wage mechanically directly increases the overall wage level in the economy, and indirectly through the “ripple” effect. For example, in the U.S., a one percent increase in the minimum wage is estimated to increase payments to workers at or just above the minimum wage by 0.8 percent and payments to workers further up the wage scale around 0.25 – 0.4 percent. IMF work on CESEE countries also reveal a significant pass-through of minimum wage hikes to general wages, up to 0.15 percent over two years in response to a one percent increase in minimum wage.

Box 1. An Example of the Impact of Minimum Wage Increases on Employment: France

In France a minimum wage was introduced in 1950. In 1970, the government established the “SMIC” (Salaire Minimum Interprofessionnel de Croissance), which links the minimum wage to the in-purchasing power of workers’ wages, as well as a measure of consumer price inflation. The government also decided to add discretionary increases on top of the formula (“coups de pouce”). This mechanism led to a substantial increase in the ratio of minimum to average wage from 39 percent in 1968 to above 50 since the 1980s.

These changes in minimum wage policy lowered wage inequality by increasing wages at the bottom. However, several studies showed that high minimum wages priced low-skilled workers and youth out of the market, thereby contributing to high unemployment.

Recognizing the negative impact of high minimum wages, the governments since 1990s have implemented a number of measures to alleviate the burden. They largely aimed to reduce labor costs through lowering the social contributions of employers and providing targeted tax credits to promote consumption of household services.

These policies managed to stabilize low-skilled employment. However, the fiscal cost of these measures was high at around 1 percent of GDP in 2007. To ensure that changes to the minimum wage better reflect economic conditions the government introduced a commission of independent experts in 2008 to give official advice each year on “coups de pouce.”

IMF Article IV discussions with France consistently recommended that France should consider keeping the ratio of minimum to average wage to below 50 percent, to avoid increasing unemployment of the young and the low-skilled. In the 2017 Article IV discussions, staff recommended to limit automatic minimum wage increases to inflation, and allow the future National Productivity Board to play an advisory role on wage setting, including by providing guidance on the link between wage dynamics and economic conditions.

9. Widespread non-compliance in both advanced and emerging economies dampens this impact. Non-compliance, for example, in the garment sector in California was observed in two-thirds of the factories. In the U.K., Low Pay Commission uncovered that more than 10 percent of the workers in the social care sector were paid less than the minimum wage they were entitled to receive.

Inequality

10. Minimum wage is an important tool to manage income inequality. And unlike most other policy measures, it does not involve direct fiscal costs.

11. There is broad consensus that in general minimum wages lower inequality, provided they are not high enough to significantly lower employment, especially for youth and low-skilled. In a seminal paper, Autor, Manning, and Smith (2016) reverse the question and argue that during 1979–89, the decline in the real value of the minimum wage was responsible for 30 to 55 percent of the raise observed in the lower tail inequality. Similar correlations were also found for the U.K. in the late 1980s and early 1990s. Several other academic works (Koeniger et al. (2007); Crivellaro (2014)) also find a positive correlation between minimum wages and lower wage inequality.

Competitiveness

12. Firms that face a higher minimum wage has three options: pass the cost on to the consumers; accept lower profits; or push up productivity. Empirical studies find evidence of all these factors in different countries, sectors, and periods. For example:

- Pass-through. Aaronson (2001) find that in Canada and the U.S., restaurant prices generally rise when their wage bill rises, especially during the period minimum wage changes are legislated.
- Lower profits. Bell and Machin (2015) find that the sizable change in the minimum wage in the U.K. that caught the markets by surprise led to significant falls in the stock market value of low-wage firms.
- Higher productivity. Riley and Bodibene (2015) show that firms with a large share of low-skilled workers raised productivity in response to higher minimum wages.

The variety of the results suggest that the impact of higher minimum wages on competitiveness depends on country—and sector-specific characteristics.

Growth and Inflation

13. The impact of minimum wage increases on growth is controversial. Proponents of minimum wage increases argue that redistribution of income from high savers to high consumers, which tend to be those who receive low wages, would spur overall consumption and growth. An extreme case of this is Japan, where higher minimum wages are projected to reduce deflationary pressures and add to economic growth (Everaert and Ganelli (2017)). Opponents argue that higher minimum wages would weaken firms' competitiveness and reduce employment.

14. On the empirical side, Onaran and Galanis (2012) look at the wage share in the economy during 1960–2007 and show that a decline in the wage share tends to lower growth in a number of countries, including Korea, and raise growth in others. They argue that at the global level, there is lack of wage-led growth and policies that would spur wage growth would strengthen the global recovery from the global financial crisis. Bassanini and Venn (2008) find a positive impact of minimum wage on productivity, and Askenazy (2003) finds that minimum wage increases speed up long-run growth in an open economy and that the growth surplus could be significant. Sabia (2015), on the other hand, finds no evidence that minimum wage increases were associated with changes in output, but finds a shift of output from low- to higher- skilled industries.

15. These studies do not take into account the economic cycle the economy is in to examine the impact of an increase in the minimum wage on growth and inflation. If there is slack in the economy, and if minimum wages are at moderate levels, a minimum wage hike could boost overall wages without significantly lowering employment. In this case, domestic demand could rise and help close the output gap. However, there are other cases where output gap may be negative and large because of lack of competitiveness. In these cases, wage moderation coupled with appropriate macro and structural policies could be the solution to higher growth. If the output

gap is closed or positive, an increase in minimum wage could lead to higher domestic demand and inflation, which could trigger monetary tightening and slower growth.

16. There is evidence that minimum wage increases have a small and positive impact on inflation. Indeed, Lemos (2004) concludes that a 10 percent increase in the minimum wage in the U.S. would increase overall prices by no more than 0.4 percent (although food prices increase by 4 percent). This is consistent with the general finding that minimum wages create upward pressures on average wages, and that there is overall wage pass-through to inflation (e.g. Gorette (2008)).

C. The Case of Korea

17. In Korea, about 7 percent of workers receive the minimum wage. This compares to less than 5 percent in the U.S. and the U.K. and around 10 percent in France and Germany, which have significantly higher minimum wages.

Historical Analysis

18. To understand the historical relationship between minimum wages, average wages, and employment in Korea, we conducted an econometric analysis. Following the literature, we run a co-integrating regression, where the real minimum wage, real average wages, and employment were con-integrated. As exogenous variable, which also reflect the supply side, change in terms of trade, productivity growth, and population growth were used. A dummy variable was included to prevent the sharp changes during the Asian crisis to dominate the econometric results.

19. Our statistical analysis showed that historically the minimum wage in Korea has followed, rather than lead average wages (see Tables 1–8). A one percent increase in average real wages increased the real minimum wage a year later by about the same magnitude. Since the decision to set the minimum wage for a particular year is made in the previous year, this reverse causation suggests that minimum wage is based on past economic performance rather than expectations of future developments.

20. Moreover, in the short run, employment is positively correlated with average and minimum wages. This is consistent with the finding that average wages lead minimum wages. In the longer run, however, estimation results suggest that total employment declines with higher minimum wages. Furthermore, separating total employment into youth and non-youth employment, minimum wages explain about 30 percent of the variation in youth employment (corresponding to 1 percentage point), compared with around 10 percent for non-youth employment (corresponding to 0.2 percentage point). The estimation method controls for working age population growth and other exogenous factors. This result suggests that minimum wage increases tend to lower youth employment in the longer run. However, this result should be interpreted with caution—Lee (2008) analyzes the effect of Korea’s minimum wage increase on youth employment and does not find any statistically significant impact. This may be partially because in Korea youth are highly educated, and 60 percent of Korea’s unemployed youth are university graduates, and partly because of the fact that with youth population increase job mismatches have increased.

21. Minimum wage increases have had an impact on income distribution through two channels: wages and employment. Given that minimum wages have tended to follow average wages, and that they have not changed overall employment significantly, it is unlikely that increases in the minimum wage level have materially changed the overall income distribution after the initial adjustment when it was first established in late 1980s. Yoon (2015) suggested an opposing view: “with the rise of the working poor and many minimum wage workers in the lowest income group, minimum wage increases are deemed to have considerable impact on the working poor status.”

22. To understand the impact on competitiveness, we look at the overall growth of the Korean economy. The strength of exports show that competitiveness of the most export-oriented sectors has remained strong in recent history. Moreover, most exporters make little use of low-skilled labor; therefore, it is unlikely that they would be significantly affected by minimum wage increases, although large wage increases would reduce their competitiveness because exporters in general tend not to be able to pass on cost increases to prices. Regarding firms in service sectors, where the bulk of the minimum wage earners are employed, we have not come across any evidence that minimum wage hikes have unduly impacted these firms. This may be partly because they have more opportunities to pass on wage increases to prices, but more analysis is needed in this area to reach a firm conclusion.

23. Similarly, historically we have not seen a clear evidence of minimum wage increases affecting growth and inflation. This is likely because minimum wages have followed productivity growth and wages, not the other way round.

The 2018 Minimum Wage Hike

24. The 2018 minimum wage hike is unprecedented. First, the increase in the minimum wage is substantially higher than the productivity growth, wage growth, and inflation observed in recent past. And second, it is taking place at a time when youth unemployment is high and increasing. The only point in Korea’s history that is comparable to the size of the 2018 hike is 2001, when productivity growth and wage growth were very strong in the previous couple of years and youth employment was declining. Therefore, we should be cautious in using historical patterns to analyze the current case.

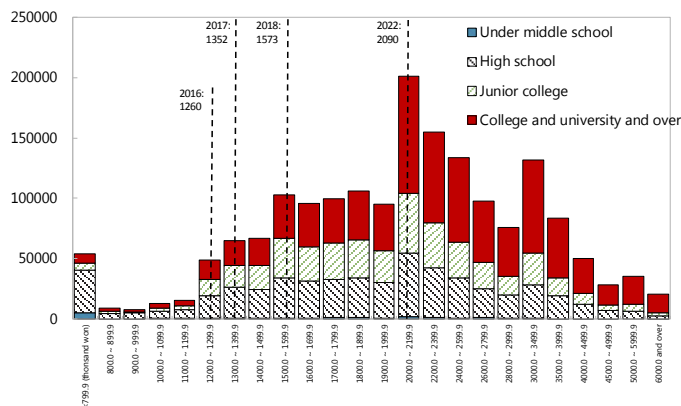
25. We expect the sharp increase in the minimum wage to push overall wages up. This is based on two arguments: first, this time around the increase in the minimum wage does not follow the historical pattern of reflecting past wage increases; and second, the increase is by far the largest in real terms since the minimum wage system was established, and should have an important ripple effect through the rest of the wage structure.

26. This increase may contribute to the difficulties low-skilled workers, youth, and the elderly are facing in finding employment.

If the cost increase for some firms that typically hire young employees is too high for them to sufficiently pass on to prices, these firms may choose to reduce employment and increase labor productivity to safeguard profitability. Also, the elderly that own or are employed by small mom-and-pop shops will be vulnerable to closure of those shops. The final impact depends on how much the economy is generating employment in other areas.

Youth employment by monthly wage

(Below age 30, employed persons in 2016)



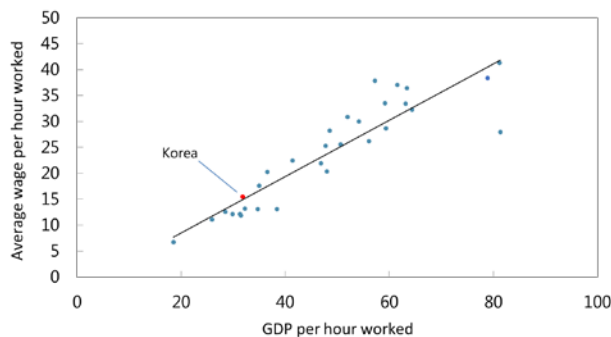
Sources: Kosis, Staff calculations.

27. Firms will face two opposing forces: higher domestic demand from workers who receive higher wages, and higher labor costs, which will increase costs.

Currently Korea’s firms are overall in good health, as reflected in the strong increase in Korea’s stock market this year. Moreover, average wage appears broadly in line with average value added per worker, compared to other OECD countries (Figure). Nevertheless, those firms that cannot pass on the cost increases or commensurately become more productive will likely lose competitiveness and some of them will fall below the break-even point. These vulnerable firms are those that employ primarily low-skilled workers, so that their ability to migrate the work to higher-skilled labor is limited. In Korea, these firms tend to be in the service sector and are generally small, including mom-and-pop shops.

Productivity and Wages - 2016

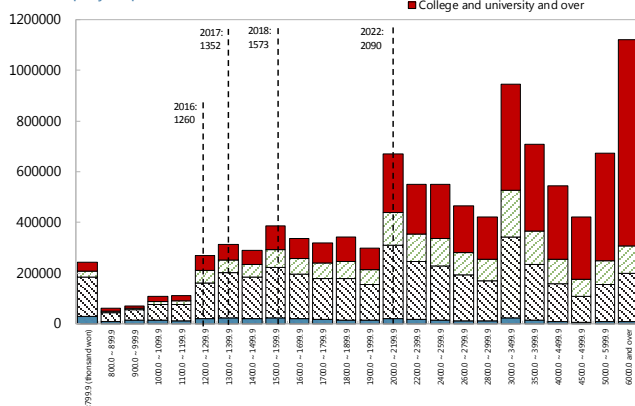
(in USD, PPP)



Sources: OECD and staff calculations.

Employment by monthly wage

(all employed persons in 2016)



Sources: Kosis, Staff calculations.

28. The 2018 minimum wage hike should support growth, but may adversely affect some low-skilled workers. The hike will boost domestic demand, which has been the key missing element of growth in Korea. Domestic demand will increase because income will shift to lower-income workers, which have lower saving and higher consumption rates. However, some low-skilled workers may face greater difficulty finding jobs.

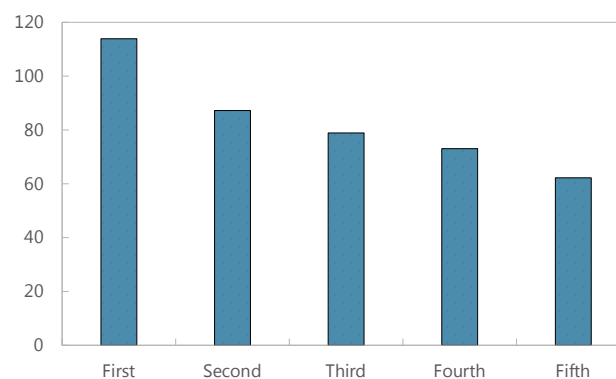
Policy Implications

29. Given the unprecedented nature of the minimum wage hike, the government should be mindful of the following policy options:

- **Analyze the impact of the 2018 wage hike before additional hikes.** While the overall impact is expected to be positive, at this early stage it is necessary to monitor the impact on the youth, the elderly, smaller firms, and firms that mostly employ low-skilled labor. The literature on minimum wages confirms that a “moderate” minimum wage level would not be detrimental to the economy, but the devil is in the detail of deciding what a “moderate” level is. With the 2018 hike, Korea’s minimum wage level will be at many of the other advanced economies. Another large hike on the heels of the hike in 2018 may stress the labor markets and firms to such a degree that they may not be able to cope with it in a short period of time.
- **Boost active labor market policies.** Those that lose employment as a result of the 2018 hike will need training to be more productive and earn higher wages. They will also need government support for matching jobs with their skills. Effective active labor market policies require significant resources. It would be preferable to channel resources to active labor market policies than to use resources to subsidize SME’s costs. The latter would prevent firms to adjust and become more efficient, and perpetuate the “Peter Pan Syndrome” where firms have incentives not to grow, which will undercut efforts to boost the growth of the economy.

Consumption Rate per Quintile

(Consumption expenditure in percent of disposable income; income quintiles)



Sources: Kosis.

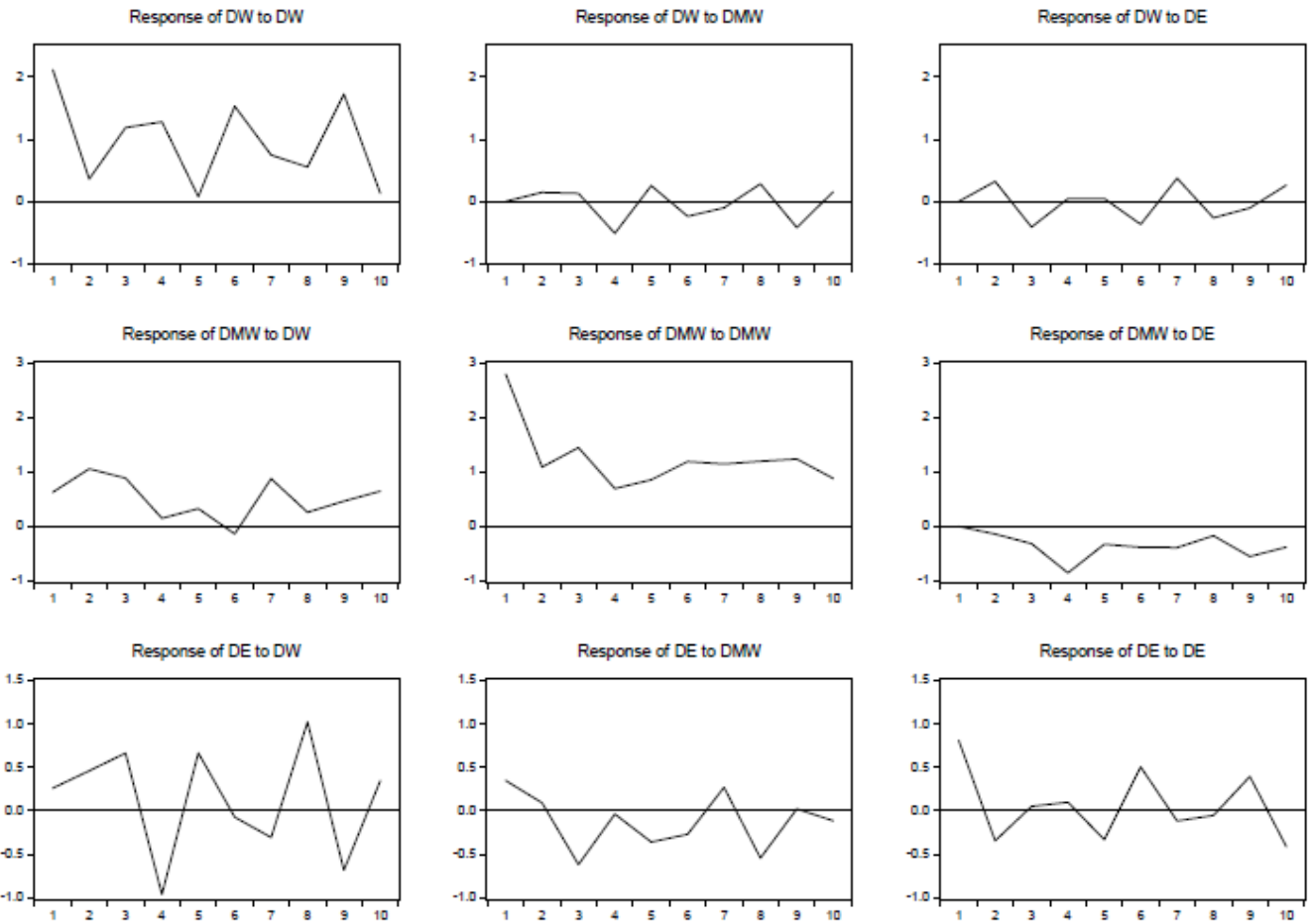
Annex

| Vector Error Correction Estimates | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| Vector Error Correction Estimates | | | |
| Date: 08/01/17 Time: 14:12 | | | |
| Sample (adjusted): 1994 2015 | | | |
| Included observations: 22 after adjustments | | | |
| Standard errors in () & t-statistics in [] | | | |
| Cointegrating Eq: | CointEq1 | | |
| DW(-1) | 1.000000 | | |
| DMW(-1) | -0.847257 (0.39300) [-2.15586] | | |
| DE(-1) | -5.831048 (1.08247) [-5.38677] | | |
| C | 9.710589 | | |
| Error Correction: | D(DW) | D(DMW) | D(DE) |
| CointEq1 | 0.041928 (0.09415) [0.44532] | 0.279085 (0.12762) [2.18681] | 0.274830 (0.04089) [6.72189] |
| D(DW(-1)) | -0.921586 (0.23914) [-3.85382] | 0.119487 (0.32414) [0.36862] | -0.030794 (0.10385) [-0.29654] |
| D(DW(-2)) | -0.441785 (0.18898) [-2.33779] | 0.250011 (0.25615) [0.97602] | 0.382699 (0.08206) [4.66347] |
| D(DMW(-1)) | 0.037859 (0.20687) [0.18301] | -0.351988 (0.28041) [-1.25524] | 0.318631 (0.08984) [3.54682] |
| D(DMW(-2)) | 0.111997 (0.19497) [0.57443] | 0.058571 (0.26428) [0.22162] | 0.090727 (0.08467) [1.07158] |
| D(DE(-1)) | 0.641835 (0.38758) [1.65600] | 1.451752 (0.52536) [2.76335] | 0.177944 (0.16831) [1.05725] |
| D(DE(-2)) | 0.251653 (0.26689) [0.94290] | 0.897559 (0.36177) [2.48104] | -0.020205 (0.11590) [-0.17433] |
| C | -0.184591 (2.77134) [-0.06661] | 6.572368 (3.75651) [1.74960] | -0.823492 (1.20346) [-0.68427] |
| DTT | 0.122179 (0.12483) [0.97879] | 0.132998 (0.16920) [0.78603] | 0.011973 (0.05421) [0.22087] |
| DUM | -7.910645 (2.36818) [-3.34039] | 1.287457 (3.21003) [0.40107] | -5.030200 (1.02839) [-4.89134] |
| DP | 0.486205 | 0.180879 | 0.075538 |

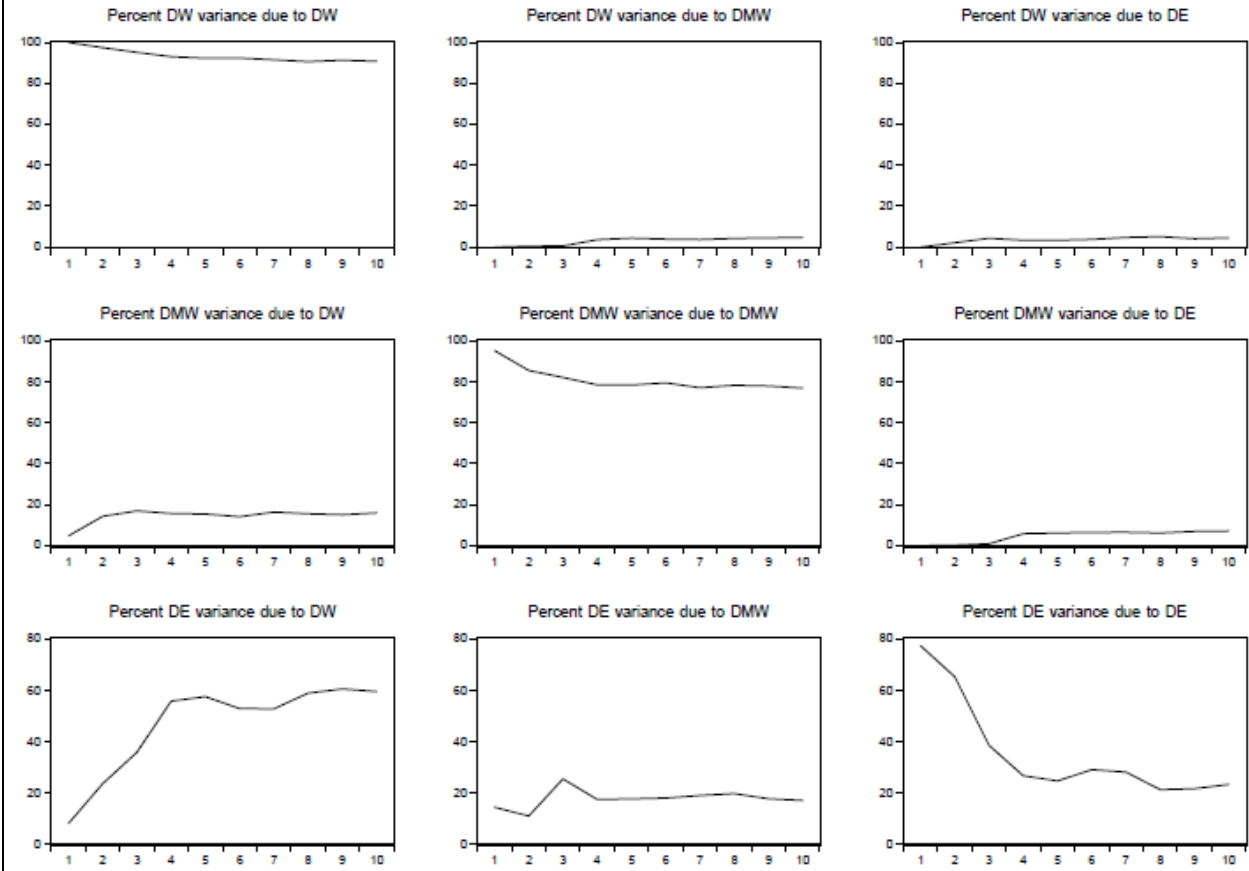
Vector Error Correction Estimates

| | | | |
|---|--------------------------------------|--------------------------------------|-------------------------------------|
| | (0.22777) [2.13458] | (0.30875) [0.58585] | (0.09891) [0.76369] |
| DPOP | -0.984724 (2.40915) [-0.40874] | -5.335493 (3.26556) [-1.63387] | 0.807566 (1.04618) [0.77192] |
| R-squared | 0.757105 | 0.592372 | 0.945591 |
| Adj. R-squared | 0.489920 | 0.143980 | 0.885740 |
| Sum sq. resids | 44.84456 | 82.39453 | 8.456573 |
| S.E. equation | 2.117653 | 2.870445 | 0.919596 |
| F-statistic | 2.833640 | 1.321104 | 15.79926 |
| Log likelihood | -39.05041 | -45.74189 | -20.69956 |
| Akaike AIC | 4.640946 | 5.249263 | 2.972688 |
| Schwarz SC | 5.236060 | 5.844377 | 3.567802 |
| Mean dependent | -0.188636 | 0.197273 | 0.006364 |
| S.D. dependent | 2.965077 | 3.102468 | 2.720512 |
| Determinant resid covariance (dof adj.) | | 23.04615 | |
| Determinant resid covariance | | 2.164364 | |
| Log likelihood | | -102.1433 | |
| Akaike information criterion | | 12.83121 | |
| Schwarz criterion | | 14.76533 | |

Response to Cholesky One S. D. Innovations



Variance Decomposition



Johansen Cointegration Test

Date: 08/02/17 Time: 09:01
 Sample (adjusted): 1994 2015
 Included observations: 22 after adjustments
 Trend assumption: Linear deterministic trend
 Series: DW DMW DE
 Exogenous series: DTT DUM DP DPOP
 Warning: Critical values assume no exogenous series
 Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|------------|--------------------|------------------------|---------|
| None * | 0.827413 | 53.17176 | 29.79707 | 0.0000 |
| At most 1 | 0.394881 | 14.52096 | 15.49471 | 0.0697 |
| At most 2 | 0.145905 | 3.469679 | 3.841466 | 0.0625 |

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|------------|------------------------|------------------------|---------|
| None * | 0.827413 | 38.65080 | 21.13162 | 0.0001 |
| At most 1 | 0.394881 | 11.05128 | 14.26460 | 0.1517 |
| At most 2 | 0.145905 | 3.469679 | 3.841466 | 0.0625 |

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b*S11*b=I):

| | DW | DMW | DE |
|--|-----------|----------|-----------|
| | -0.208539 | 0.176686 | 1.216002 |
| | 0.261789 | 0.529335 | -1.543629 |
| | -1.160915 | 0.104206 | 1.173728 |

Unrestricted Adjustment Coefficients (alpha):

| | D(DW) | D(DMW) | D(DE) |
|--|-----------|-----------|-----------|
| | -0.201055 | -0.690052 | 0.346756 |
| | -1.338288 | -0.905181 | -0.434964 |
| | -1.317883 | -0.088882 | 0.017538 |

1 Cointegrating Equation(s): Log likelihood -102.1433

Normalized cointegrating coefficients (standard error in parentheses)

| | DW | DMW | DE |
|--|----------|-----------|-----------|
| | 1.000000 | -0.847257 | -5.831048 |
| | | (0.39300) | (1.08247) |

Adjustment coefficients (standard error in parentheses)

| | D(DW) | D(DMW) | D(DE) |
|--|-----------|-----------|----------|
| | 0.041928 | 0.279085 | 0.274830 |
| | (0.09415) | (0.12762) | |

Johansen Cointegration Test

(0.04089)

2 Cointegrating Equation(s): Log likelihood -96.61770

Normalized cointegrating coefficients (standard error in parentheses)

| DW | DMW | DE |
|----------|----------|------------------------|
| 1.000000 | 0.000000 | -5.850362 (0.84441) |
| 0.000000 | 1.000000 | -0.022796 (0.73688) |

Adjustment coefficients (standard error in parentheses)

| | | |
|--------|------------------------|------------------------|
| D(DW) | -0.138720 (0.13229) | -0.400792 (0.22057) |
| D(DMW) | 0.042119 (0.18104) | -0.715601 (0.30185) |
| D(DE) | 0.251562 (0.06494) | -0.279900 (0.10828) |

Vector Error Correction Estimates

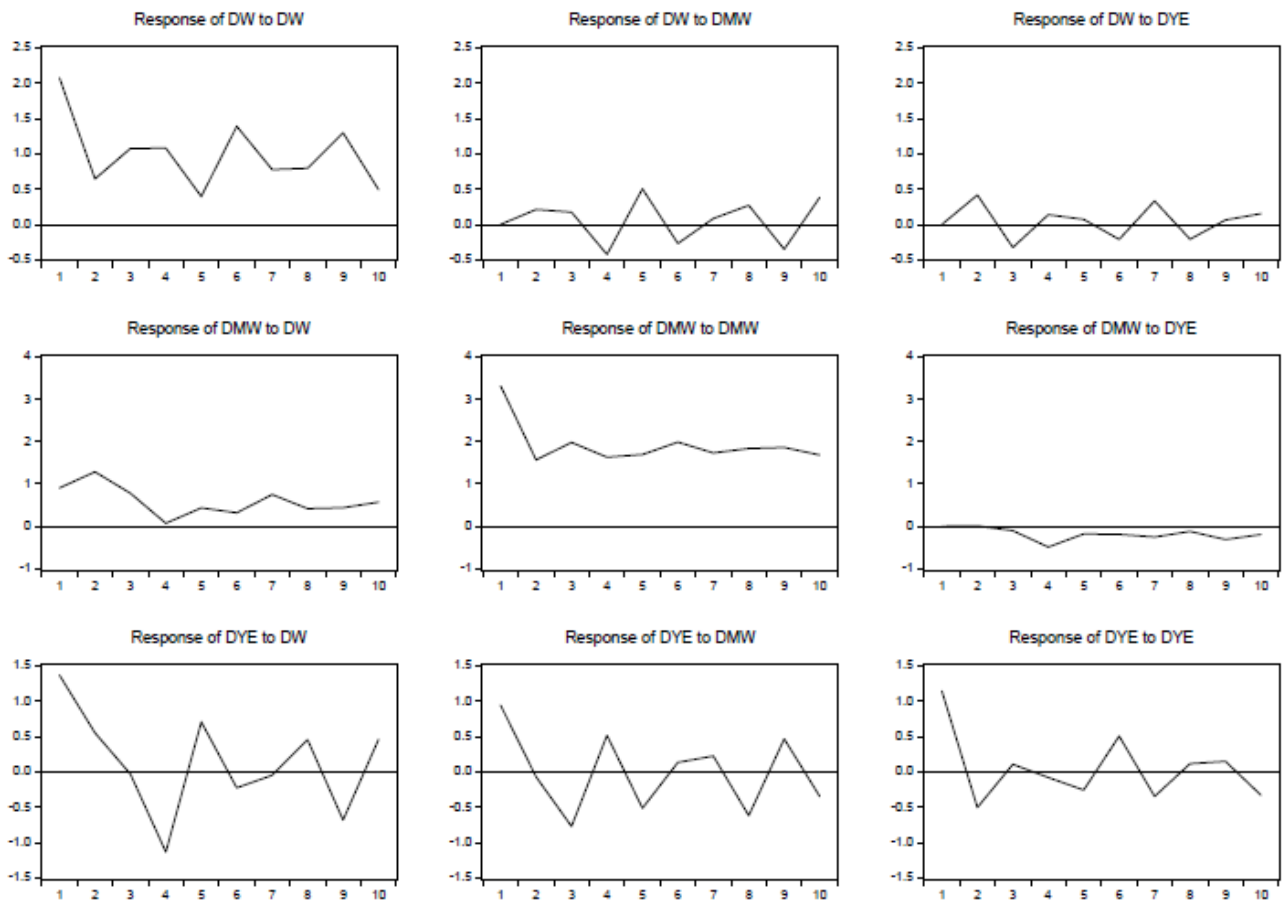
Vector Error Correction Estimates
 Date: 08/01/17 Time: 14:20
 Sample (adjusted): 1994 2015
 Included observations: 22 after adjustments
 Standard errors in () & t-statistics in []

| Cointegrating Eq: | CointEq1 | | |
|-------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| DW(-1) | 1.000000 | | |
| DMW(-1) | -5.255119 (11.1225) [-0.47247] | | |
| DYE(-1) | -159.4390 (21.8860) [-7.28499] | | |
| C | -215.1063 | | |
| Error Correction: | D(DW) | D(DMW) | D(DYE) |
| CointEq1 | -0.000450 (0.00249) [-0.18049] | 0.003651 (0.00413) [0.88371] | 0.011288 (0.00242) [4.65549] |
| D(DW(-1)) | -0.911625 (0.24348) [-3.74421] | 0.405529 (0.40333) [1.00545] | 0.502732 (0.23668) [2.12409] |
| D(DW(-2)) | -0.440378 (0.19571) [-2.25019] | 0.335475 (0.32420) [1.03478] | 0.679647 (0.19025) [3.57246] |
| D(DMW(-1)) | -0.042278 (0.18950) [-0.22310] | -0.509089 (0.31391) [-1.62174] | 0.163324 (0.18421) [0.88661] |
| D(DMW(-2)) | 0.075653 (0.18214) [0.41535] | -0.093310 (0.30173) [-0.30925] | -0.078853 (0.17706) [-0.44534] |
| D(DYE(-1)) | 0.291351 (0.25380) [1.14795] | 0.589798 (0.42044) [1.40283] | 0.355958 (0.24672) [1.44277] |
| D(DYE(-2)) | 0.134145 (0.15032) [0.89239] | 0.352768 (0.24902) [1.41664] | 0.064183 (0.14613) [0.43923] |
| C | -0.263707 (2.70116) [-0.09763] | 5.338282 (4.47461) [1.19302] | -2.276918 (2.62578) [-0.86714] |
| DTT | 0.068767 (0.13649) [0.50382] | 0.115255 (0.22610) [0.50974] | 0.343225 (0.13268) [2.58682] |
| DUM | -7.755125 (2.43305) [-3.18740] | 2.407322 (4.03048) [0.59728] | -4.183658 (2.36516) [-1.76887] |
| DP | 0.473242 | 0.130813 | 0.126919 |

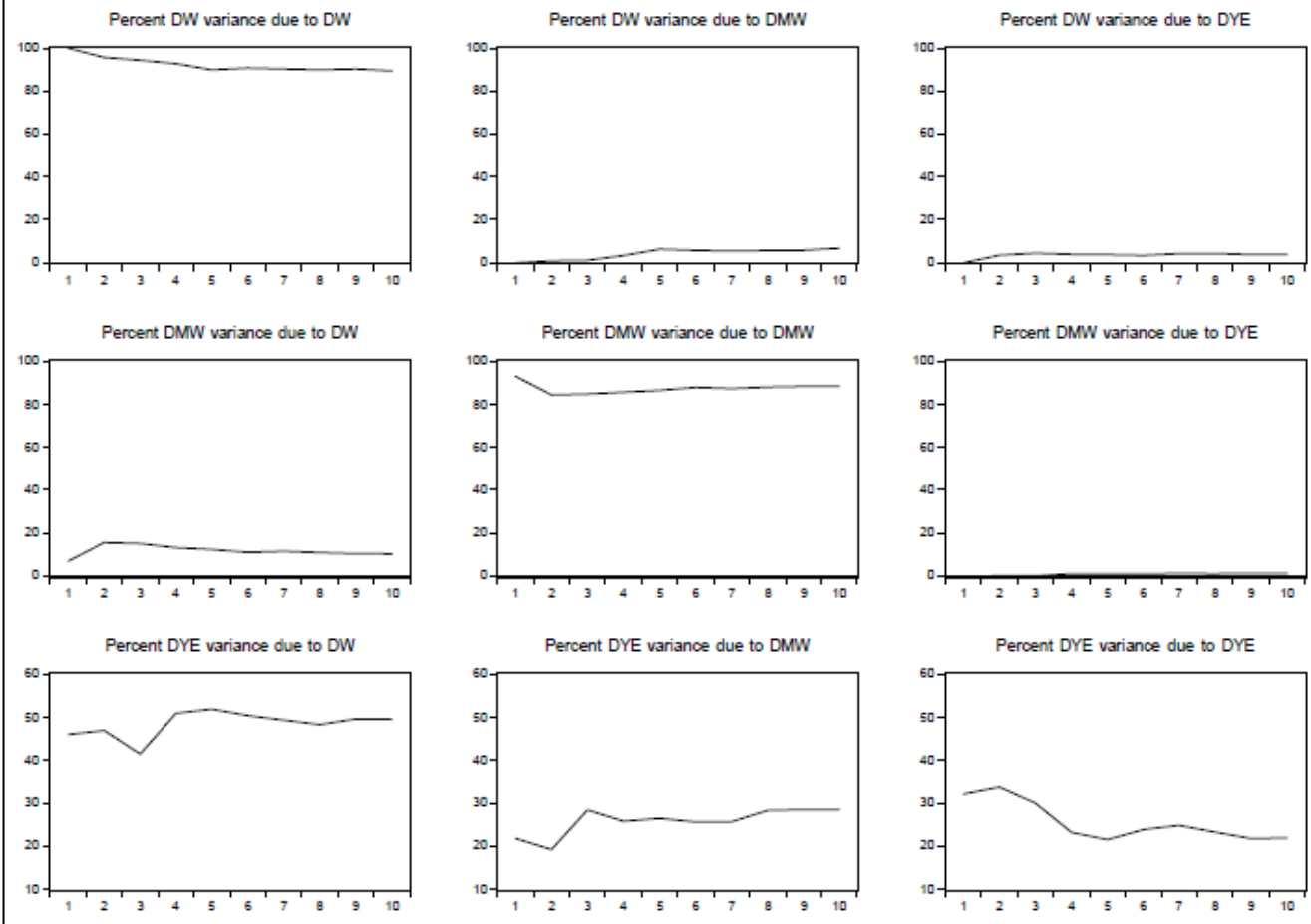
Vector Error Correction Estimates

| | | | |
|---|------------|------------|------------|
| | (0.21937) | (0.36339) | (0.21325) |
| | [2.15731] | [0.35998] | [0.59518] |
| DPOP | -1.029590 | -4.224148 | 2.934076 |
| | (2.33884) | (3.87440) | (2.27357) |
| | [-0.44021] | [-1.09027] | [1.29051] |
| R-squared | 0.767611 | 0.417518 | 0.882539 |
| Adj. R-squared | 0.511983 | -0.223212 | 0.753332 |
| Sum sq. resids | 42.90486 | 117.7379 | 40.54375 |
| S.E. equation | 2.071349 | 3.431295 | 2.013548 |
| F-statistic | 3.002847 | 0.651629 | 6.830418 |
| Log likelihood | -38.56402 | -49.66825 | -37.94138 |
| Akaike AIC | 4.596729 | 5.606204 | 4.540125 |
| Schwarz SC | 5.191843 | 6.201318 | 5.135239 |
| Mean dependent | -0.188636 | 0.197273 | 0.198182 |
| S.D. dependent | 2.965077 | 3.102468 | 4.054201 |
| Determinant resid covariance (dof adj.) | | 61.17289 | |
| Determinant resid covariance | | 5.745012 | |
| Log likelihood | | -112.8816 | |
| Akaike information criterion | | 13.80742 | |
| Schwarz criterion | | 15.74154 | |

Response to Cholesky One S. D. Innovations



Variance Decomposition



Johansen Cointegration Test

Date: 08/02/17 Time: 09:02
 Sample (adjusted): 1994 2015
 Included observations: 22 after adjustments
 Trend assumption: Linear deterministic trend
 Series: DW DMW DYE
 Exogenous series: DTT DUM DP DPOP
 Warning: Critical values assume no exogenous series
 Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---------------------------|------------|-----------------|---------------------|---------|
| None * | 0.855680 | 63.20067 | 29.79707 | 0.0000 |
| At most 1 * | 0.546277 | 20.61483 | 15.49471 | 0.0077 |
| At most 2 | 0.136506 | 3.228909 | 3.841466 | 0.0723 |

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|---------------------------|------------|---------------------|---------------------|---------|
| None * | 0.855680 | 42.58583 | 21.13162 | 0.0000 |
| At most 1 * | 0.546277 | 17.38592 | 14.26460 | 0.0155 |
| At most 2 | 0.136506 | 3.228909 | 3.841466 | 0.0723 |

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b*S11*b=I):

| DW | DMW | DYE |
|-----------|-----------|-----------|
| -0.005648 | 0.029681 | 0.900512 |
| 0.290752 | -0.516266 | 0.086314 |
| 1.058762 | -0.056537 | -0.896632 |

Unrestricted Adjustment Coefficients (alpha):

| D(DW) | D(DMW) | D(DYE) |
|-----------|-----------|-----------|
| 0.079705 | -0.646485 | -1.998556 |
| 0.548191 | 1.628364 | 0.702986 |
| -0.437010 | 0.241526 | -0.190043 |

1 Cointegrating Equation(s): Log likelihood -112.8816

Normalized cointegrating coefficients (standard error in parentheses)

| DW | DMW | DYE |
|----------|-----------|-----------|
| 1.000000 | -5.255119 | -159.4390 |
| | (11.1225) | (21.8860) |

Adjustment coefficients (standard error in parentheses)

| D(DW) | D(DMW) | D(DYE) |
|-----------|-----------|----------|
| -0.000450 | 0.003651 | 0.011288 |
| (0.00249) | (0.00413) | |

| Johansen Cointegration Test | | |
|---|-----------------------|------------------------|
| (0.00242) | | |
| <hr/> | | |
| 2 Cointegrating Equation(s): | Log likelihood | -104.1886 |
| <hr/> | | |
| Normalized cointegrating coefficients (standard error in parentheses) | | |
| DW | DMW | DYE |
| 1.000000 | 0.000000 | 81.81172 (10.8073) |
| 0.000000 | 1.000000 | 45.90776 (6.04315) |
| Adjustment coefficients (standard error in parentheses) | | |
| D(DW) | 0.158938 (0.11812) | -0.280647 (0.21004) |
| D(DMW) | 0.477102 (0.15111) | -0.859858 (0.26871) |
| D(DYE) | 0.215683 (0.10680) | -0.422247 (0.18991) |
| <hr/> | | |

References

- Abowd, John M., and others, 2009, "Minimum Wages and Employment in France and the United States," IZA Institute of Labor Economics Paper as presented at [The Economics of the Minimum Wage](#) Conference.
- Askenazy, Philippe, 2003, "Minimum Wage, Exports and Growth," *European Economic Review*, No 47, p.p. 147–164.
- Autor, David H., Alan Manning, and Christopher L. Smith, 2016, "The Contribution of the Minimum Wage to U.S. Wage Inequality over Three Decades: A Reassessment," *American Economic Journal: Applied Economics*, Volume 8, No. 1, p.p. 58–99.
- Card, David and Alan B. Krueger, 1994, "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania," *The American Economic Review*, Vol. 84, No. 4, p.p. 772–793.
- Bassanini, Andrea and Danielle Venn, 2008, "The Impact of Labour Market Policies on Productivity in OECD Countries," *International Productivity Monitor, Organization for Economic Cooperation and Development*, Number 17, p.p. 2–15.
- Everaert, Luc and Giovanni Ganelli, 2016, "Can Raising Japan's Minimum Wage Accelerate Wage Growth?," IMF Blog, November. <https://blogs.imf.org/2016/11/28/can-raising-japans-minimum-wage-accelerate-wage-growth/>
- Goretti, Manuela, 2008, "Wage-Price Setting in New EU Member States," IMF Working Paper No. 08/243 (Washington: International Monetary Fund).
- , 2000, "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Reply," *The American Economic Review*, Vol. 90, No. 5, p.p. 1397–1420.
- International Monetary Fund, 2016, "Cross-Country Report on Minimum Wages—Selected Issues," IMF Country Report No. 16/151 (Washington).
- Lee, Byung-Hee, 2008, "The Effects of Minimum Wage on Job Loss and Job Entry," *Korean Journal of Labor Studies*, Vol. 14, No.1, p.p. 1–24.
- Lemos, Sarah, 2009, "The Effect of the Minimum Wage on Prices," Institute for the Study of Labor (IZA), Discussion Paper No. 1072.
- Neumark, David and William Wascher, 2003, "Minimum Wages, Labor Market Institutions, and Youth Employment: A Cross-National Analysis", Federal Reserve Finance and Economics Working Paper Series, No. 2003-23.

- , 2007, "Minimum Wages and Employment," *IZA Discussion Paper* No. 2570, Institute for the Study of Labor (IZA), January.
- Onaran, Özlem and Giorgos Galanis, 2012, "Is Aggregate Demand Wage-led or Profit-Led? National and Global Effects," International Labor Office, *Conditions of Work and Employment Series* No. 40.
- Organization for Economic Cooperation and Development, 2015, *OECD Employment Outlook* (Paris: Organization for Economic Cooperation and Development).
- Riley, Rebecca and Chiara Rosazza Bondibene, 2015, "Raising the Standard: Minimum Wages and Firm Productivity" *National Institute of Economic and Social Research and Centre For Macroeconomics*, Discussion Paper No. 449.
- Sabia, Joseph J., 2015, "Minimum Wages and Gross Domestic Product," *Contemporary Economic Policy*, Vol. 33, No. 4, p.p. 587–605, October.
- , 2015, "Do Minimum Wages Stimulate Productivity and Growth?" Institute for the Study of Labor (IZA), *IZA World of Labor Series* No.221, December.
- Vaughan, Daniel (ed), 2010, "France: Towards the end of an Active Minimum Wage Policy?" in *The Minimum Wage Revisited in the Enlarged EU*, International Labour Office (Geneva: Edward Elgar Publishing).
- Yoon, Yoon-Gyu., and others, 2015, "Research on Employment Impact Assessment of Minimum Wage Increase," Korea Labor Institute, 2015 Employment Impact Assessment Research Series No. 29.

RECENT TRENDS IN FINANCIAL PERFORMANCE AND INVESTMENT OF KOREA'S LARGEST COMPANIES¹

A. Introduction

1. **One distinctive feature of Korea's corporate landscape is the prominence of conglomerate groups called chaebols.** The denomination "chaebol" typically refers to a group of formally independent firms under the single common administrative and financial control of one dominant family. The many affiliated firms generally operate in a diverse number of industries and are often interlocked by circular shareholdings among them.
2. **The origin of Korean Chaebols goes back to the 1950s when a few private companies arose out of the business opportunities surrounding U.S. foreign aid allocation** (Lee, Kim and Lee, 2010). Over time, these business groups diversified into related or unrelated industries that were profitable owing to market demand or government industrial policy. While they used to be tightly owned by founding families, the families' share become smaller as many became listed companies to raise more funds for growth. At the same time, the shares held by affiliated companies increased. This structure allowed the families to maintain control over the group affiliated firms while financing their growth.
3. **Korea's chaebols have greatly contributed to Korea's economic success that led to impressive growth rates for decades and rapid increases in per capita income.** Some of Korea's chaebols are among the world's most recognized companies. However, some have faced significant challenges in recent years due to sluggish global trade and increasing competition from emerging markets, particularly China (Shin, 2017). Corporate vulnerabilities have intensified especially in some of the heavy industrial sectors that underpinned Korea's past growth.
4. **Against this background, this papers review indicators of financial sector performance and balance sheet vulnerabilities of the chaebols, in comparison with a group of other large companies.** The analysis is based on firm level data from the Orbis database between 2006 and 2015. It also analyzes the investment behavior of chaebols and other large companies, and estimates its determinants using an econometric model.

B. Data

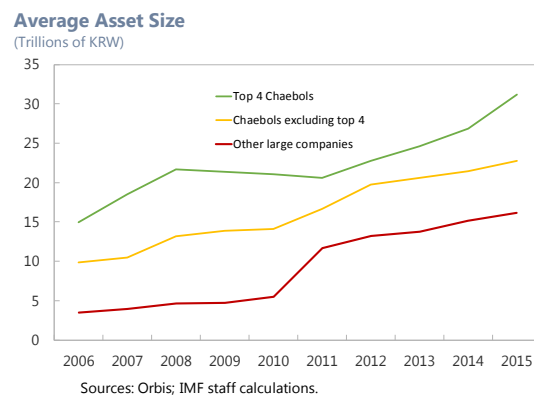
5. **Annual data on firm consolidated balance sheets and profit and loss accounts from 2006 to 2015 are obtained from the Bureau Van Dijk Orbis database for 200 very large Korean companies.** These are defined as follows: (i) operating revenues are at least US\$ 100 million, (ii) total assets are at least US\$ 260 million, (iii) the number of employees is at least 1000, (iv) they are listed on the stock exchange.

¹ Prepared by Edda Zoli.

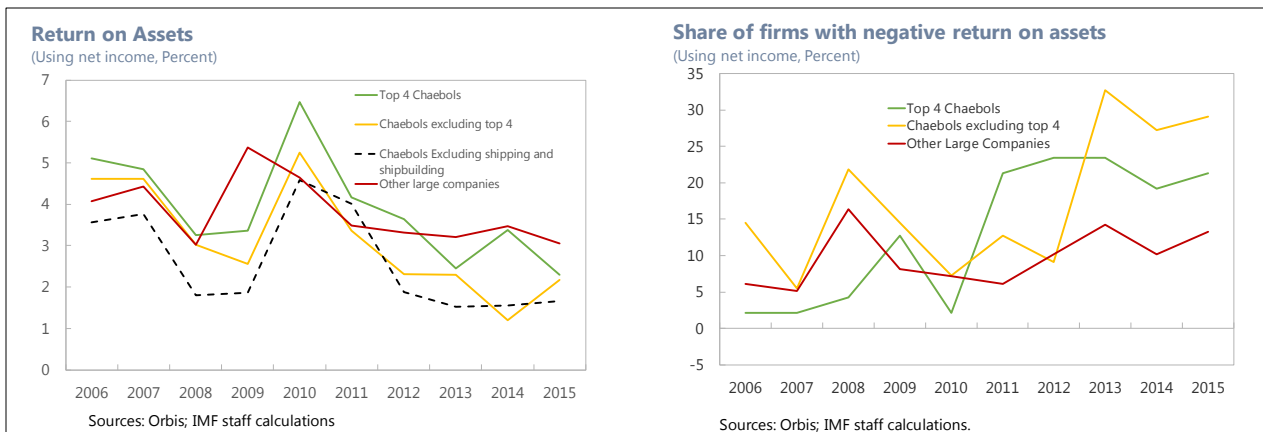
6. The categorization of companies into chaebols affiliated is based on the Korea Fair Trade Commission (KFTC) classification. This approach is the same as that adopted in previous studies (e.g., Shin and Park, 1999; Lee, Kim and Lee, 2010). Since 1987, the KFTC has been compiling a list of the top 30 business groups as measured by asset size and has subjected them to special monitoring and restrictions. Even though the categorization criteria somewhat changed over time, the 30 groups are generally perceived as chaebols. In our sample of 196 firms, 98 were identified as chaebols affiliated. Of these, 55 were part of the top four Chaebols (Samsung, Hyundai, LG and SK).²

C. Stylized Facts

7. The average asset size of chaebols affiliated companies is much higher than that other Korean large companies. The size differential is even more prominent for the top four chaebols (Samsung, Hyundai, LG and SK). Indeed, as of 2015, the average size of the 55 affiliated companies of the top four chaebols groups in our sample was nearly double that of other large Korean firms. The average assets of the top four chaebols affiliated companies have also grown faster than other those of other companies in the most recent years, having recorded a growth rate of over 50 percent from 2011 to 2015, compared to less than 40 percent growth rates in the other two firm groups.

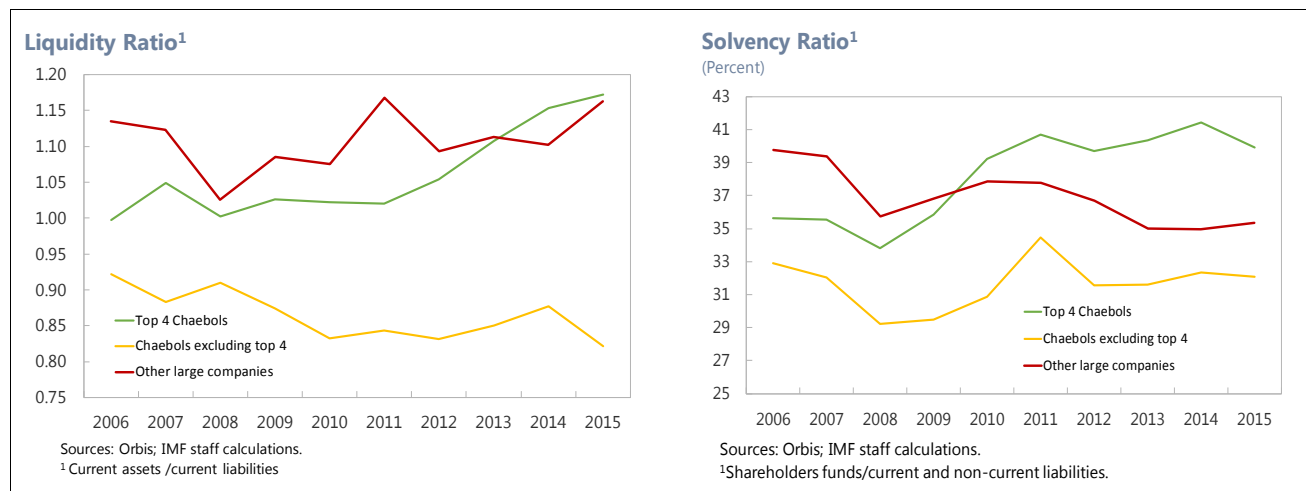


8. Average profitability—as measured by return on assets—has typically been higher among the affiliates of the top 4 chaebols than in the other conglomerates. Nevertheless, it seems to have declined after the global financial crisis, and since 2013 it appears to be, on average, higher in large companies that are not part of conglomerates. Since 2009 chaebols excluding the top four have recorded the lowest profitability compared to the other firms in the sample. The share of firms with negative returns has increased quite steeply in the group of chaebols excluding the top four since 2010, and was as high as 30 percent in 2015.

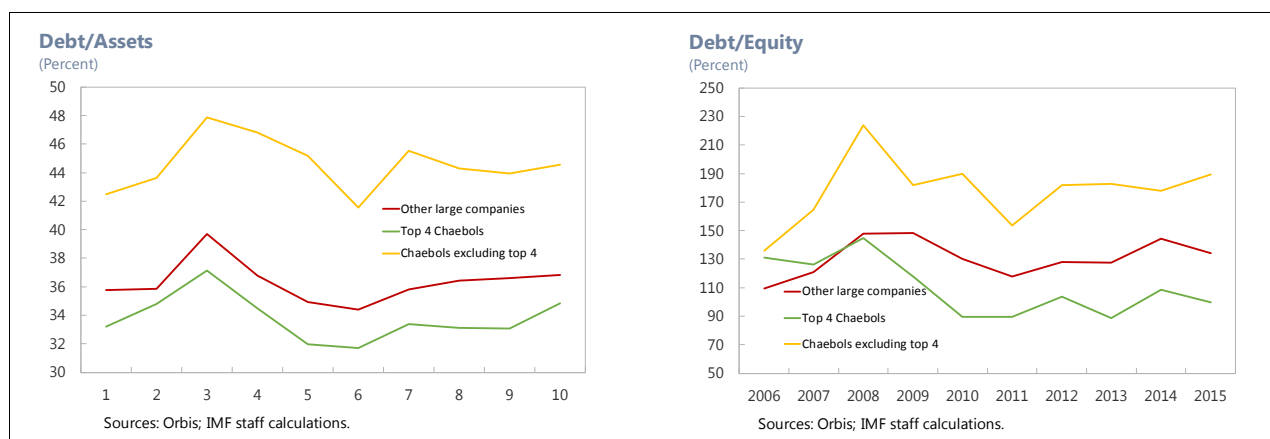


² For robustness check, the categorization of firms into chaebols and non-chaebols was also compared with that used in previous studies (e.g., Joh, 2003).

9. The liquidity ratio—defined as the ratio between current assets and current liabilities—shows polarization between the top four chaebols and other large companies on one hand and chaebols excluding the top four on the other. An indicator of solvency—the ratio between shareholder funds and liabilities—also portrays a similar pattern, with the solvency of the chaebols excluding the top four much lower than that of the other two groups.

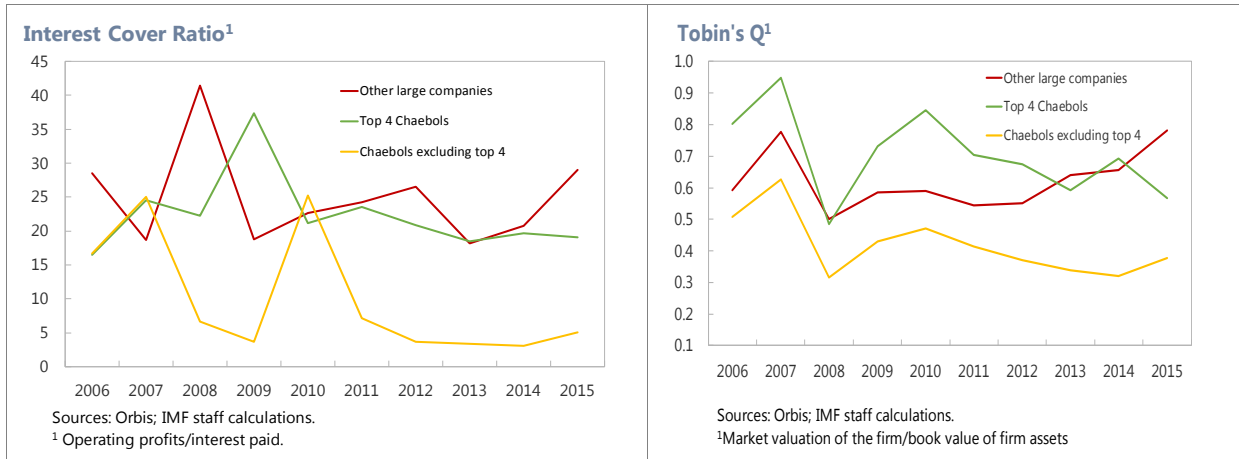


10. Leverage—a measured by debt-to-equity and debt-to-asset ratios—is more elevated in chaebols excluding the top four than in the two other groups of firms. The relatively high leverage of the chaebols excluding the top four does not seem to be relate to the sector they operate in. First of all, all these conglomerates seem to be quite diversified. Moreover, an industry-adjusted debt-to-equity ratio—constructed as the difference between a firm debt-to-equity ratio and the average debt-to-equity ratio of all the firms operating in the same sector—is higher for chaebols excluding the top 4.



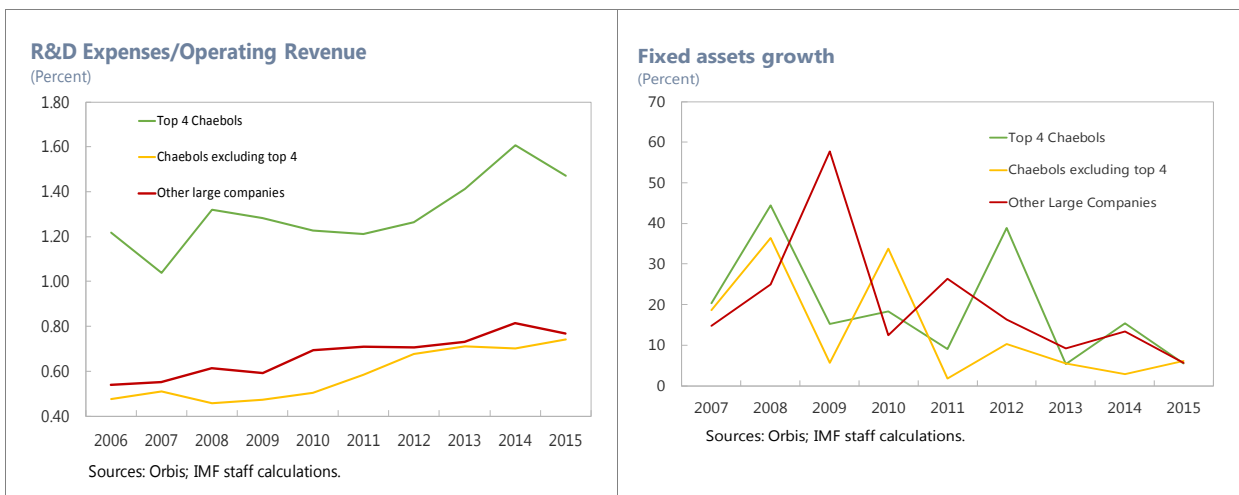
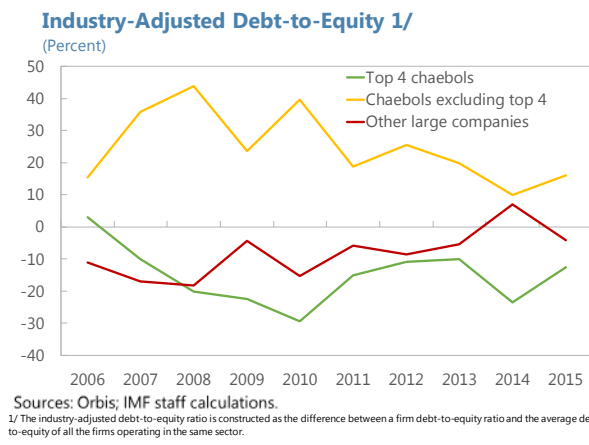
11. Reflecting the relatively higher debt levels and lower profitability, the interest cover ratio—the ratio of operating profits to interest paid—is low for chaebols excluding the top four. This indicates that for some of these companies meeting interest payment obligations may be challenging. The relatively weaker balance sheet soundness and profitability of the chaebols

excluding the top four is also mirrored in the lower Tobin's Q, which measures the market valuation of a firm relative to the book value of its assets.



12. Which group of firms is spending more on Research and Development (R&D) and investing more?

The top four chaebols are spending double as much on R&D (as a share of their operating revenues) than the other companies, while R&D spending is the lowest among chaebols excluding the top four. In all the three groups R&D spending has increased somewhat since 2006. Conversely, investment growth has been on a slight downward trend in the three firm groups. While the investment growth pattern of the three groups of firms seems rather similar, in more recent years, it has been typically weaker in chaebols excluding the top four.



D. Determinants of Investment Growth

13. To better understand what drives investment in the Korean largest companies, an econometric panel model of 200 Korean firms is estimated over the period 2007 to 2015. The specification for the regressions follows the standard neoclassical investment model that relates investment to expectations of future profitability (as proxied by the Tobin's Q) and cash flow (i.e., liquid assets such as cash, bank accounts money market holdings).³ The model also includes sector dummies and time effects as control variables.

14. The estimated model also tries to assess more specifically whether the determinants of investment differ for chaebols and non-chaebols. Earlier studies have found evidence that the sensitivity of investment to cash flow is low and insignificant for chaebol firms, but high and significant for non-chaebols, which seems to suggest that financing constraints are higher for non-chaebols (e.g., Shin and Park, 1999). Another relevant question is whether high leverage and low profitability or a limited ability to service debt (as proxied by the interest coverage ratio) in the chaebols excluding the top four have a negative impact on investment.

15. Estimation results indicate that expectations of future profitability are an important factor for overall investment behavior of Korea firms, but cash flow is not (Table). Indeed, the estimated coefficient of the Tobin's Q variable is positive and significant. Conversely, the coefficient of the cash flow (as percent of assets) is not statistically significant (column 1). When the variable leverage (as measured by debt of equity) is added as a regressor, these results are not affected, with leverage having a significant and negative coefficient (column 2). These results seem to suggest that Korean firms' investment is driven by growth opportunities and not constrained by cash flows, but negatively impacted by leverage. Other variables, such as profitability and the interest coverage ratio are found not to have significant estimated coefficients. The dummy for the sector in which firms operate is found to be not statistically significant, suggesting that the investment function is similar across sectors.

16. To assess whether the drivers of investment differ across firm groups, the explanatory variables are interacted with dummy variables for the top four chaebols, the other chaebols excluding the top four, and other large companies. The estimation results indicate that the coefficient of Tobin's Q variable is significant only for chaebols (both the top four and the others), but not for other large companies that are not part of conglomerates. Moreover, the coefficient of the cash flow variable is positive, large and statistically significant for the large companies that are not chaebols, but not for chaebols (column 3). This result holds also when the variable leverage is added as a regressor (column 4). Overall, the estimation results suggest that for chaebols investment is driven by growth opportunities and is insensitive to availability of internal financing. On the other hand, for other large companies that are not part of conglomerates, investment is driven by the availability of funds rather than future growth opportunities perceived by the market. This seems to

³ Hayashi (1982) suggests that investment should depend only on Tobin's Q which captures the expectations of future profitability. However, many empirical studies have found that cash flow has also significant effect on investment, even if Tobin's Q is included as an explanatory variable, which has been interpreted as evidence of financing constraints facing firms (Fazzari, Hubbard, and Petersen 1988).

suggest that firms that are not chaebols face more binding financing constraints, confirming the results in Shin and Park, 1999.

| Regression Results | | | | |
|--------------------------------------|-------------|--------------|--------------|--------------|
| Dependent variable investment growth | | | | |
| | (1) | (2) | (3) | (4) |
| Constant | 9.75 | 14.84 | 6.24 | 10.41 |
| | 0.00 | 0.00 | 0.01 | 0.00 |
| Tobin's Q (-1) | 5.63 | 3.30 | | |
| | 0.00 | 0.03 | | |
| Cash Flow (-1) | 0.00 | 0.00 | | |
| | 0.36 | 0.00 | | |
| Leverage(-1) | | -0.03 | | |
| | | 0.00 | | |
| Tobin's Q (-1) Top 4 Chaebols | | | 10.44 | 8.91 |
| | | | 0.00 | 0.00 |
| Tobin's Q (-1) Chaebols excl. Top 4 | | | 25.41 | 23.44 |
| | | | 0.00 | 0.00 |
| Tobin's Q (-1) other large firms | | | -0.46 | -1.17 |
| | | | 0.85 | 0.62 |
| Cash Flow (-1) Top 4 Chaebols | | | 0.00 | 0.00 |
| | | | 0.50 | 0.41 |
| Cash Flow (-1) Chaebols excl. Top 4 | | | 0.00 | 0.00 |
| | | | 0.16 | 0.15 |
| Cash Flow (-1) other large firms | | | 85.45 | 57.82 |
| | | | 0.01 | 0.09 |
| Leverage (-1) Top 4 Chaebols | | | | -0.04 |
| | | | | 0.01 |
| Leverage (-1) Chaebols excl. Top 4 | | | | -0.03 |
| | | | | 0.00 |
| Leverage (-1) other large firms | | | | -0.01 |
| | | | | 0.01 |
| Sector dummy | 0.0 | 0.0 | 0.0 | 0.0 |
| | 0.6 | 0.4 | 0.5 | 0.2 |
| R squared | 0.1 | 0.1 | 0.1 | 0.1 |
| No. Observations | 1152 | 1129 | 1152 | 1129 |

Source: IMF Staff estimates.
P-values in parenthesis. Bolded coefficients are significant at least 10 percent.

E. Conclusions

17. Data on firm consolidated balance sheets and profit and loss accounts from 2006 to 2015 point to a polarization between the top four chaebols and the other conglomerates.

Indicators of profitability, solvency, liquidity, leverage and market firm valuation are all weaker for the chaebols excluding the top four compared to the top four conglomerates as well as other large firms. A sizable and increasing share of firms with negative returns, elevated leverage and low

interest coverage are all sources of vulnerability among the chaebols excluding the top four, suggesting a need for corporate restructuring. While challenging in the short term, corporate restructuring provides benefits in the medium term, including increased investment, capital productivity and employment (Chung and Ratnovski, 2016, Shin, 2017).

18. The econometric evidence from the paper seems to suggest a dichotomy in the investment behavior of Korea's large firms. It appears that non-chaebols firms are more financial constrained and dependent on internal cash flows to finance investment projects than chaebols, even though they have lower leverage and better growth opportunities—as measured by the Tobin's Q—than the chaebols excluding the top four. This finding points to a role for policy to make sure that credit and capital markets financing allocation are fair to all firms and based on consistent project evaluation criteria.

References

- Chung, Jae and Lev Ratnovski, 2016, "Benefits and Costs of Corporate Debt Restructuring: An Estimation for Korea," IMF Working Paper WP/16/204.
- Fazzari, S., G. Hubbard, and B. Petersen, 1988, "Financing Constraints and Corporate Investment," Brookings Papers on Economic Activity 141–195.
- Hayashi, F., 1982, "Tobin's marginal Q and average Q: a neoclassical interpretation," *Econometrica* 50: 215–224.
- Hubbard, R.G., 1998, "Capital-market imperfections and investment," *Journal of Economic Literature* 36:193–225.
- Joh, Sung Wook, 2003, "Corporate Governance and Firm Profitability: Evidence from Korea before the Economic Crisis", *Journal of Financial Economics* 68 pp. 287-322.
- Lee, Keun, Ji Youn Kim and Oonkyu Lee, 2010, "Long-term evolution of the firm value and behavior of business groups: Korean chaebols between weak premium, strong discount, and strong premium", *Journal of the Japanese and International Economies* 24, pp 410-440.
- Shin, Hyun-Han and Young S. Park, 1999, "Financing Constraints and Internal Capital Markets: Evidence from Korean 'chaebols', *Journal of Corporate Finance* 5, pp. 169-191.
- Shin, Jongsoo, 2017, "Corporate Restructuring and Its Macro Effects", IMF Working Paper WP/17/17.