

Local Challenges in Global Korea: Rebalancing with Leverage*

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This paper analyzes the implications of global rebalancing in the post-crisis period for Korea and how high leverage in the household and SME sectors could affect this process. Consumption and investment in Korea appear in line with that of peers, but there are limits how much they could be sustained in the post crisis world to pick up the slack from a lower external demand. To avoid the build-up of vulnerabilities from high leverage, households have to increase their saving rate limiting consumption growth. On the other hand, export-oriented and large corporates may need to invest less with lower export demand increasing corporate savings further. This would leave SMEs in the non-tradable sector as the engines for investment, employment and household income growth, increasing the urgency to address their long-standing structural problems and weak balance sheets. Delaying the necessary adjustment would increase costs and financial vulnerabilities. Improving social safety nets and the pensions system would be important to manage the adjustment costs while increasing labor market flexibility.

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1. INTRODUCTION

The global crisis has highlighted the importance of rebalancing growth for Asia to lessen its dependence on exports, improve its resilience to external demand shocks and sustain high growth rates in the face of waning exports to advanced economies as they repair their balance sheets.

Within the region, Korea stands out in many aspects. Although the Korean economy remains heavily dependent on the tradable sector, Korea's current account surpluses have not been excessive. This is reflected in consumption and investment levels consistent with OECD averages. Hence, the paper will argue that rebalancing growth in Korea would not simply mean sustaining domestic demand growth but also shifting production, investment and employment structures tied to export-oriented industries to nontradables. This shift would require finding new domestic engines of growth that can be financed by healthy balance sheets. However, Korean households and the SMEs, the key actors to generate this shift, are highly leveraged. This could limit their ability to facilitate the new engines of growth and would require an appropriate sequencing of policies to minimize adjustment costs.

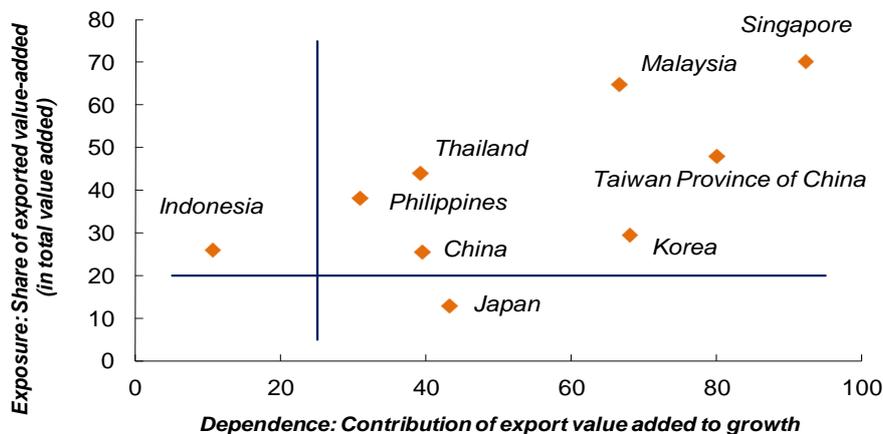
The first section of the paper discusses the implications of global rebalancing for Korea using simulations from the IMF's Global Integrated Monetary and Fiscal Model (GIMF). The second section focuses on how rebalancing growth in Korea is different than in the rest of the region and discusses the challenges of highly leveraged households and SMEs for the rebalancing process. The last section concludes with policy recommendations.

2. IMPLICATIONS OF GLOBAL REBALANCING FOR KOREA

Economic growth in Korea depends heavily on external demand. Although Korea's export "exposure" — defined as the share of value added

linked to external demand — at 30%, is not one of the highest in the region and not excessive relative to the OECD, exports have remained the engine of growth contributing 68% to growth between 2001 and 2007. This may be surprising when contrasted with the contribution of net exports to growth in national accounts, which accounted only for 18% of growth in the same period, albeit well above the OECD averages. This is because the net export based measure understates the dependence of incomes on external demand if incomes are spent on imports whereas the value added based measure captures this effect.¹⁾ When the share of domestic investment tied to exports is also accounted for Korea's exposure to external demand would go up by 4 ppt to 34 and total contribution of export value added to growth would reach 73%.

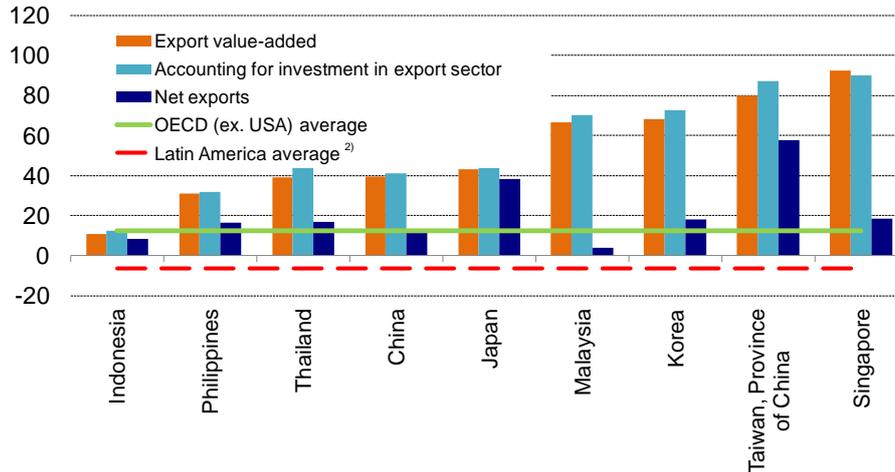
Figure 1 Selected Asia: Export Dependence and Exposure (in Percent)



Sources: Japan External Trade Organization (JETRO) Asian Input Table (2000), OECD, UN COMTRADE, CEIC Data Company Ltd., Haver Analytics, and IMF Staff Estimates.

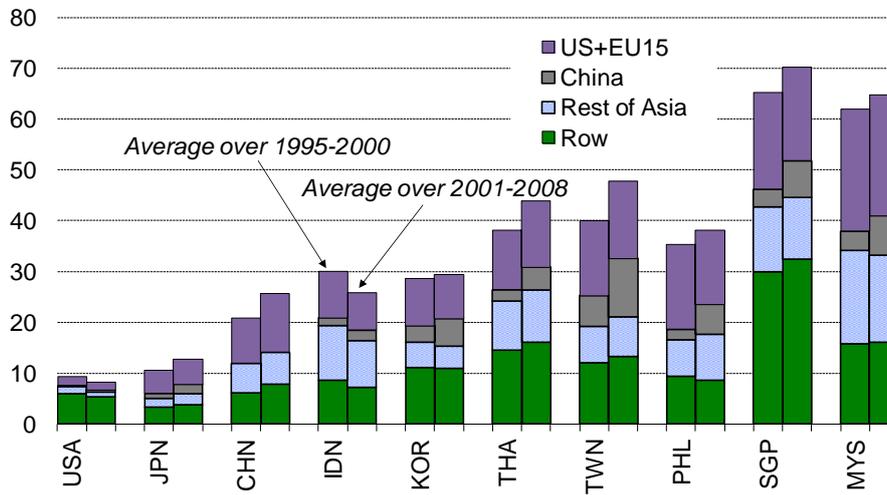
¹⁾ Export based measures will also overstate the role of exports as a source of growth, as increasing vertical trade integration means that exports include a declining share of domestically produced value added. Asian international input-output (AIO) tables were used to measure the extent to which the value added produced in an economy can be attributed to domestic, intraregional, and extra-regional demand. For details see *Regional Economic Outlook*, April 2010 (<http://www.imf.org/external/pubs/ft/reo/2010/APD/eng/areo0410.htm>).

**Figure 2 Selected Asia: Average Contribution to Real GDP Growth¹⁾
(in Percent of Real GDP Growth)**



Notes: 1) Average of contributions to 3-year growth rates between 2001-2007. Exchange rate adjusted deflator. 2) Latin America includes Argentina, Bolivia, Brazil, Chile, Colombia, Peru, Paraguay, Uruguay, and Venezuela.

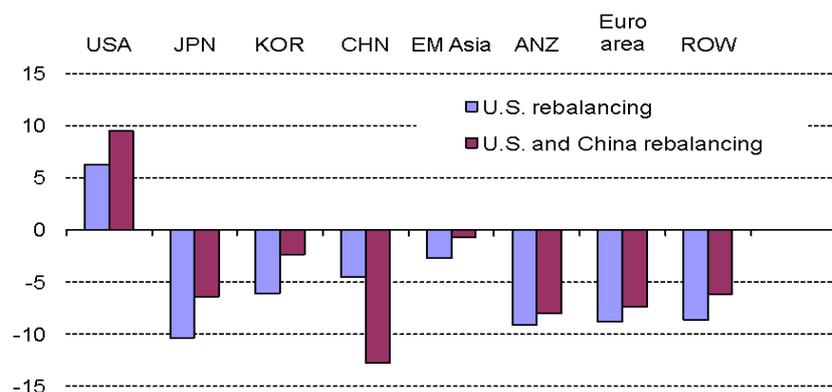
**Figure 3 Selected Asia: Share of Export Value Added in GDP
(in Percent)**



Sources: AIO 2000 and IMF Staff Estimates.

Notwithstanding increasing intra-regional trade and the emergence of China as a final destination of its exports, the advanced economies remain the most important source of external demand for Korea. China is now Korea's biggest export market (23% of total exports) and cyclically export growth to China was a key reason behind the rapid recovery from the Great Recession. Nonetheless, Korea lags behind Taiwan Province of China, Malaysia, Singapore and the Philippines in benefiting from growing domestic demand in China.

Figure 4 Export Impact from U.S. and China Rebalancing¹⁾
(Cumulative Percent Difference from Baseline in 3 Years)



Note: 1) Assumes U.S. (China) private saving increase (decrease) by 2 percentage points of GDP.

Source: IMF Staff Calculations.

As a result, the deleveraging in advanced economies in the post-crisis period will mean lower external demand for Korea. Simulations with an expanded version of the IMF's GIMF model were used to assess the implication of a rebalancing in the U.S. on Korea.²⁾ A decline in external demand associated with a two percentage point (ppt) permanent increase in U.S. private savings rate could reduce Korean exports by 6 ppt and GDP

²⁾ For technical details of the model see N'Diaye *et al.* (2010). Simulations are from REO, April 2010.

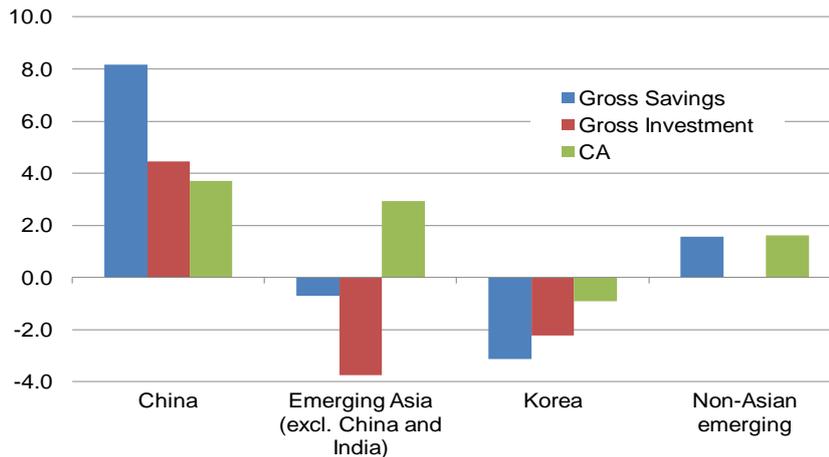
growth by one ppt in the next three years from their respective current IMF baseline forecasts. Furthermore, a similar rebalancing of growth in China — through lower private savings — alone will not fully offset the lack of external demand from the U.S. Positive spillovers from greater Chinese demand would at best mitigate 40% of the adverse shock on Korea. One important reason is that, despite high growth, China has remained a marginal importer of consumer goods — accounting for only 3% of global imports — while the United States still dominates global imports, both in terms of direct and indirect trade linkages. At current speeds it would take another decade for China to take over from advanced economies in leading export value added in Korea, notwithstanding the adjustment costs to reorient production to the Chinese customer basket, which is quite different than that in advanced economies.³⁾

3. HOW CAN KOREA REBALANCE ITS GROWTH?

Despite its high export dependence Korea has small current account surpluses, which mask shifts in underlying balance sheets of the households and corporates. Korea's current account surplus is not excessive and unlike most of the region has been declining since the Asian crisis. This trend is driven by a larger decline in savings than in the region — although investment has also declined (see below). In addition, unlike most of Asia, this reflects a larger increase in corporate savings that has been largely offset by lower household savings.

³⁾ Measured by an import similarity index based on SITC-5 digit data comprising over 300 line items for consumer goods, the consumer goods basket imported by China overlaps by only about 35% with that in other advanced economies.

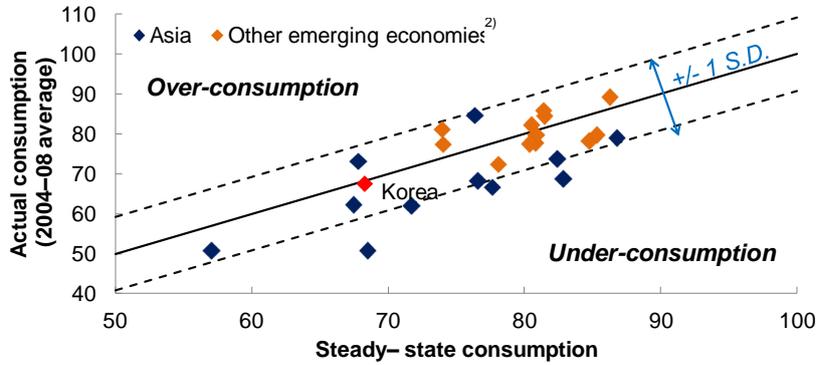
**Figure 5 Saving-Investment Balance and Current Account
(in Percent of GDP, Change in Period Averages,
2009-2001; 1996-2000)**



Source: WEO.

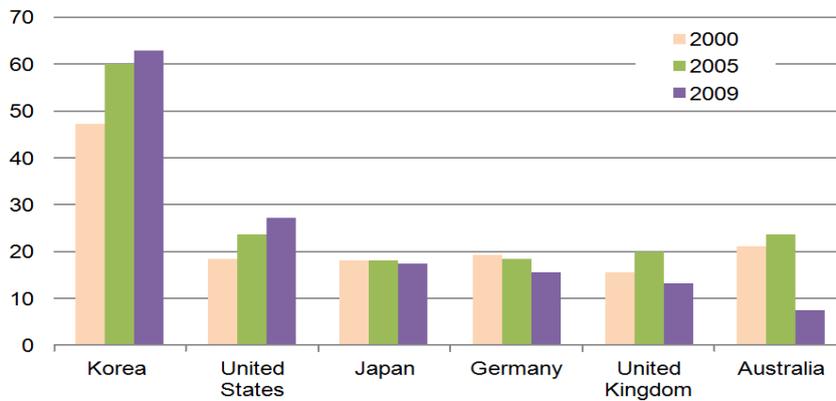
High leverage of the household sector could limit consumption growth in the post-crisis world. Consumption growth in Korea is consistent with fundamentals and at par with peers in the OECD. However, it has been sustained by increasing debt levels, making Korean households one of the most financially leveraged with household debt reaching 80% of GDP. Leverage is even higher when real wealth is considered, despite the relatively lower diversification of Korean households into financial assets. The increase in leverage has also coincided with a sharp drop in the household saving rate (see, Appendix). As the recent U.S. experience shows, a debt-financed consumption growth cannot be sustained forever without the build-up of substantial vulnerabilities, although in Korea this is not driven by external indebtedness. This would mean that households would have to deleverage either by curtailing consumption growth or by increasing incomes or a combination of both.

**Figure 6 Asia: Consumption Relative to Steady-state¹⁾
(in Percent of GDP)**



Notes: 1) Based on staff estimates of S-I balance using CGER’s Macroeconomic balance approach. 2) Other emerging economies include Argentina, Brazil, Chile, Colombia, Egypt, Israel, Mexico, Morocco, Pakistan, Peru, South Africa, and Turkey.

Figure 7 Debt as a Percent of Net Wealth¹⁾



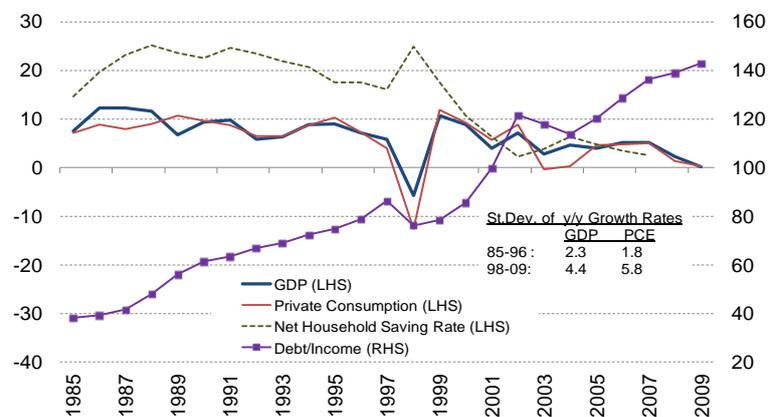
Note: 1) Net wealth is defined as non-financial assets minus liabilities. For Japan and Germany the latest observation is 2007 and for UK 2008.

Sources: OECD and IMF Staff Estimates.

The structure of household lending has limited financial risks but increased consumption volatility. In fact only about one-third of household debt in Korea is tied to residential mortgages (two-thirds in the OECD on average)

and strict loan-to-value and debt-to-income-regulations limit excessive leveraging through home ownership. Nonetheless, 90% of household loans are at floating market interest rates making household consumption more vulnerable to interest rate shocks and the business cycle.⁴⁾ As a result — and despite wider access to finance — consumption volatility has increased three-fold since 1998, and rather than smoothing aggregate activity, consumption now amplifies its volatility.

**Figure 8 Growth, Private Consumption and Saving Rate
(y-o-y Growth, Percent)**



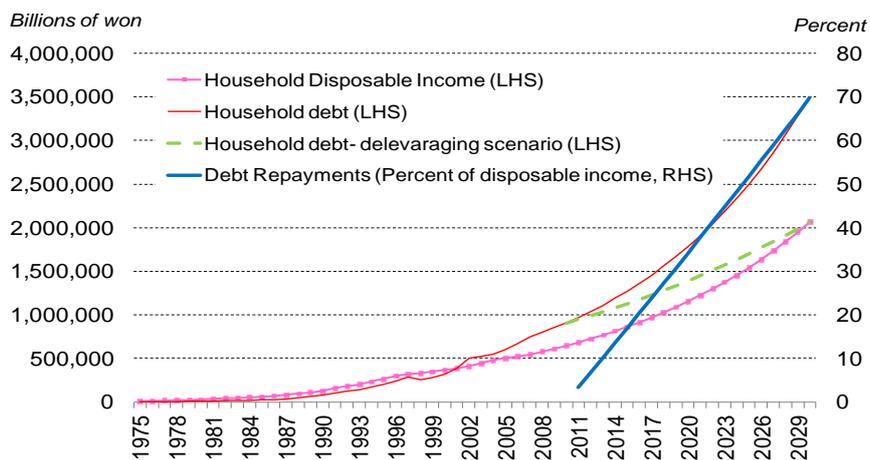
Source: CEIC Data Company Ltd.

Consumption growth will depend on the amount of leverage that can be sustained by the households. Finding the optimal nexus of consumption and leverage for the household sector is not straightforward and would depend on the extent to which the build-up has reflected structural and cyclical factors, such as financial deepening and a low interest rate environment, and the degree to which the substantial increase in households' gearing has been

⁴⁾ In the USA (2005), EU (2004) and UK (2004) variable rate mortgages constituted 31%, 46% and 72% of all mortgages, respectively. The LTVs in Korea have been declining against the global trend, going down from 56.4 at end-2004 to 47 at end-2007. The global average is 80%.

excessive and needs to be unwound. Nonetheless, a simple model of household debt dynamics can be used to demonstrate the unsustainability of the current path. Assuming an effective nominal interest rate on existing household debt of 6% and a future nominal growth rate of disposable income of 6% — both reflecting recent averages, — debt-to-income ratio would stabilize around the current 140%. However, regulatory tightening globally and in Korea and a gradual return to neutral interest rates are expected to increase carrying cost of debt and limit credit growth forcing deleveraging. A gradual 200 bps increase in interest rates from this baseline by 2013 and a decline in the debt-to-income ratio to 100% by 2030 would require households to spend an improbable 70% of projected disposable income by 2030 on debt repayments leaving little to consume. Obviously, these numbers are illustrative and meant to demonstrate the potential constraints on consumption growth even a gradual deleveraging would entail. Even in the absence of deleveraging sustaining consumption growth with higher carrying costs would be difficult and would act as a medium-term drag on overall economic activity, but especially on SMEs, who depend more on domestic demand.

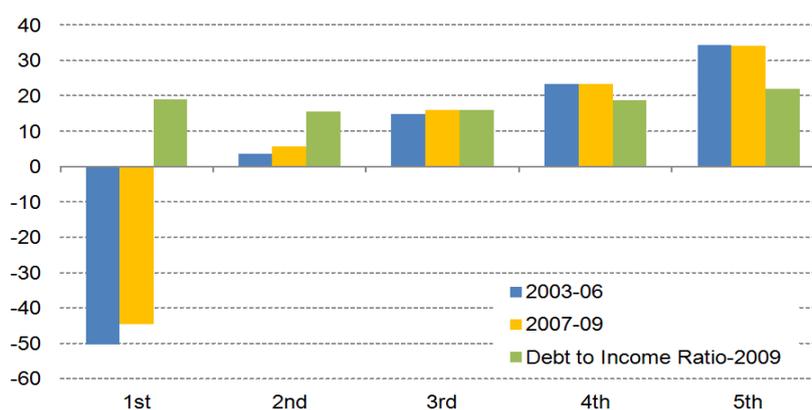
Figure 9 Scenario Analysis: Gradual Deleveraging



Source: CEIC Data Company Ltd.

The adjustment of households' balance sheet is unlikely to be uniform across households as the most rapid debt growth has been registered at the higher and lower income levels. While high income households seem to have borrowed heavily to invest in real estate low income households tend to do so for consumption. It is estimated that more than 13% of households in the bottom 20% income group have debt payments over 40% of their income (Hahm *et al.*, 2009). To the extent low income groups tend to have a higher marginal propensity to consume, the impact of deleveraging on aggregate consumption could be even higher.⁵⁾

Figure 10 Household Saving Rate and Leverage by Income Quantile (As a Percent of Disposable Income)



Source: Korea National Statistics Office and Hahm *et al.* (2009).

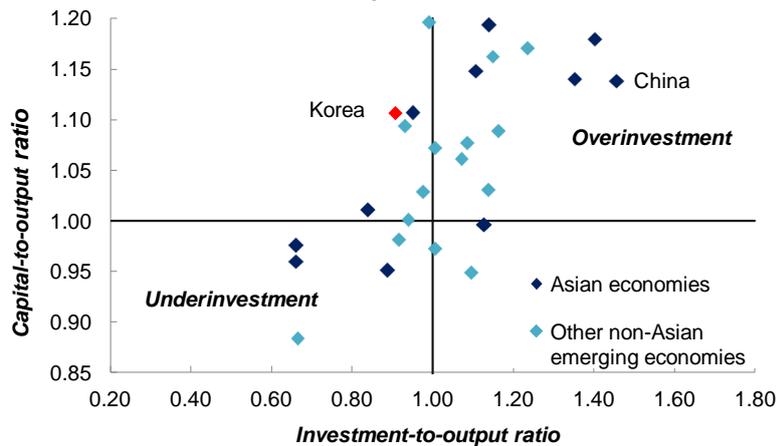
Slower export growth in the post-crisis period could also limit domestic investment. While current aggregate investment levels in Korea are close to their long-term average and still-high by developed country standards investment growth since the Asian crisis has been driven by larger companies, who also dominate Korea's exports.⁶⁾ Slower export growth in the post-crisis

⁵⁾ Karasulu (2008) estimates that low income groups' propensity to consume out of current period income is about 5 times as high as that of the overall population.

⁶⁾ Pre-1998 investment levels were at historic highs despite relatively subdued corporate indicators, and are difficult to rationalize based on economic fundamentals. See Syed, 2007.

world could lead large cooperates to reduce domestic investment, even as they increase FDI to the region to benefit from lower labor costs elsewhere.

Figure 11 Capital-to-Output and Investment-to-Output Ratio (Relative to Steady-state Level in 2008)

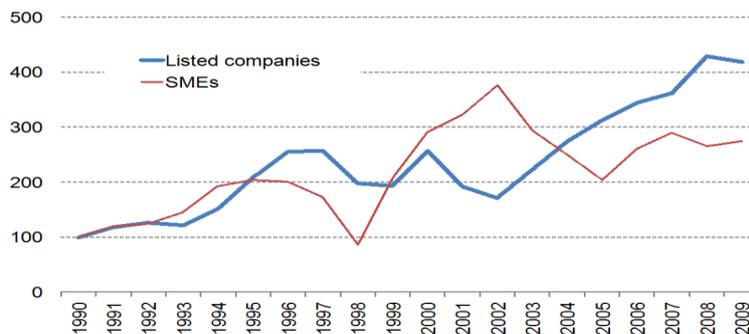


Sources: Penn World Tables; IMF, WEO Database; and IMF Staff Calculations.

The only offsetting factor would be investment by domestically-oriented companies, the majority of which are SMEs. However, unlike the chaebol, the SMEs have lagged behind, largely reflecting weaker fundamentals in the aftermath of the Asian crisis. Small firms also tend to dominate the services sector (representing around 85% of firms), where productivity growth has been lackluster.⁷⁾ Looking ahead, a vibrant SME sector, especially in the nontradable sector will be vital for investment growth and sustaining high rates of growth. With their decades long focus on export-oriented manufacturing large corporates do not have the experience or the incentives to invest in services. In addition should they reorient themselves to the nontradable sector this could have implications for domestic competition policy.

⁷⁾ Productivity in services in Korea is relatively low at 58% of the manufacturing and 44% of the U.S. service sector.

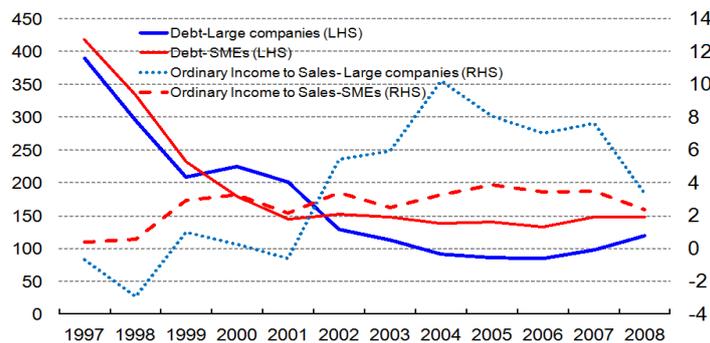
Figure 12 Facility Investment (1990=100)



Sources: The Federation of Korean Industries and IMF Staff Estimate.

However, the rapid expansion of credit guarantees for SMEs after the Asian crisis and the Great Recession have held back needed restructuring. Between 1997-2001, SME credit guarantees roughly doubled in size, reaching a peak of nearly 8% of GDP, compared to only 1.5% of GDP in Taiwan Province of China, 0.2% in the United States and 0.6% in France. Unwinding such support has also proven difficult. The size and coverage were only partially pared back during the subsequent recovery, and rose again following the Great Recession, reaching 6% of GDP (highest in non-Japan Asia). In addition to expanding the size of guarantees, their coverage was also increased and terms made more generous, although the authorities are in the process of scaling them back to pre-crisis levels.

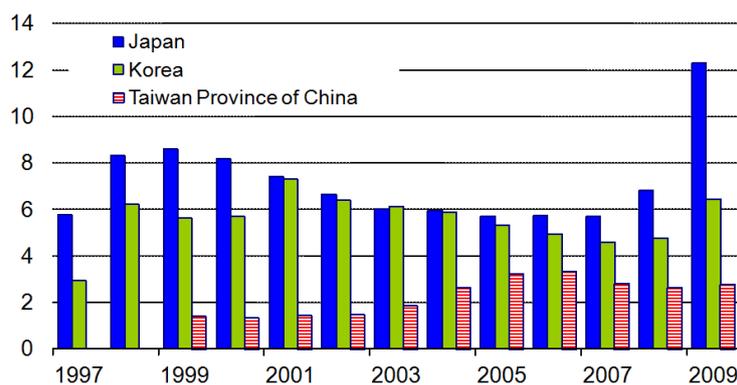
Figure 13 Debt Ratio and Ordinary Income to Sales (in Percent)



Source: BOK Financial Statement Analysis.

Furthermore, SME guarantees favor repeat clients and do not provide incentives to banks to develop new instruments suitable for the SMEs in the services sector. Given the high degree of coverage, Korean banks tend to direct loans to those SMEs that can secure credit guarantees which are overwhelmingly well established firms.⁸⁾ Although these guarantees are typically given for only one year, they are usually rolled over, or were required to be rolled over following the global crisis. Therefore, the bulk of guarantees outstanding are directed toward existing firms, creating a barrier to new entrants. As a result, low profitability of existing SMEs and the financing constraints for the newcomers limit their ability to invest.

Figure 14 SME Guarantees (in Percent of GDP)



Source: IMF Staff Estimates.

In addition to the guarantees policy support to SMEs through other channels is sizable. Besides the loans of the dedicated policy banks (IBK and KDB) and the government-run Small Business Corporation, SMEs also benefit from regulatory lending requirements on banks.⁹⁾ Domestic banks are

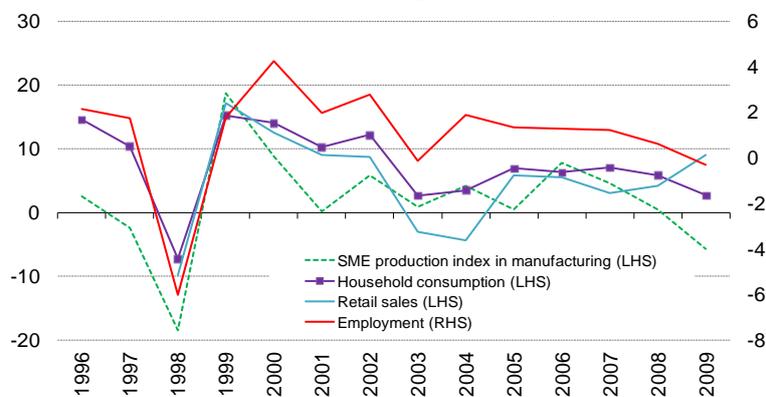
⁸⁾ While more than 70% of KCGF guarantees have a one-year maturity, the typical firm has been under KCGF coverage for five years. More than 30% of KOTEC guarantees went not to start-ups but to established companies older than three years.

⁹⁾ Lee *et al.* (2009) estimate that the share of total policy support to SMEs constitutes 30% of their funding, while bank loans (with or out without guarantees) account for 62%.

mandated to allocate a certain portion of their won loan book to SMEs. Since 1997, the minimum for commercial banks is 45% and for regional banks 60%. Foreign branches are subject to a 25% or 35% requirement depending on their use of the Bank of Korea (BOK)'s discount window. For mutual savings banks and credit specialized financing companies,¹⁰⁾ loans to SMEs must be between 30 to 50%¹¹⁾ of total outstanding loans. In addition the BOK operates a credit facility at favorable terms for on-lending to SMEs.

The prospects of households are closely tied with SMEs, especially in the non-tradable sector. The distinction between households and “mom and pop” shops is blurred as 88% of companies operate as micro-enterprises.¹²⁾ SMEs dominate the services sector and depend on domestic consumption more than the large firms tying closely investment in the sector with employment growth. This suggests that addressing SMEs weaknesses in the services sector would go a long way supporting household income growth.

Figure 15 SMEs, Employment and Domestic Demand (y/y Percent Change)



Source: CEIC Data Company Ltd.

¹⁰⁾ Credit-specialized financial companies (CSFCs) consist of credit card companies, leasing companies, installment finance companies, and new technology venture capital companies.

¹¹⁾ For mutual saving banks the requirement encompasses household loans as well.

¹²⁾ As a result reported SME loans, which rely only on commercial bank data, appear to underestimate SME debt by about 30% while misclassification overstates household loans.

Cognizant of the need to rebalance growth toward the nontradable sector the Korean government launched a major initiative in May 2009 to develop services. As part of its strategy to create new “engines of growth” the government identified nine service sectors, including health care, education, green financing, software, and conventions and tourism to support. However, the choice was based on their potential to reduce Korea’s deficit in service trade rather than addressing the broader problems in the SMEs and the services sector. The plan targets a more level playing field between services and manufacturing by increasing the tax incentives, fiscal aid and SME support to the level of manufacturing. For example, knowledge-based services are being given more government credit guarantees and to increase the amount of SME assistance received in the service sector, the government greatly relaxed the requirements for service firms to be classified as SMEs.¹³⁾

4. CONCLUSIONS AND POLICY RECOMMENDATIONS

Rebalancing growth from exports to services with leveraged actors will require action on multiple fronts and a careful balancing act. Delaying SME restructuring would undermine a sustained increase in investment and employment growth in the non-tradable sector and feed the incentives for more leverage. Efforts to restructure SMEs should start with scaling back SME guarantees back to international norms, while resisting temptations to use industrial policy for the new engines of growth in the non-tradable sector.

At a minimum the regulatory requirements to lend to SMEs should be gradually eliminated to encourage banks to assess risks and opportunities and improve the efficiency of capital allocation. This would include developing new instruments suitable for the SMEs in the services sector and reduce dependence on limited collateral, such as real assets.

Leveling the playing field between services and manufacturing would be

¹³⁾ OECD, *Economic Review-Korea*, 2010.

crucial in rebalancing and sustaining growth. However, this would be better achieved by reducing support to the latter, rather than, as planned, extending more government guarantees and payments to service firms, notably to SMEs. Rather than service industry-specific measures broader policies to strengthen competition in services by eliminating domestic entry barriers, accelerating regulatory reform, upgrading competition policy and reducing barriers to trade and inflows of foreign direct investment (FDI) would be needed to improve productivity in services.

Maintaining a robust consumption growth while avoiding an abrupt deleveraging of households will require a combination of policies to support incomes, ease transition costs and further develop the financial sector to better intermediate the risks now born by households. A carefully planned sequencing of labor market policies and increased social protection for unemployed would be crucial to minimize the adjustment costs until restructuring of the SMEs can unleash new sources of employment and income growth (see, Eskesen, 2010). Addressing the seniority system in the labor market, while increasing the coverage of and the contribution to the pension system, would improve formal employment opportunities for the aging population and support household incomes. Developing mortgage financing further and addressing the structural problems in the housing sector would also go a long way in addressing the financial risks inappropriately born by the households who cannot diversify them.

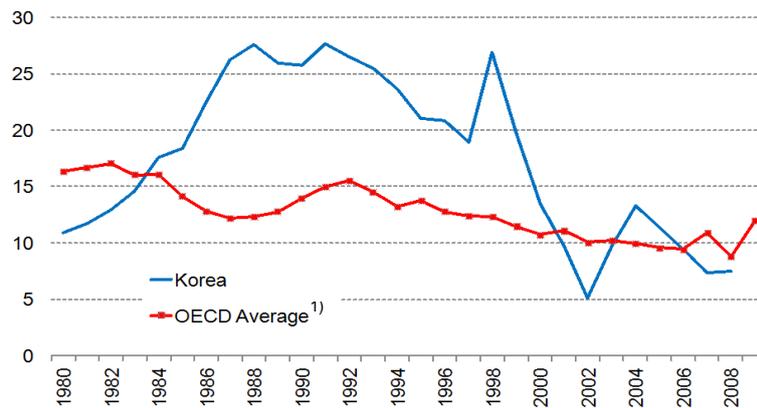
APPENDIX

Are Korean Households Saving Too Little?

Korean households' savings rate dropped from 27% to 7.5% of disposable household income since 1998 and remains one of the lowest in the OECD. This has coincided with a steady increase in household debt and raised concerns for sustainability of consumption and financial stability. Aggregate

household debt as a percent of reported¹⁴⁾ disposable income has reached 143% and Koreans spend 7% of their income to service debt, more than the U.S. households.

Figure A1 Household Saving Rate



Note: 1) includes the OECD countries in the sample.
Source: OECD.

A cross-country panel regression was used to explain the dynamics of the household saving rate in Korea.¹⁵⁾ An unbalanced panel regression comprising 20 countries was estimated using GMM with country dummies and lagged values of the variables as instruments.

Regression results suggest that the decline in the Korean households' saving rate is consistent with fundamentals. Without even accounting for Korea specific factors, beyond those captured by the various regressors, the decline in Korean household savings rate can be reasonably predicted by the model. Decomposing the estimates into their respective contribution to the household savings few key conclusions emerge:

¹⁴⁾ Survey data suggests that underreporting of household incomes may overstate the debt ratio by about 22%, consistent with the estimated size of the informal economy.

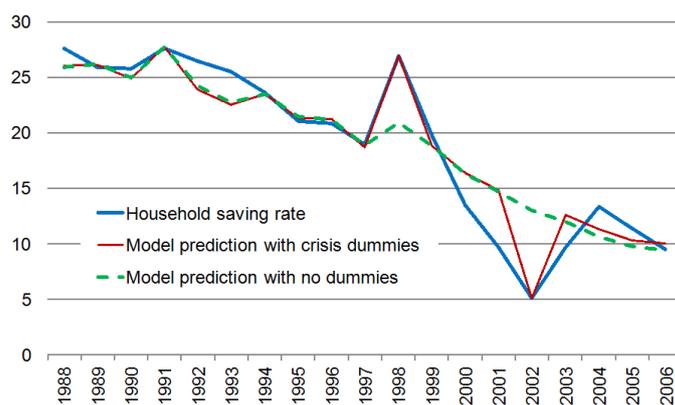
¹⁵⁾ The countries are Korea, United States, United Kingdom, Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, Canada, Japan, Finland, Greece, Ireland, Australia, and New Zealand. The longest series in the unbalanced sample starts in 1970 and ends in 2008.

Table A1 Determinants of Household Saving
(in Percent of Household Disposable Income)

	Coefficients	P-value ⁴⁾
GDP per Capital ¹⁾	0.000	(0.008)**
Old Age Dependency Ratio ²⁾	-0.257	(0.010)**
Young Age Dependency Ratio ²⁾	0.214	(0.033)**
Effective Retirement Age ³⁾	-0.534	(0.000)***
Terms-of-Trade	0.052	(0.000)***
Real Household Disposable Income Growth	0.310	(0.000)***
Corporate Saving / GDP	-0.472	(0.000)***
Public Saving / GDP	-0.464	(0.000)***
Real Interest Rate	0.332	(0.001)***
Real Stock Prices	0.001	(0.003)***
Inflation Rate	0.529	(0.000)***
Unemployment Rate	0.177	(0.076)*
Household Credit / GDP	-0.045	(0.000)***

Notes: 1) in Thousand of US dollars (ppp). 2) The youth-dependency ratio is the pre-working age population (age category 0 to 19 years) to the working-age population (age 20 to 64). The elderly-dependency ratio is represented by the ratio of the population in the retirement phase (aged 65 and over) to the working-age population. 3) Source: OECD. 4) *, **, *** denote significance at 10%, 5%, 1%, respectively. 5) The model includes year dummies for Korea in 1998 and 2002.

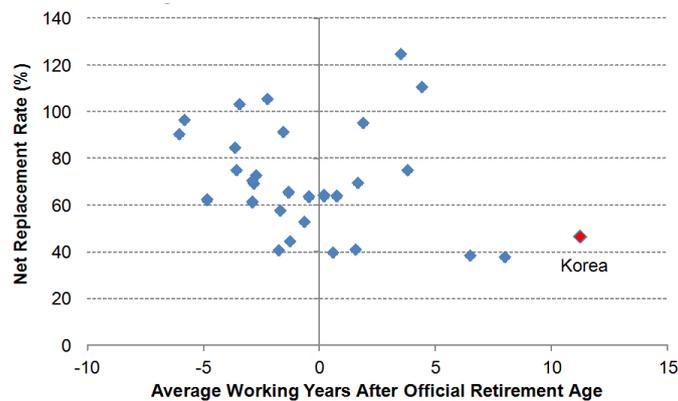
Figure A2 Model Predictions: Korean Household Saving Rate



Sources: OECD and IMF Staff Estimate.

Demographics. The fast drop in Korea's fertility rate led to a significant drop in the young-age dependency ratio and is a key reason for the declining saving rate. Going forward, with old-age dependency increasing rapidly with an aging population, the saving rate is likely to decline further.

Figure A3 Pension Replacement Rates and Effective Retirement Age, 2000-2007



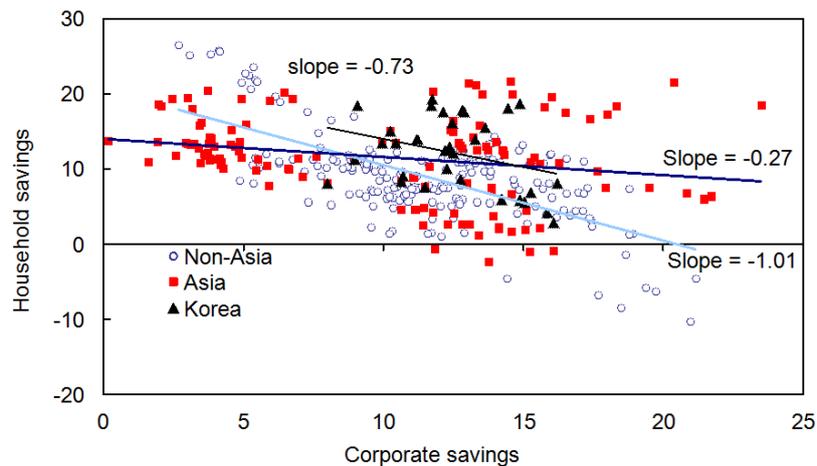
Source: OECD.

The pension system and the unique features of the labor market reduced incentives for saving. The pension system in Korea has one of the lowest replacement and contribution rates in the OECD. Nonetheless, its introduction in 1988 was a break-through for households that relied only on personal savings until then for retirement income reducing incentives to save. On the other hand, the seniority system in the labor market translates into early mandatory company retirement, well below the official retirement age. As a result, high life expectancy pushes most retirees to second jobs, increasing the effective retirement age¹⁶⁾ beyond the official retirement age reducing effective retirement period and motive for saving. In addition, most

¹⁶⁾ Effective retirement age takes into account households' response to incentives embedded in the pension system and is defined as the average age of exit from the labor force during a 5-year period. Labor force (net) exits are estimated by taking the difference in the participation rate for each 5-year age group (40 and over) at the beginning of the period and the rate for the corresponding age group aged 5-years older at the end of the period.

post-retirement employment tends to concentrate in the services, where mom and pop shops proliferate with retirement lump-sums used for start-up capital, where income growth has been lackluster reducing resources for savings.¹⁷⁾

Figure A4 Household and Corporate Savings (in Percent of GDP)



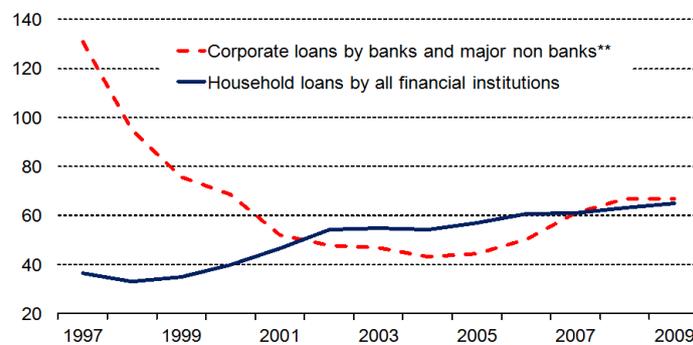
Corporate savings have substituted for some of the household savings. Absent any tax distortions and liquidity constraints, households should be indifferent between holding their savings directly or indirectly via the savings of the firms that they own. However, in the presence of credit constraints, or a weak corporate management culture piercing this corporate veil becomes difficult, breaking this neutrality. While for most of Asia this neutrality does not hold, in Korea, the deleveraging of the corporate sector following the Asian crisis along with substantial corporate governance reforms appears to have provided incentives to reduce savings for households.

Low interest rates and competition for new market segments in the financial system after the Asian crisis fueled credit to the household sector

¹⁷⁾ Reflecting the large number of self-employed and irregular workers, Korean pension system has a low coverage (60% compared to around 85% for the OECD), although notionally coverage was made universal in 1999.

and reduced incentives to save. With less diversification of household balance sheets to financial assets, the low interest rate environment reduced incentives to save and increased household debt. The banking sector's increasing shift toward retail lending following the retrenchment of credit from the large corporates since 1998 and competition for market share also facilitated a period of cheap and easy credit.

**Figure A5 Household* and Corporate Loans
(in Percent of GDP)**



Notes: * include general loans and loans for housing. ** Major non banks include KDB (until 01), Merchant Banks, Trust account of Banks and life insurance companies.

Source: CEIC Data Company Ltd.

Going forward demographic factors are likely to push the saving rate even lower. One of the lowest fertility rates in the world and an increasing life-expectancy will translate into an extraordinarily large increase in the old-age dependency ratio from 14.5% in 2008 to 65% in 2050. As a result, more people who are currently in the work force and are accumulating assets would reduce their saving in the medium term.

Addressing the seniority system in the labor market and improving the pension system would increase formal employment opportunities for the aging population and support household incomes and savings. The 2008 pension reform will gradually reduce the pension benefit replacement rate from the current 60% of wages to 40% by 2028, but does not raise the

contribution rate from its current 9%, reflecting a social choice of low contribution and low benefits in Korea. However, the labor market policies are increasing the poverty risk of an aging population as working years do not provide sufficient accumulation of assets for the longer life-expectancy.

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